

SkyShield

Ground Control Station — User Manual

For SkyShield 2.0 on Windows
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1. About this manual

SkyShield is a ground control station for unmanned aircraft. It plans missions, flies them, shows the aircraft's video, watches that video with on-board AI for people, vehicles, fire, flood and other conditions, and shares the picture with other people on site through an ordinary web browser.

This manual is written for the operator: the person at the ground station during a flight. It has two layers:

- **Reference chapters (2 to 13)** describe each screen and every control on it.
- **Use cases (chapter 14)** walk through complete tasks from start to finish.

Names of buttons, menus and settings are printed **like this**, exactly as they appear on screen. Numbered red circles on a screenshot refer to the numbered rows in the table beneath it.

About the screenshots

All screenshots were taken from the running application with a simulated aircraft and a recorded aerial video, so the telemetry values and scenes are examples. Your screen will show your own aircraft and camera.

Safety

SkyShield commands a real aircraft. Any action that moves the aircraft or changes its state asks for confirmation with a slider. Read what the confirmation says before you slide. The AI layer is an aid to an operator, not a replacement for one: it can miss things and it can raise alerts that turn out to be nothing.

2. Getting started

2.1 Installing and activating

1. Run the installer, **SkyShield-<version>-Setup.exe**, and follow its prompts.
2. Start SkyShield. On a computer that has not been activated, the only window that opens is **SkyShield — Activation Required**. It shows **This copy is not activated** and a **THIS DEVICE ID**.
3. Click **Save Request...** and send the saved file (or read out the device ID) to your SkyShield supplier.
4. When you receive a licence file (.lic), click **Import Licence...** and select it.
5. When the window shows **Licensed — restart to continue**, click **Restart SkyShield**.

The device ID is derived from hashed hardware identifiers. No hardware serial number or network address leaves the computer. A licence is tied to the computer it was issued for and cannot be copied to another.

The licence is never checked in flight

SkyShield evaluates the licence when it starts and while the aircraft is on the ground. A licence that reaches its expiry date during a flight does not affect an aircraft that is already airborne. It prevents the next start. The **Licence** page warns you from 14 days before expiry.

2.2 The screen at a glance

SkyShield opens in the **Fly View**. This is where you spend a flight.

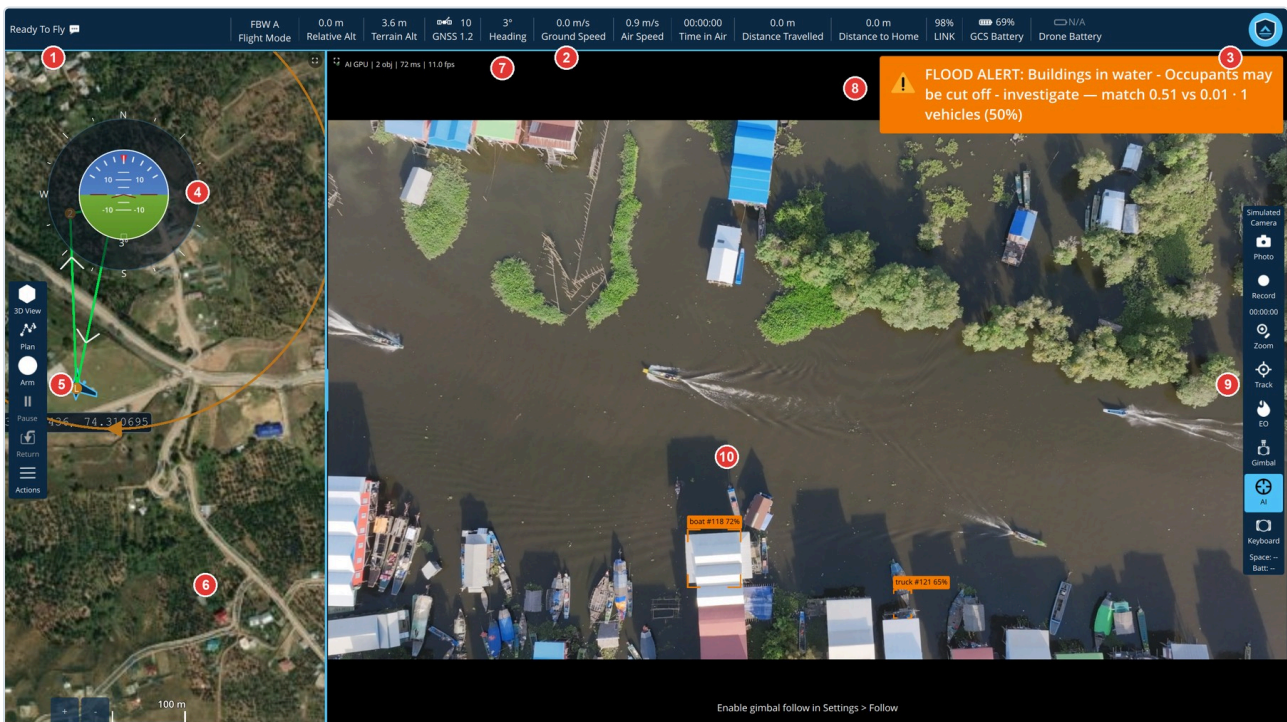


Figure 2.1 — The Fly View with an aircraft connected, video playing and an alert raised.

Area

What it is for

1	Status	Overall state of the aircraft, such as Ready To Fly or No Vehicle Connected . Click it for messages and sensor health.
2	Toolbar readouts	Flight mode, altitudes, GNSS, heading, speeds, time, distances, link and batteries. See 3.1.
3	Application menu	The round SkyShield badge. Opens settings and tools. See 2.3.
4	Compass and attitude	Heading ring and artificial horizon. Can be dragged anywhere, or switched off.
5	Action strip	3D View, Plan, Arm, Pause, Return, Actions.
6	Map	The aircraft, its position, its mission and its home. Click the map for location actions.
7	AI status line	Whether detection is running, on which device, how many objects, and how fast.
8	Alert banner	The single most important thing the AI is currently reporting.
9	Camera panel	Photo, record, zoom, tracking, camera type, gimbal, AI on/off, keyboard control.
10	Video	The aircraft's camera, with detection boxes drawn over it.

The map and the video share the screen side by side. Drag the divider between them to give either one more room (the map can take between a quarter and three quarters of the width). Double-click the video to make it fill the screen, and double-click again to return.

2.3 The application menu

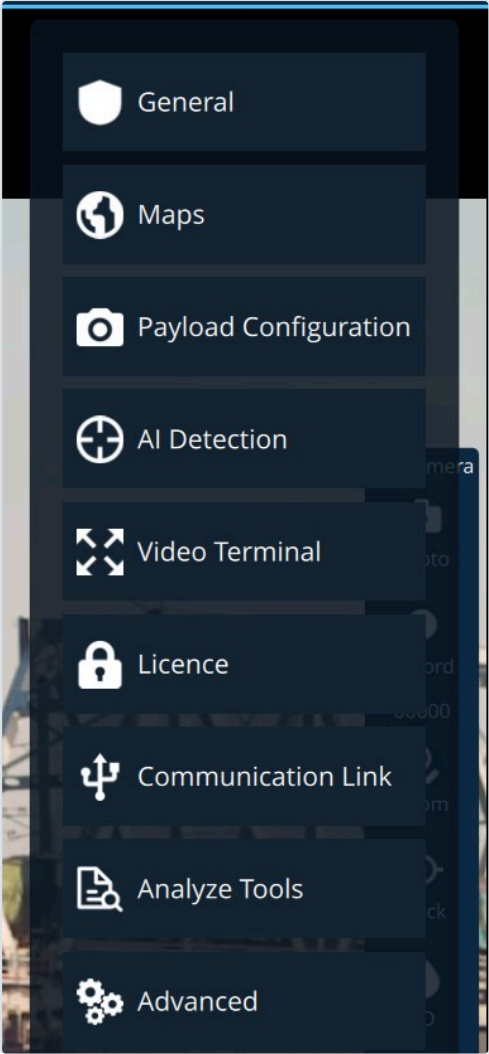


Figure 2.2 — The application menu.

Click the round badge at the top right to open the menu. The rest of the screen dims, but the toolbar and action strip stay usable.

Entry	Opens	Chapter
General	Everyday switches, units, updates, simulator, configuration file	11.1
Maps	Map provider and offline map areas	11.2
Payload Configuration	Video source and recording	4
AI Detection	Detection, alerts, voice, autonomous actions	5
Video Terminal	Sharing video with browsers	9
Licence	Licence status and device ID	13
Communication Link	How SkyShield connects to aircraft	2.4
Analyze Tools	Log download and diagnostics (shown only in Advanced Mode)	10
Advanced	Application Settings and Vehicle Configuration	11.3, 12

Every page opened from the menu has a back arrow and the page title at the top left. Click it to return to where you were.

Advanced Mode. Hold **Shift** and click the version number at the bottom of the menu to turn Advanced Mode on or off. It reveals **Analyze Tools** and some rarely needed options.

2.4 Connecting an aircraft

SkyShield connects by itself to an aircraft that appears on a supported link. Plug in the telemetry radio or autopilot USB cable, or power the aircraft's data link, and wait for the status at the top left to change from **No Vehicle Connected**.

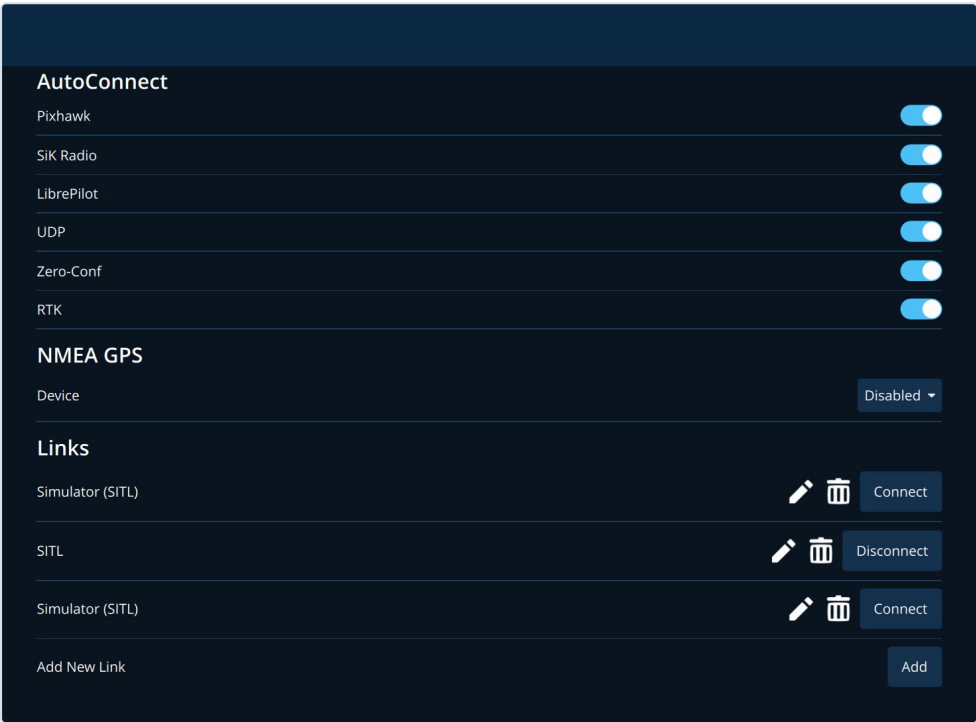


Figure 2.3 — Communication Link.

Open **Communication Link** from the application menu to control this.

Section	What it does
AutoConnect	One switch per link type SkyShield will connect to without being asked: Pixhawk , SiK Radio , LibrePilot , UDP , Zero-Conf , RTK . Switch one off if a device is being connected to by mistake.
NMEA GPS	An optional GPS receiver attached to the ground station itself.
Links	Connections you have defined by hand. Each has edit and delete icons and a Connect or Disconnect button.
Add New Link	Add creates a serial, UDP, TCP or Bluetooth link, or a log replay link.

The first time SkyShield loads an aircraft's parameters it shows a progress bar under the toolbar. Wait for it to finish before planning or arming.

2.5 Training without an aircraft

SkyShield can run a flight simulator on the ground station so that an operator can practise with nothing connected. The simulator behaves like a real aircraft in every screen of the application.

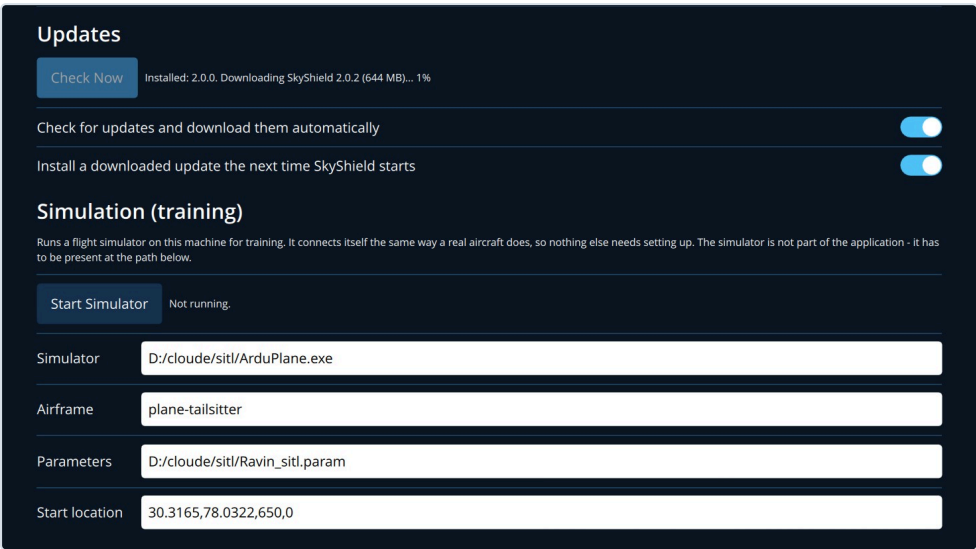


Figure 2.4 — Simulation (training) in General settings.

1. Open the application menu and choose **General**. Scroll to **Simulation (training)**.
2. Click **Start Simulator**. After a few seconds the Fly View shows the simulated aircraft.
3. When you have finished, return to the same page and click **Stop Simulator**.

Field	Meaning
Simulator	Location of the simulator program on this computer. The simulator is not part of SkyShield. If it is not at this location the button is disabled and the status says so.
Airframe	The type of aircraft simulated.
Parameters	A parameter file loaded into the simulated aircraft.
Start location	Latitude, longitude, altitude in metres and heading, separated by commas.

The four fields can only be edited while the simulator is stopped. The simulator appears in **Communication Link** as **Simulator (SITL)** and can be disconnected there like any other aircraft. To practise with video and AI as well, play a recorded video file in place of a camera. See 4.2.

3. Fly View

3.1 Toolbar readouts

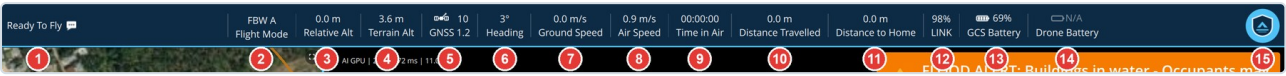


Figure 3.1 — The toolbar.

Readout	Meaning
1 Status	Overall aircraft state. Click for the Arm button, vehicle messages and sensor health.
2 Flight Mode	The mode the autopilot is in. Click to change it.
3 Relative Alt	Height above the home (take-off) point.
4 Terrain Alt	Height above the ground directly below the aircraft.
5 GNSS	Number of satellites and horizontal accuracy (HDOP; lower is better). Click for detail.
6 Heading	Compass direction the aircraft is pointing, in degrees.
7 Ground Speed	Speed over the ground.
8 Air Speed	Speed through the air.
9 Time in Air	Time since take-off, as hours:minutes:seconds.
10 Distance Travelled	Total distance flown this flight.
11 Distance to Home	Straight-line distance back to the home point.
12 LINK	Percentage of telemetry packets arriving. Click for radio detail.
13 GCS Battery	The battery of this computer, not the aircraft.
14 Drone Battery	The aircraft's battery. Shows N/A until the aircraft reports one.
15 Application menu	See 2.3.

Readouts never disappear. When a value is not available yet, its place shows -- or **N/A**, so the toolbar always has the same layout.

Flashing readouts. You can make a readout flash red when it crosses a limit, for example when relative altitude falls below a height or when distance to home exceeds a range. Set the limits in **Advanced > Application Settings > Fly View > Telemetry Alerts** (11.3).

3.2 Status, flight mode and other drop-downs

Click a readout to open its panel. Click anywhere else, or press **Esc**, to close it.

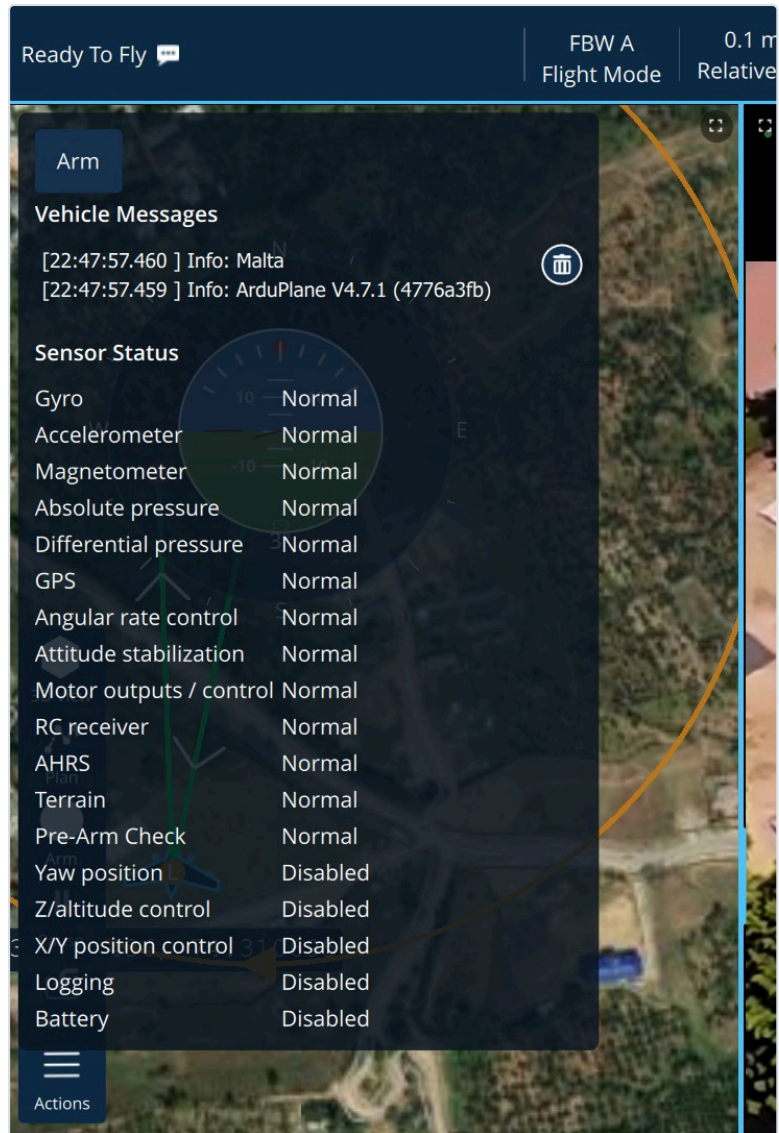


Figure 3.2 — Status panel: the Arm button, messages from the aircraft, and the health of each sensor.

The **status panel** lists recent messages from the aircraft and the state of each sensor (**Normal**, **Disabled** or an error). If the aircraft will not arm, look here first: the reason is normally in the messages.

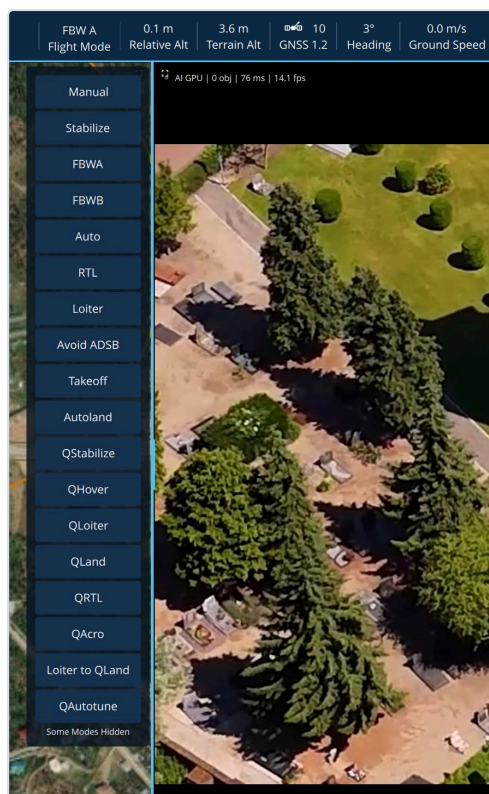


Figure 3.3 — Flight mode list. The modes offered depend on the aircraft type.

The **flight mode list** shows every mode the aircraft supports. Click one to command it.

Changing mode changes how the aircraft flies

Choose a mode only if you know what the aircraft will do in it. Modes are defined by the autopilot, not by SkyShield. Refer to your aircraft's flight manual.

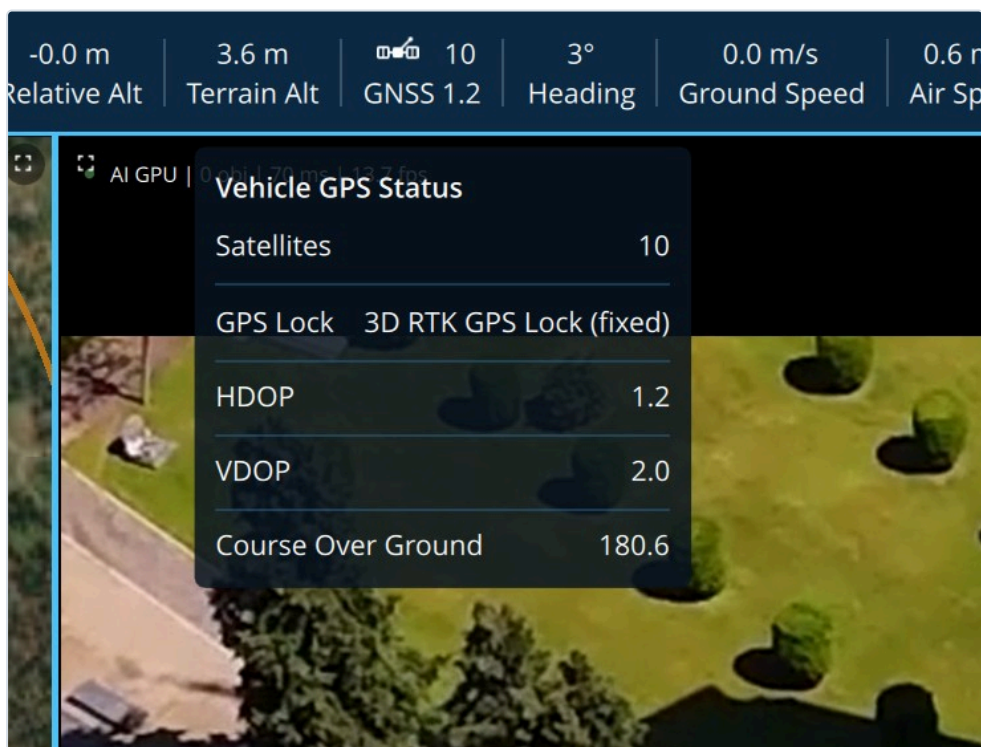


Figure 3.4 — GNSS panel: satellites, lock type, HDOP, VDOP and course over ground.

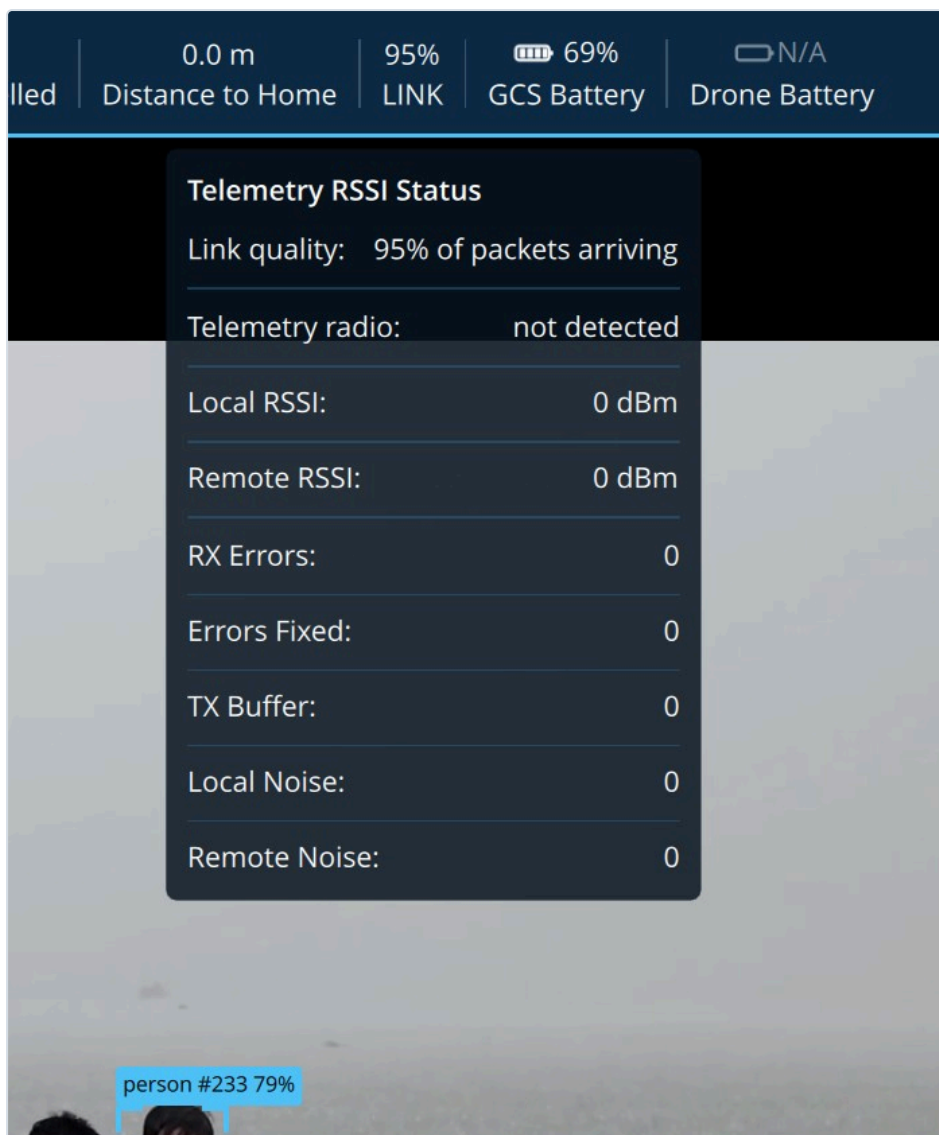


Figure 3.5 — Link panel: link quality and, when a telemetry radio reports them, signal strength, noise and error counts.

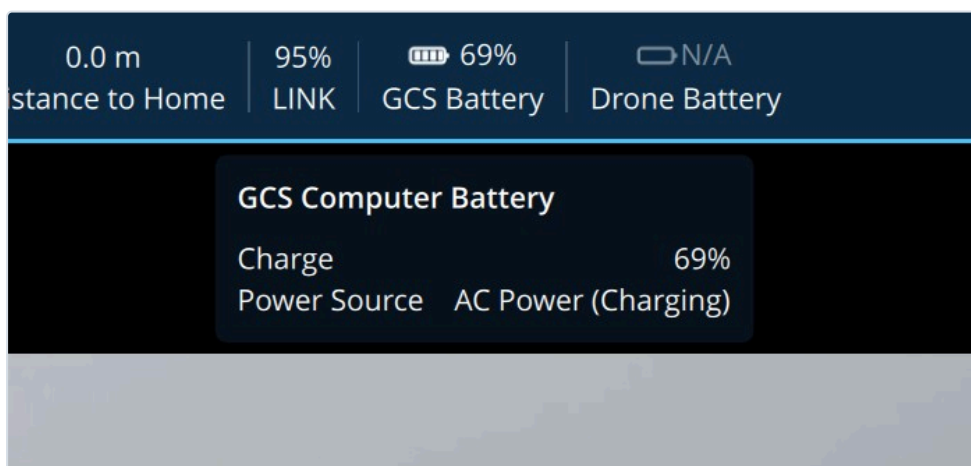


Figure 3.6 — GCS battery panel: charge and whether the computer is on mains power.

3.3 Compass and attitude display

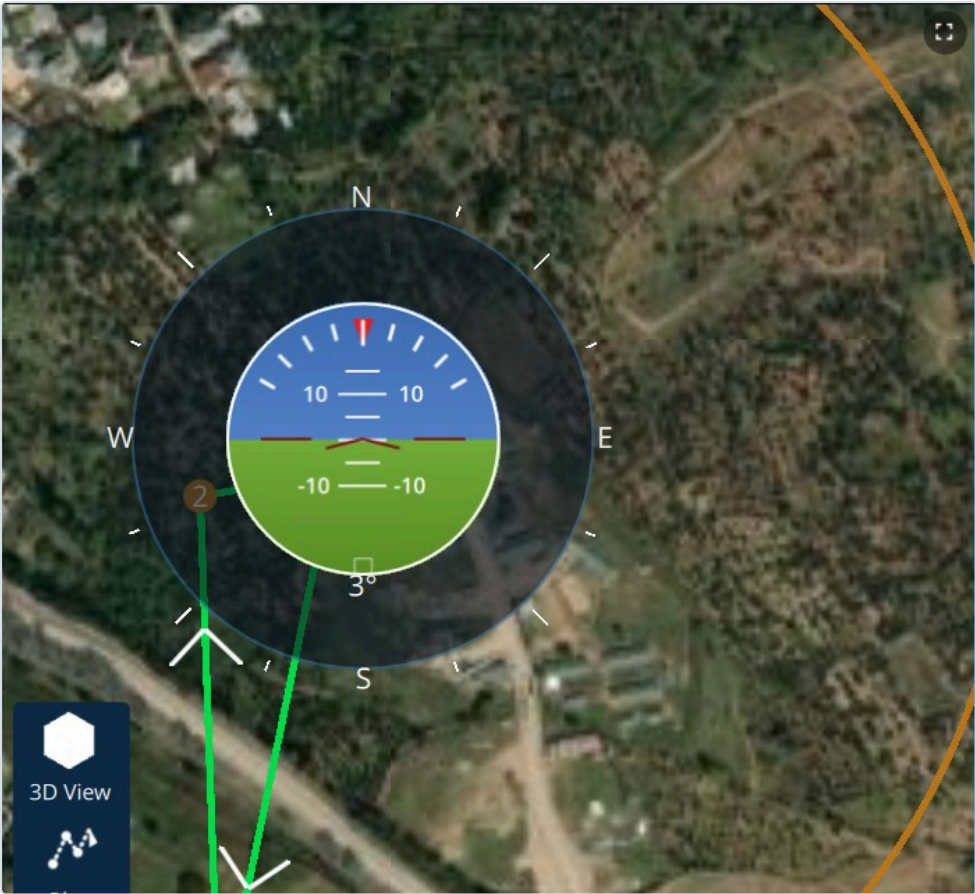


Figure 3.7 — Compass ring and artificial horizon.

The outer ring is a compass with the aircraft's heading shown beneath it. The centre is an artificial horizon showing pitch and roll. Drag the display to move it. It floats over the map or the video. Switch it on or off with **General > Show compass and HUD**.

3.4 Action strip and confirmations

Button	What it does
3D View	Switches the map to a three-dimensional view (chapter 8). Disabled until Show 3D view is on in General settings.
Plan	Opens Plan View (chapter 7).
Arm / Disarm	Arms the aircraft so that its motors can run, or disarms it. The button shows whichever applies.
Pause	Holds the aircraft where it is, interrupting a mission.
Return	Commands the aircraft to return to its home point.
Actions	Opens further actions that apply right now, such as Start Mission , Change Altitude or Continue Mission .

Buttons that cannot be used at the moment are greyed out, not hidden.

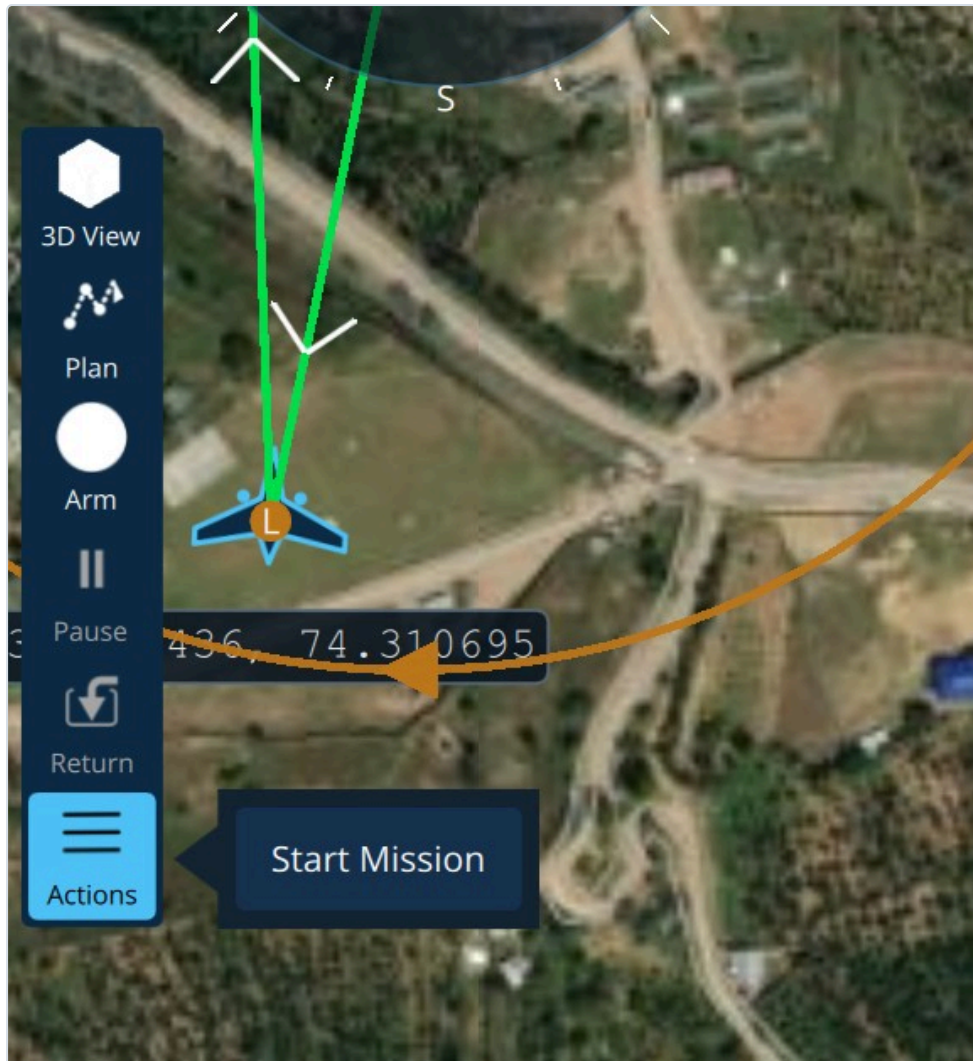


Figure 3.8 — The Actions panel on the ground with a mission loaded.

Confirming an action

Every action that affects the aircraft shows a confirmation at the top of the screen that says what will happen.

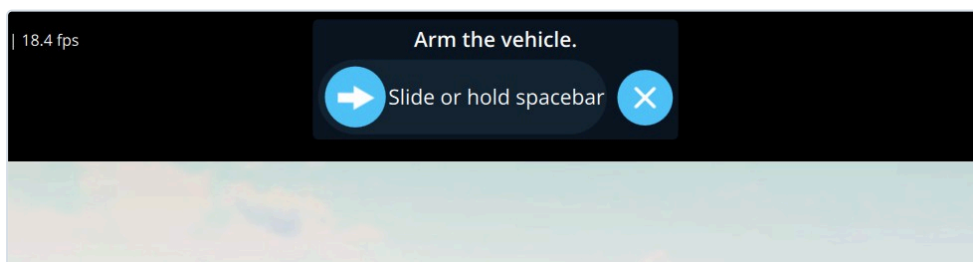


Figure 3.9 — Confirmation for arming.

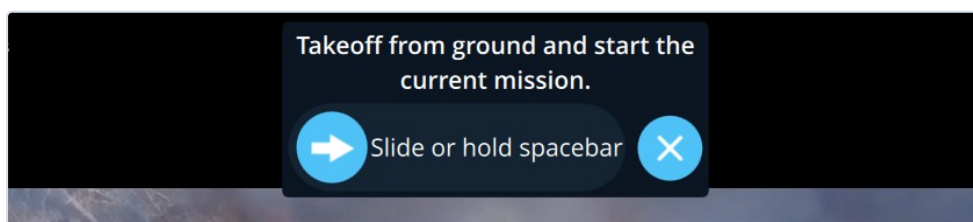


Figure 3.10 — Confirmation for taking off and starting the mission.

- To go ahead, drag the round handle to the right, or hold the **Space** bar.
- To cancel, click the **X**.

Read the confirmation text

The text is the only statement of what is about to happen. A confirmation can be waiting on screen when you return to the Fly View. If you did not ask for it, cancel it.

3.5 Working on the map

- **Move and zoom:** drag the map, use the mouse wheel, or use the + and - buttons at the bottom left. The scale bar is beside them.
- **The aircraft** is drawn as an arrow pointing where it is heading. Its latitude and longitude are printed beside it to six decimal places.
- **The mission** is drawn as lines between numbered waypoints. The home point is marked.

Click a point on the map to open a panel of actions for that location:

Action	Available	What it does
Go to location	In flight	Flies the aircraft to the point. Asks for confirmation.
Orbit at location	In flight, if the aircraft supports it	Circles the point.
ROI at location	If the aircraft supports it	Points the camera at the location and keeps it there. Cancel ROI releases it.
Mark location	Always	Drops a marker on the map for your own reference.
Set home	Disarmed only	Moves the aircraft's home point to the location.
Calibrate gyro	Disarmed only	Runs the gyro calibration. Keep the aircraft still.
Calibrate airspeed & baro	Disarmed only	Zeroes the airspeed sensor and barometer. Shield the pitot tube from wind.

The panel also shows the latitude and longitude of the point clicked. **Go to location** is limited to the distance set in **Application Settings > Fly View > Go To Location Max Distance** (1000 m unless changed).

3.6 Changing altitude in flight

Choose **Actions > Change Altitude**. A box opens with the cursor already in it. Type the new altitude and confirm. Before you confirm, the box states the change in words, for example a climb or descent from the current altitude to the new one and by how much, and it shows the permitted range. **Cancel** leaves the aircraft as it is. After the command is sent, the Fly View shows the altitude the aircraft reports it is heading for, so you can see that it accepted the value.

3.7 Pre-flight checks

SkyShield can show a checklist before arming. Turn it on with **Application Settings > Fly View > Use Preflight Checklist**. With **Enforce Preflight Checklist** also on, the aircraft cannot be armed from SkyShield until every item passes.

The checklist covers battery, GNSS, radio control, sensor health and sound output. For fixed-wing aircraft it also checks **terrain following** and tells you which of these applies:

- Terrain following is on.
- It is on in some flight modes only.
- It is off, and the aircraft's terrain database is disabled.
- It is off: the aircraft would hold height above home, not above the ground.

Terrain following is a pre-flight decision

Over rising ground, an aircraft that holds height above home gets closer to the terrain as it flies out. Check this item on every flight over hills.

4. Video and the camera panel

4.1 Choosing the video source

Open **Payload Configuration** from the application menu.

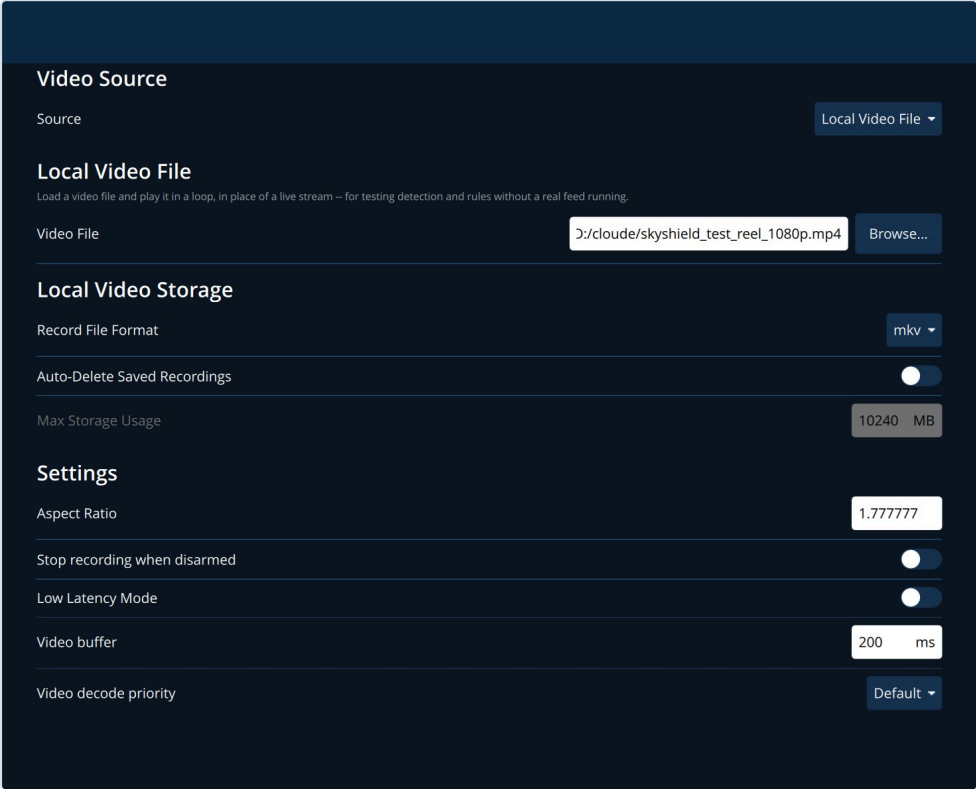


Figure 4.1 — Payload Configuration with a local video file selected.

Setting	Meaning
Source	Where video comes from: an RTSP stream, UDP H.264, UDP H.265, TCP, MPEG-TS, a preset for a known device, Local Video File , or disabled. If the aircraft announces its camera stream itself, the source is set automatically and this section is locked.
RTSP URL / TCP URL / UDP URL	The address of the stream. Only the field for the chosen source is shown.
Video File	For Local Video File : the file to play. Browse... selects one.
Record File Format	Format of recordings you make: mkv, mov or mp4.
Auto-Delete Saved Recordings	Deletes the oldest recordings when the total passes Max Storage Usage .
Aspect Ratio	Shape of the picture, width divided by height. 1.777777 is 16:9.
Stop recording when disarmed	Ends a recording automatically when the aircraft disarms.
Low Latency Mode	Shows frames as soon as they arrive. Less delay, at the cost of a less smooth picture on a poor link.

Video buffer	How long video is held before it is shown, in milliseconds (200 unless changed). A larger buffer smooths a bad link.
Video decode priority	Which decoder to prefer. Leave on Default unless advised otherwise.

A large video buffer means you are looking at the past

When the buffer is above one second, the page warns that the video is being held back and that you must not fly on that picture. Use a large buffer only for observation.

4.2 Playing a recorded video file

Set **Source** to **Local Video File** and choose a file (mp4, mov, mkv, avi, ts, webm or m4v). The file plays in the Fly View exactly as a live camera would, including AI detection and alerts, and starts again when it reaches the end. Use this for training, for demonstrations, and to see how the AI responds to footage of your own.

4.3 The camera panel

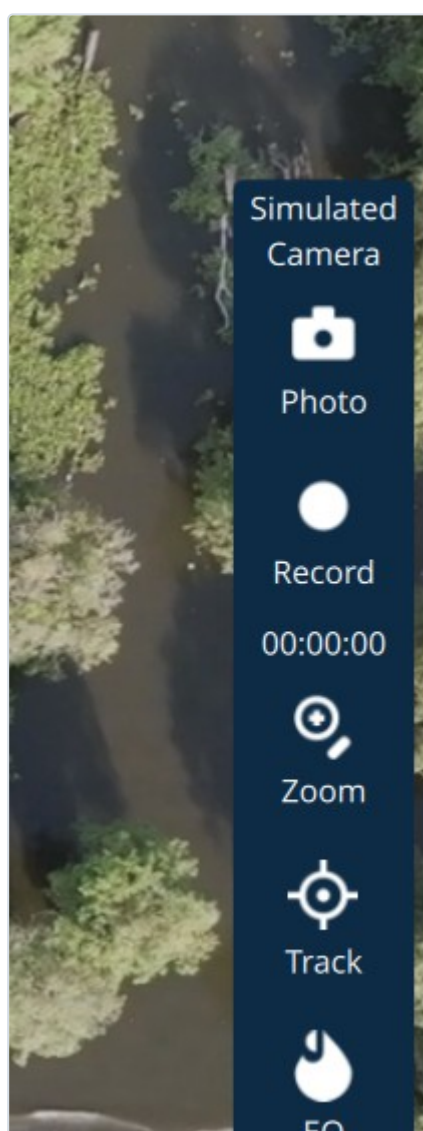


Figure 4.2 — The camera panel at the right of the video.

Control	What it does
Camera name	The camera in use, or No Camera .
Photo	Takes a still picture.
Record	Starts and stops a video recording. The counter beneath shows the length of the recording.
Zoom	Opens - and + buttons beside the panel to zoom out and in.
Track	Lets you draw a box on the video around something to follow. See chapter 6.
EO	Switches the camera between daylight (EO), thermal (IR) and the mixed modes the camera offers (IR PiP , IR Mix). Greyed out when the camera has no thermal sensor.
Gimbal	Opens the gimbal controls (below).
AI	Turns AI detection on or off for this session. Highlighted when on.
Keyboard	Turns keyboard control of radio channels on or off. See 11.3.
Space / Batt	Free storage and battery of the camera, when it reports them.

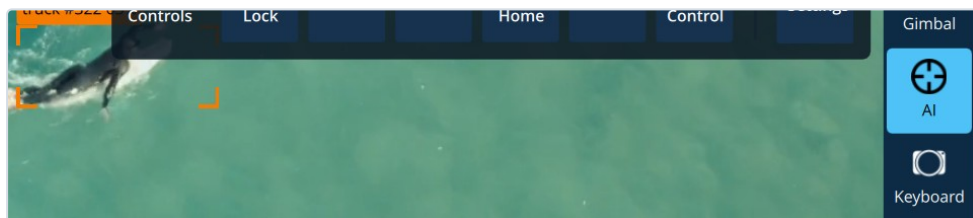


Figure 4.3 — Gimbal controls.

Gimbal control	What it does
Yaw Lock	Holds the camera on a compass direction while the aircraft turns, or releases it to follow the aircraft's nose.
Center	Points the camera straight ahead.
Tilt 90	Points the camera straight down.
Point Home	Points the camera at the home point.
Retract	Stows the gimbal.
Acquire Control	Takes control of the gimbal for this ground station when more than one controller is present.
Settings	Gimbal options, including on-screen control: click or drag on the video to aim the camera.

Camera and gimbal controls normally appear only when the aircraft reports that hardware. Turn on **General > Show all camera and gimbal controls (no MAVLink needed)** to show them all the time, for example to learn where they are. A press still only acts on real hardware.

5. AI detection and alerts

SkyShield examines the video on the ground station itself. Nothing is sent to the internet and no network is needed. It does two separate things:

- **Object detection** finds people, vehicles, boats, aircraft and animals, draws a box on each, and follows each one from frame to frame.
- **Scene assessment** judges what is happening in the picture as a whole, such as fire, flooding or a damaged building, and raises an **alert**.

5.1 What you see on the video



Figure 5.1 — Detection boxes and a fire alert.

Item	Meaning
1 AI status line	A green dot means detection is running. GPU or CPU is the device doing the work. Then the number of objects in view, the time taken per frame in milliseconds, and frames examined per second.
2 Alert banner	The alert that currently matters most. See 5.2.
3 Detection box	Corner brackets around an object, so the object itself stays visible. The label gives the type, a track number and a confidence percentage, for example truck #96 72% .
4 AI button	Turns detection on and off for this session.

The **track number** stays with an object for as long as it is followed. If the same number is still on a vehicle a minute later, it is the same vehicle. Boxes are blue normally and orange while an alert is active.

5.2 Alerts

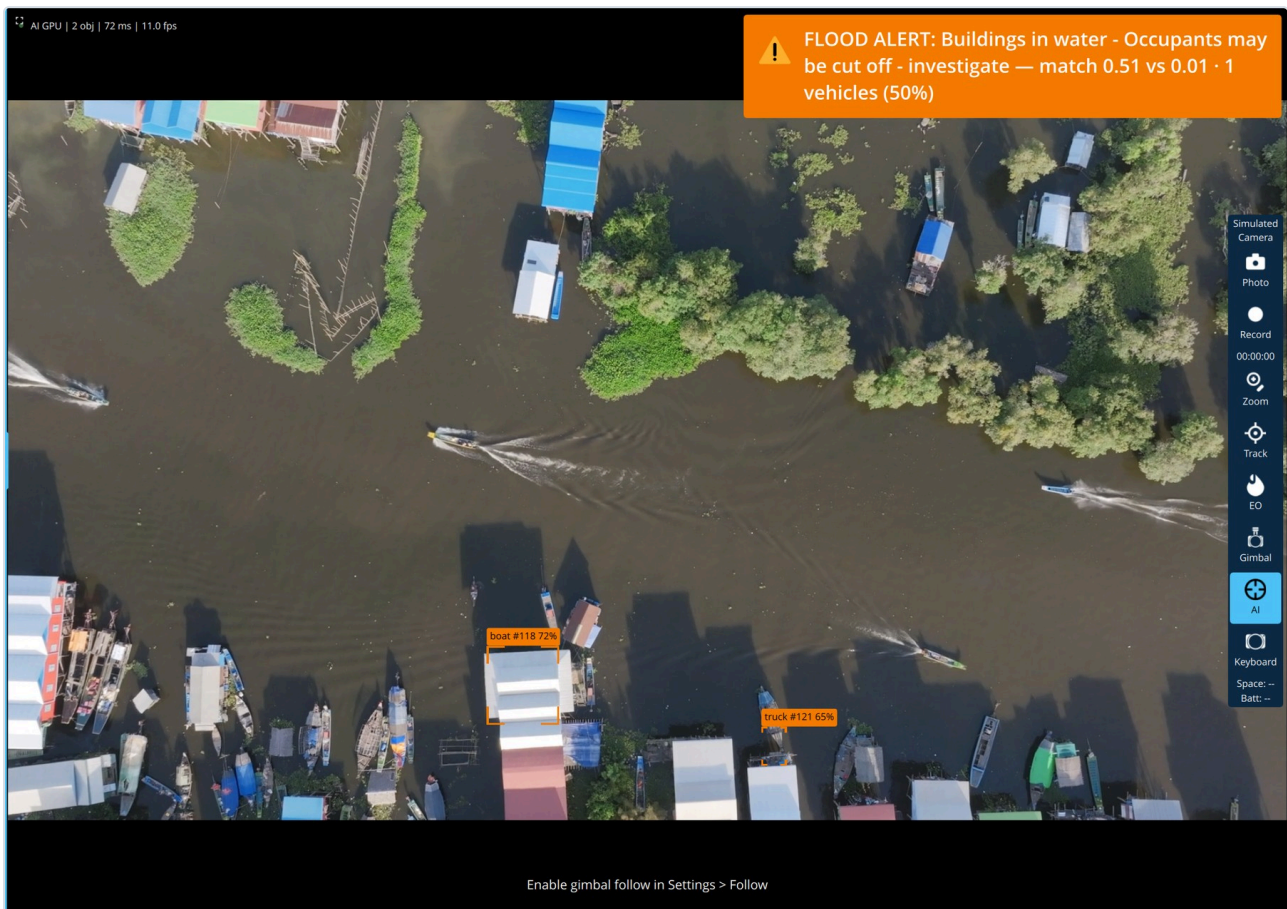


Figure 5.2 — A flood alert.

An alert banner reads, in order:

1. **Category**, such as **FIRE ALERT**, **FLOOD ALERT** or **PEOPLE ALERT**.
2. **What was seen**, such as **Buildings in water**.
3. **What to do about it**, such as **Occupants may be cut off - investigate**.
4. **The evidence**: **match 0.51 vs 0.01** compares how strongly the picture matches the alert with how strongly it matches the things most often mistaken for it. A wide gap is a strong alert. Then the number of people or vehicles counted in the affected area, and a confidence percentage.

How alerts behave:

- **One alert at a time.** A burning building could be described as fire, smoke and a building on fire all at once. SkyShield shows the most serious and treats the others as supporting detail.
- **Alerts that name an object need that object.** **Person in water** is raised only when the detector has also found a person.
- **Alerts about movement need movement.** **Person not moving** or **Vehicle convoy** are decided from how tracked objects move relative to the rest of the scene.
- **Spoken alerts.** Alerts are read aloud by a voice that runs on this computer. The same kind of alert is not repeated until the **Minimum gap between announcements** has passed.

- **While an alert is up**, boxes are drawn only for objects inside the affected area, so that you can see what is in it.

Appendix A lists every alert with its severity.

Alerts are prompts to look, not findings

An alert means the picture resembles something worth investigating. Confirm with your own eyes before acting or reporting. Flood alerts are less reliable than fire alerts. No alert does not mean nothing is there.

5.3 AI Detection settings

Open **AI Detection** from the application menu.

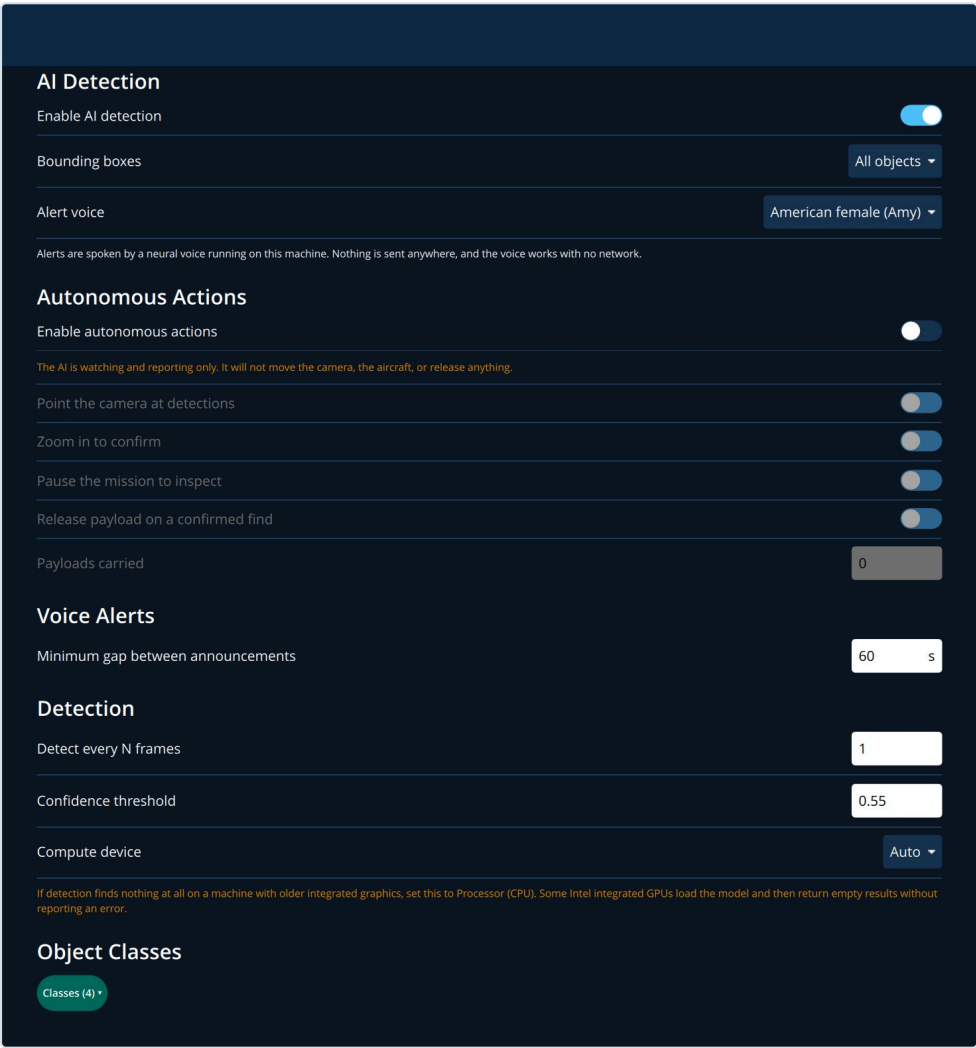


Figure 5.3 — AI Detection settings.

Setting	Meaning	Default
Enable AI detection	Master switch. When off, the AI button in the Fly View cannot turn detection on.	Off
Bounding boxes	All objects ; Only critical objects (boxes appear only inside the area of an active alert); or Hidden . Hiding boxes does not stop detection or alerts.	All objects

Alert voice	British male (Alan), American neutral (Lessac) or American female (Amy).	British male
Minimum gap between announcements	Seconds between spoken alerts, from 3 to 300.	60 s
Detect every N frames	1 examines every frame. A higher number (up to 10) examines fewer frames and eases the load on a slower computer.	1
Confidence threshold	How sure the detector must be before it draws a box, from 0.05 to 0.95. Lower finds more and makes more mistakes.	0.5
Compute device	Auto, Graphics card (GPU) or Processor (CPU).	Auto
Classes	Which kinds of object to detect.	See below

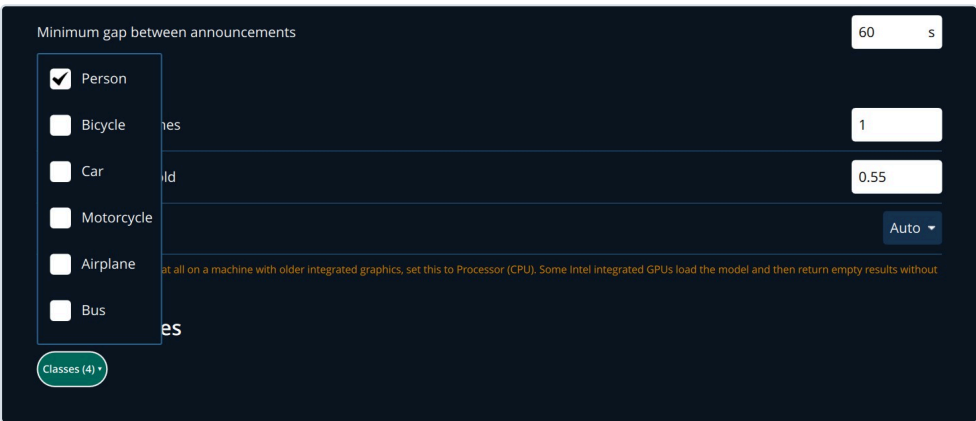


Figure 5.4 — Choosing object classes.

Object classes. Click the **Classes** pill and tick the kinds of object you want. The choices are person, bicycle, car, motorcycle, airplane, bus, train, truck, boat, bird, cat, dog, horse, sheep, cow, elephant, bear, zebra and giraffe. Until you change anything, people, vehicles and boats are detected and animals are not, because animal detections from the air are mostly wrong.

If nothing is ever detected

On a computer with older built-in graphics, set **Compute device** to **Processor (CPU)**. Some built-in graphics chips load the AI and then return nothing, without any error.

5.4 Autonomous actions

By default the AI only watches and reports. The **Autonomous Actions** section lets you permit it to act, one kind of action at a time.

Permission	What the AI may do
Enable autonomous actions	Master switch for the four below. While off, the page states that the AI will not move the camera, the aircraft, or release anything.
Point the camera at detections	Aim the gimbal at something it has found.
Zoom in to confirm	Zoom the camera for a closer look.

Pause the mission to inspect	Hold the aircraft while it looks.
Release payload on a confirmed find	Drop a carried payload. Set Payloads carried to the number on board (0 to 16).

All are off unless you turn them on. Detection, alerts and logging continue whatever these switches say.

Payload release cannot be undone

A release must also be armed in the Fly View, and it is blocked if the release point appears to be water. Enable it only under your organisation's procedures and with the area below the aircraft under your control.

5.5 Records

SkyShield keeps AI logs in an **AILogs** folder in its data folder. They include the score of every alert on every pass, whether or not it was raised. These files are useful when reviewing a flight and when reporting a missed or false alert to support.

6. Visual tracking and gimbal follow

Visual tracking follows *anything* you point out on the video. It does not depend on AI detection and does not need the object to be of a known type.

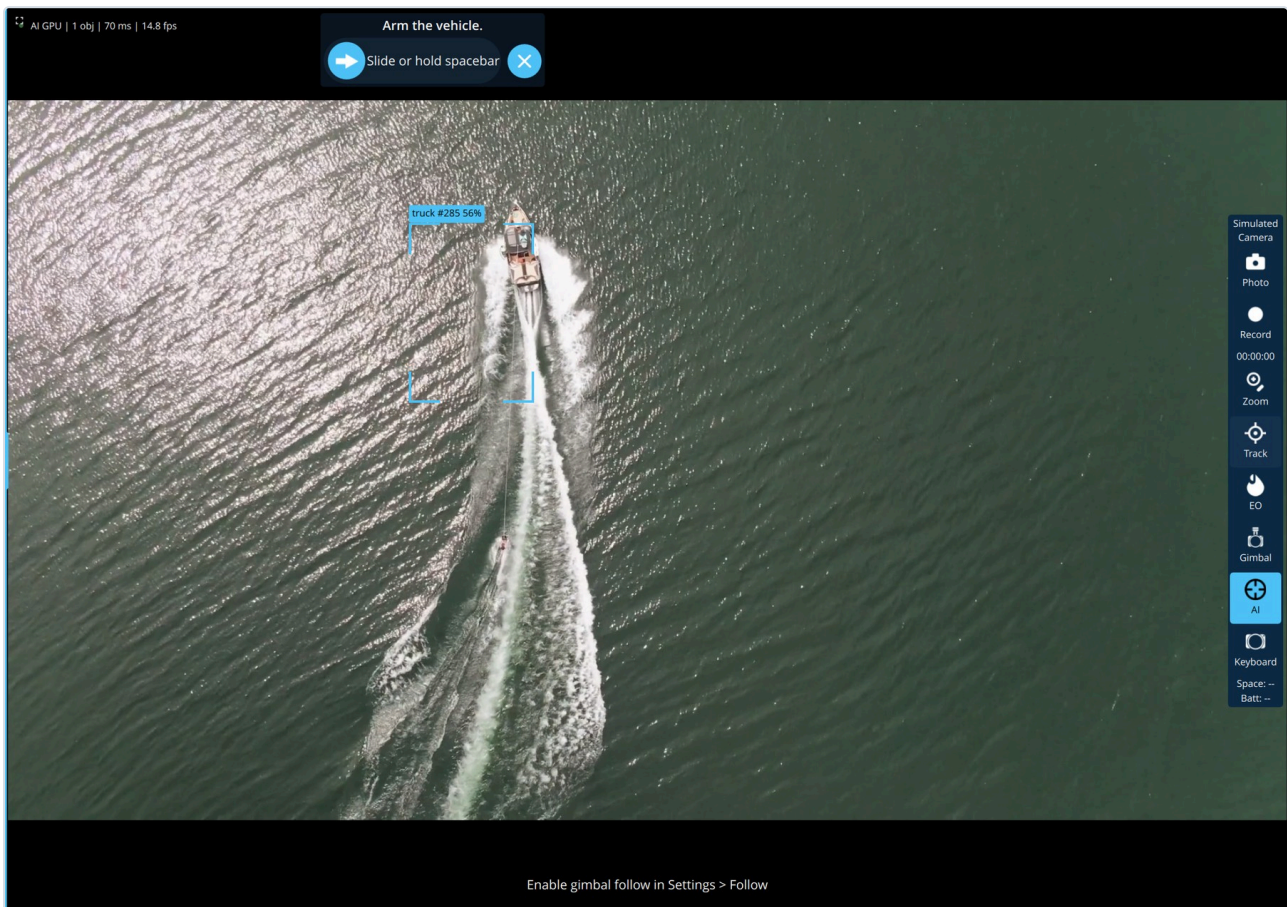


Figure 6.1 — Track mode: drag a box around the target.

1. Click **Track** in the camera panel. The video shows **Drag on the video to select a target**.
2. Drag a box tightly around the target.
3. SkyShield follows that patch of the picture and draws the box as it moves.
4. Click **Track** again to stop.

6.1 Making the gimbal follow the target

Tracking alone only draws a box. **Gimbal follow** moves the camera to keep the target centred, by sending radio-channel commands to the gimbal. It is set up once, in **Advanced > Application Settings > Follow**.

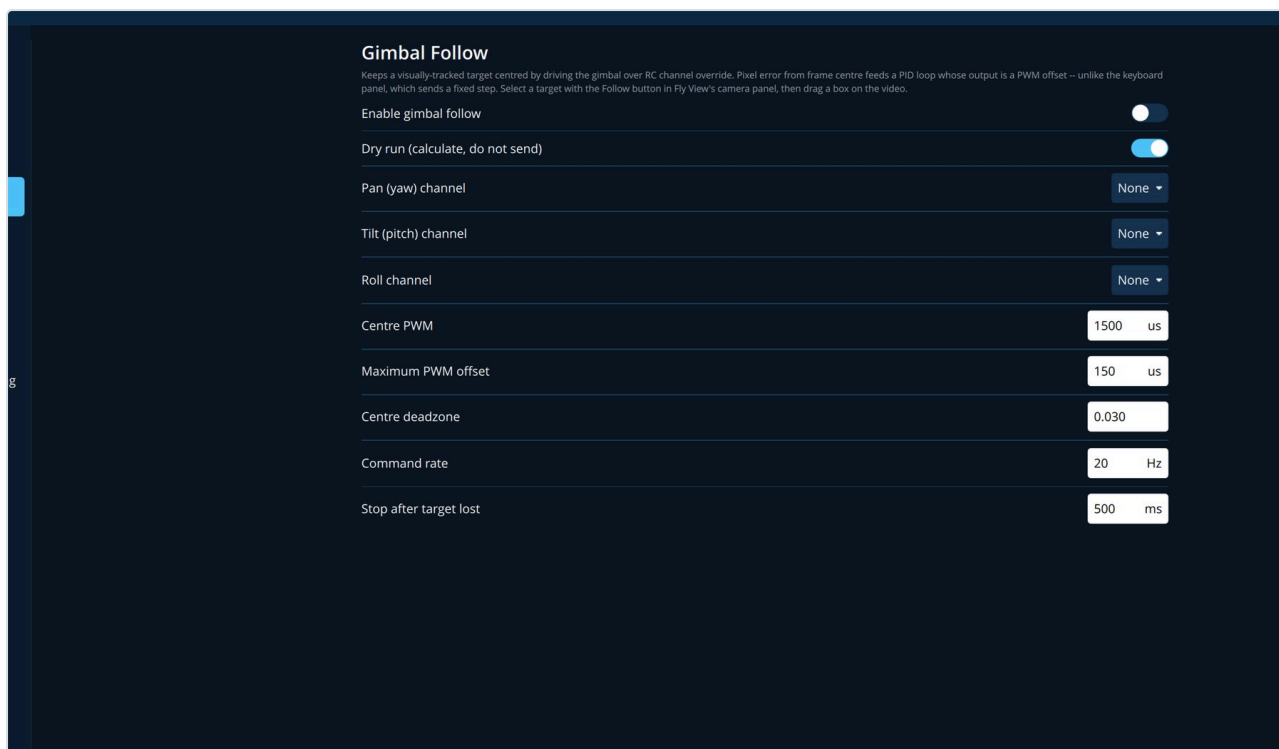


Figure 6.2 — Gimbal Follow settings.

Setting	Meaning	Default
Enable gimbal follow	Allows follow to be used. Until it is on, the Fly View reminds you: Enable gimbal follow in Settings > Follow.	Off
Dry run (calculate, do not send)	Works out the commands and shows them, but sends nothing. Use this to check direction before letting it move the gimbal.	On
Pan (yaw) channel, Tilt (pitch) channel, Roll channel	The radio channel that drives each gimbal axis. Channels 1 to 4 are marked (flight) because they normally fly the aircraft.	None
Centre PWM	The signal that means "do not move".	1500 us
Maximum PWM offset	The largest correction that will ever be sent.	150 us
Centre deadzone	How far off centre the target may drift before the gimbal is moved.	0.03
Command rate	Commands per second.	20 Hz
Stop after target lost	How long after losing the target the gimbal is released.	500 ms

With follow enabled, further options set the response of each axis (gains and inversion). The roll axis is for gimbals mounted sideways. Its gains start at zero so that it does nothing until you set it up.

Never assign a flight channel

Selecting channel 1, 2, 3 or 4 for gimbal follow would send camera corrections to the aircraft's flight controls. Set follow up on the ground, with **Dry run** on, and confirm the gimbal moves the right way before a flight.

7. Plan View

Plan View is where you build a mission: the route the aircraft flies by itself. Open it with **Plan** in the action strip.

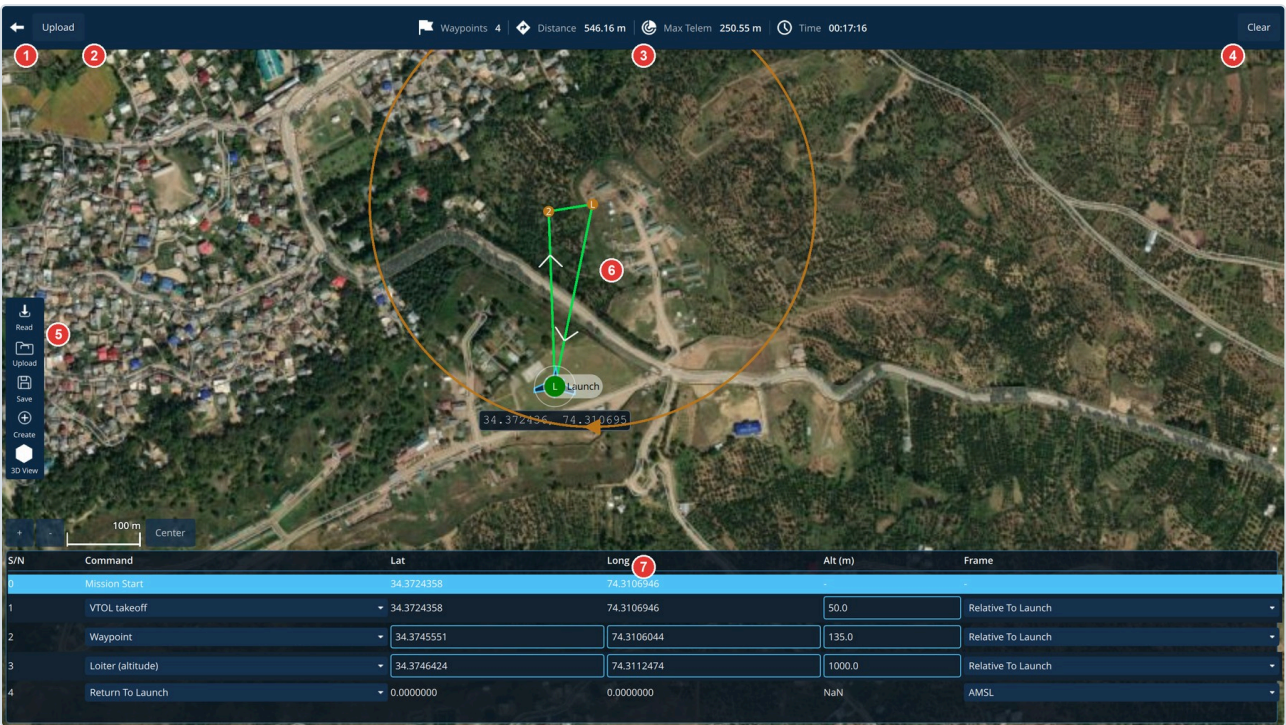


Figure 7.1 — Plan View with a four-item mission.

Area			What it is for
1	Back		Returns to the Fly View.
2	Upload		Sends the plan to the aircraft. Highlighted when the plan on screen differs from the one on the aircraft.
3	Mission summary		Waypoints , total Distance , Max Telem (the farthest the route goes from home), and estimated Time .
4	Clear		Removes the plan from the screen and from the aircraft. Asks first.
5	Tools		Read loads the plan from the aircraft. Upload sends it. Save stores it as a file. Create starts a new plan. 3D View previews the plan in three dimensions.
6	Map		The route. Click to add waypoints and drag a waypoint to move it.
7	Mission table		Every step of the mission, one per row.

7.1 Creating a plan

1. Click **Create**. If a plan is already on screen you are asked whether to replace it.
2. Answer **How should altitude be measured?** Choose **Terrain** to keep the same height above the ground below the aircraft, or **Relative to Launch** to hold a fixed height above the take-off point.
3. Enter the altitude new waypoints should fly at, and click **Start**.

- Click on the map where you want the aircraft to fly. Each click adds a waypoint. **Undo** removes the last one.
- Click **Done**.

The Create panel also offers **Pattern** tools such as a survey over an area, and layers for a **Fence** (an area the aircraft must stay inside) and **Safe Landing** points. An area can be traced on the map or loaded from a KML or shapefile.

Two tools build a route for you:

- Auto Plan** covers the geofence, an existing survey area, or a square around the centre of the map, in that order of preference. Altitude and sweep direction are worked out for you.
- Route To** builds a route from the aircraft (or from the planned home when no aircraft is connected) to a point you click. Altitude and speed are chosen for you.

A route built this way is shown as a proposal. Click **Use as Mission** to accept it or **Dismiss** to discard it.

7.2 Editing in the mission table

S/N	Command	Lat	Long	Alt (m)	Frame
0	Mission Start	34.3724360	74.3106944	-	-
1	VTOL takeoff	34.3724360	74.3106944	50.0	Relative To Launch
2	Waypoint	34.3745551	74.3106044	135.0	Relative To Launch
3	Loiter (altitude)	34.3746424	74.3112474	1000.0	Relative To Launch
4	Return To Launch	0.0000000	0.0000000	NaN	AMSL

Figure 7.2 — The mission table with the last row selected.

Column	Meaning
S/N	Order of the step. Row 0 is the mission start.
Command	What the aircraft does at this step, chosen from a drop-down: take-off, waypoint, loiter, return to launch, land and others.
Lat, Long	Position. Type a value directly into the cell.
Alt (m)	Altitude for the step.
Frame	What the altitude is measured from, for example Relative To Launch or AMSL (above mean sea level).

Click a row to select it. The selected step is highlighted on the map, and any extra values that the command needs can be edited for that row. **Center**, above the table, brings the mission into the middle of the map.

7.3 Terrain check

The route is drawn green where it is clear and **red where it would hit the ground**. SkyShield checks the whole path between waypoints against terrain height, not only the waypoints themselves, so a line that clips a hill between two safe waypoints is caught. Fix every red section before uploading: raise the altitude, move the waypoint, or switch the plan to terrain-relative altitude.

7.4 Uploading and flying

- Click **Upload** and wait for **Done**.

2. Return to the Fly View. The mission is drawn on the map.

3. Choose **Actions > Start Mission** and confirm.

You can plan while the aircraft is flying. A plan started in the air does not need a take-off step.

8. 3D view

The 3D view replaces the flat map with a three-dimensional globe showing real terrain, the aircraft and its path.

- 1. Turn on **General > Show 3D view**. This is needed once.
- 2. In the Fly View or Plan View, click **3D View**. Click it again to return to the flat map.

8.1 In the Fly View

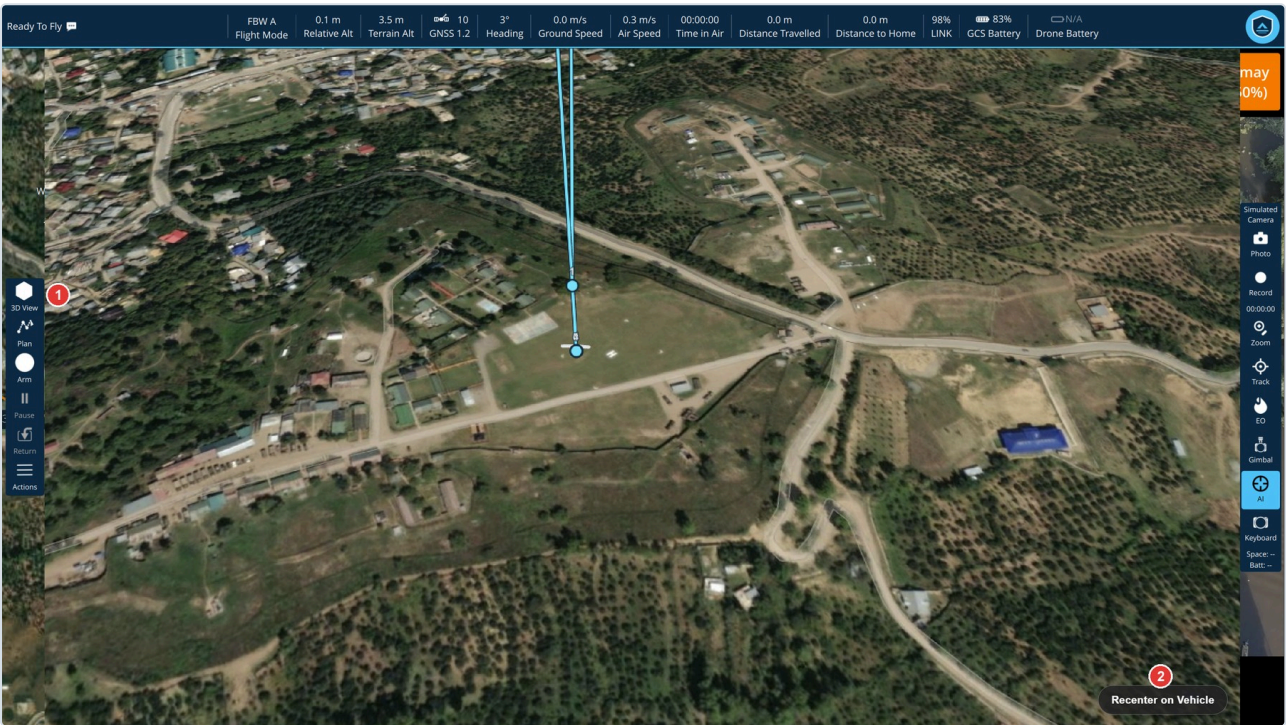


Figure 8.1 — The 3D view in the Fly View, with the aircraft on the ground and its mission rising from it.

Item	What it is for
1 3D View	Switches between the 3D view and the flat map with video.
2 Recenter on Vehicle	Brings the camera back to the aircraft after you have moved the view.

The 3D view takes over the main area of the Fly View. The toolbar, action strip and camera panel stay in place, so every flight control remains available. The camera follows the aircraft. Drag to look around and use the mouse wheel to zoom, then click **Recenter on Vehicle** to return. The mission is drawn as a line through numbered points at their real heights.

8.2 In Plan View

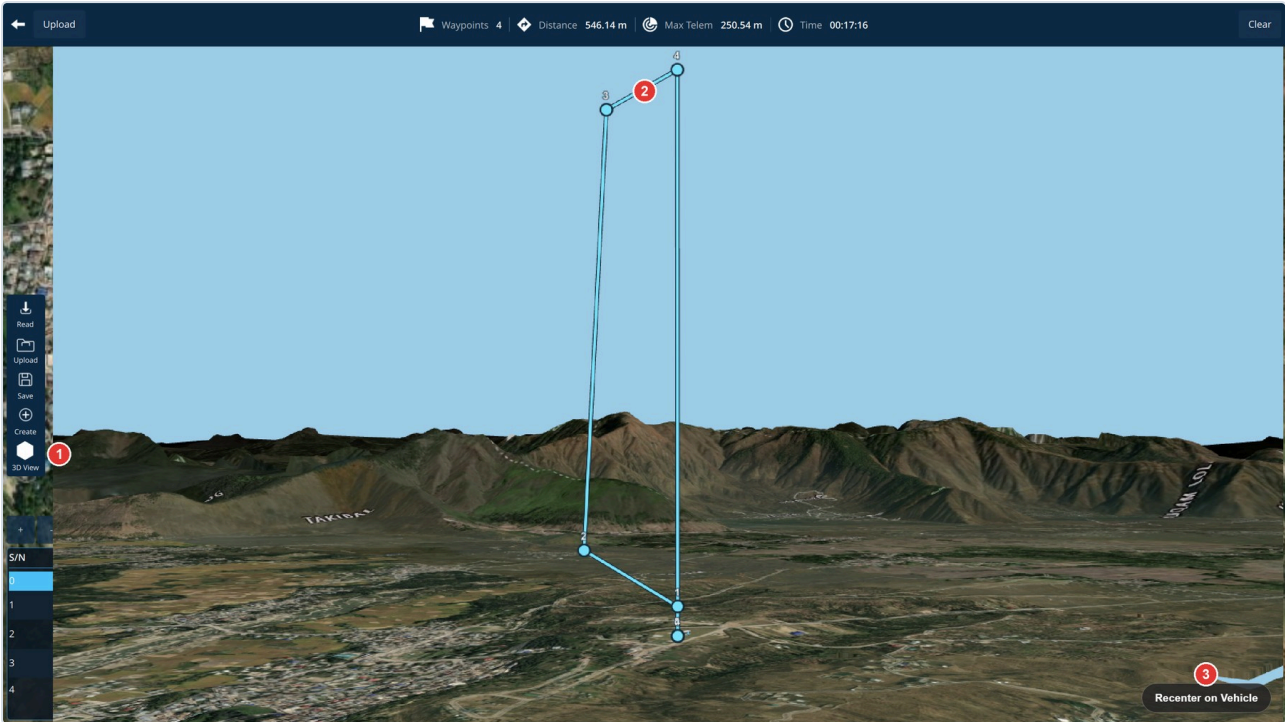


Figure 8.2 — A mission previewed in 3D in Plan View. This mission climbs steeply to a high loiter point.

Item	What it is for
1 3D View	Switches between the 3D preview and the flat planning map.
2 Mission path	Each numbered point is a step of the mission, drawn at its planned altitude above the terrain.
3 Recenter on Vehicle	Returns the camera to the aircraft.

The mission is previewed over the terrain, even with no aircraft connected. This is the quickest way to see whether a route clears a ridge, and how high a step really is compared with the ground around it. The mission table is reduced to its row numbers while the preview is open. Click **3D View** again to edit the plan.

Terrain is shown at about 30 m resolution for the area in view.

Map imagery and terrain that you have already viewed or downloaded are used without an internet connection. The first time the 3D view is opened on a computer it needs an internet connection to load its display component.

Dialogs and the 3D view

While a dialog box is open, the 3D view hides itself so that the dialog can be seen. It returns when the dialog closes.

9. Remote Video Terminal

The Remote Video Terminal lets other people watch the aircraft's video on a phone, tablet or laptop by opening a web page. There is nothing to install on their device. The aircraft is not involved: the ground station shares a copy of the video it is already receiving. Viewers can only watch. They cannot command the aircraft.

9.1 Turning it on

Open **Video Terminal** from the application menu.

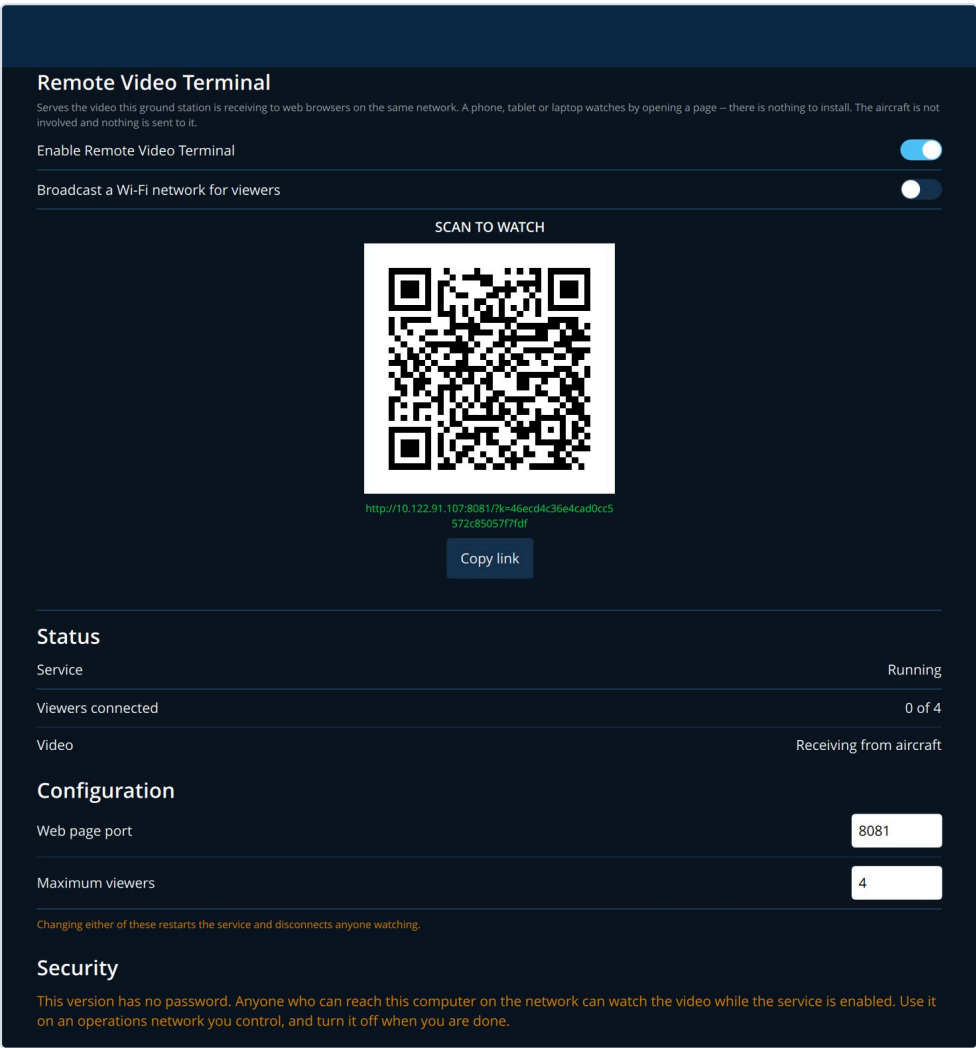


Figure 9.1 — Video Terminal with the service running on an existing network.

- 1. Turn on **Enable Remote Video Terminal**.
- 2. Decide how viewers will reach the ground station (9.2).
- 3. Have each viewer scan the code, or send them the link with **Copy link**.

Item	Meaning
Service	Running when the page is being served.
Viewers connected	How many people are watching, out of the maximum allowed.

Video	Receiving from aircraft, or No video yet. The second is normal before the aircraft's camera starts.
Web page port	The network port of the page (8081 unless changed). The next port up is also used.
Maximum viewers	From 1 to 16 (4 unless changed). Further viewers are refused with a reason.

Changing the port or the viewer limit restarts the service and disconnects everyone watching.

9.2 Three ways for viewers to connect

The ground station's own Wi-Fi network

Use this when there is no network on site. Turn on **Broadcast a Wi-Fi network for viewers**. Two codes appear:

1. **JOIN** — the viewer scans this first and their phone offers to join the network. The network name and password are printed beneath it.
2. **WATCH** — the viewer scans this second and the video page opens.

The order matters: a phone cannot open the page until it has joined the network.

Do not broadcast if the aircraft link uses this computer's Wi-Fi

Broadcasting takes over the Wi-Fi radio. If the computer also uses Wi-Fi for its internet connection, viewers get a poor picture, because one radio is doing two jobs. Connect the computer to the internet by cable or USB instead.

An existing network

If the viewers are already on the same wired or wireless network as the ground station, leave broadcasting off. One code appears, **SCAN TO WATCH**. If the ground station has more than one network address, the others are listed so that you can give a viewer the one they can reach.

From another site, over a VPN

Put the ground station and the remote viewers on the same private network (VPN), then send them the link with **Copy link**. Start the VPN before enabling the Video Terminal, or turn the Video Terminal off and on again afterwards.

9.3 What a viewer sees

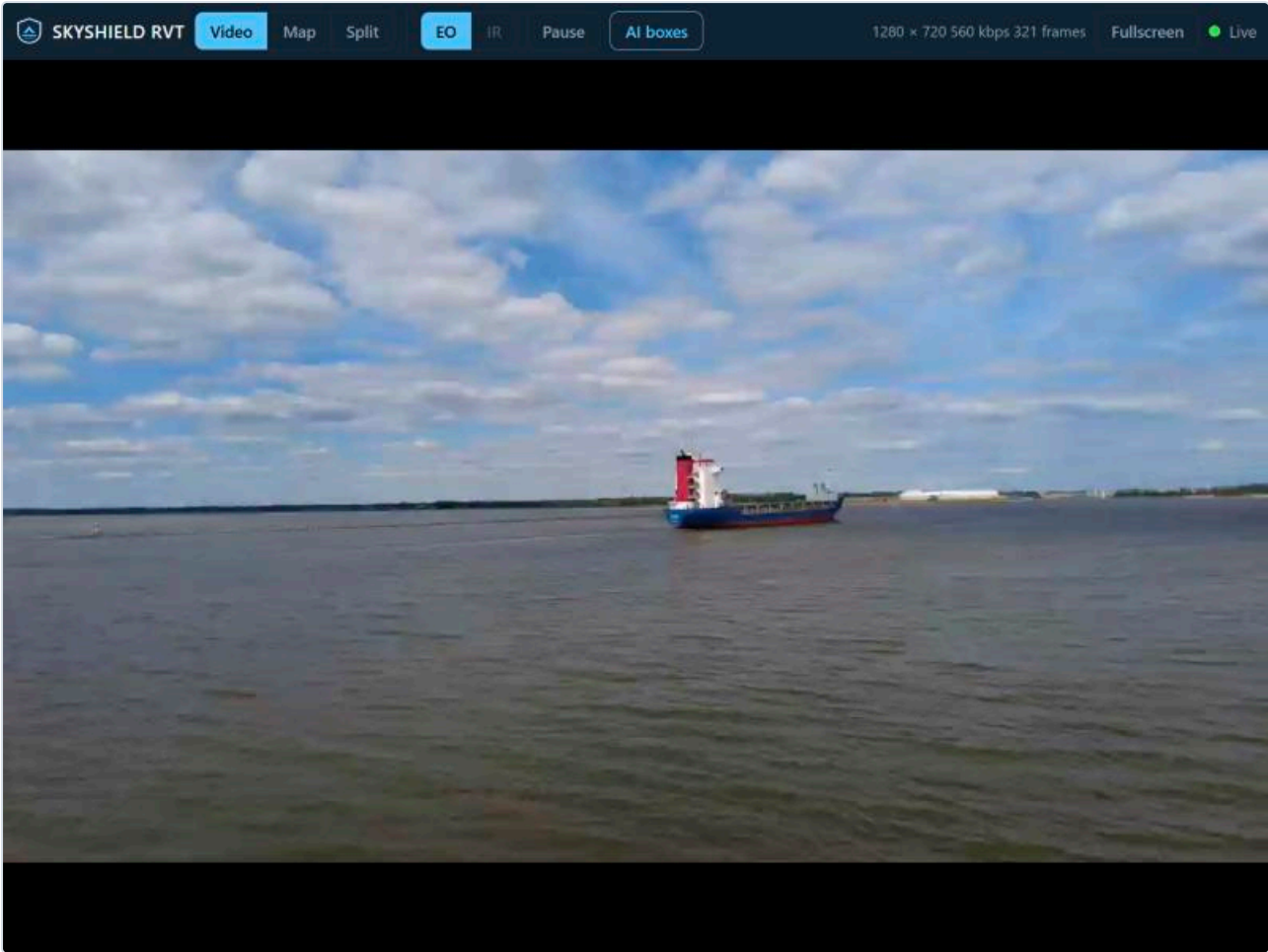


Figure 9.2 — The viewer page showing video.

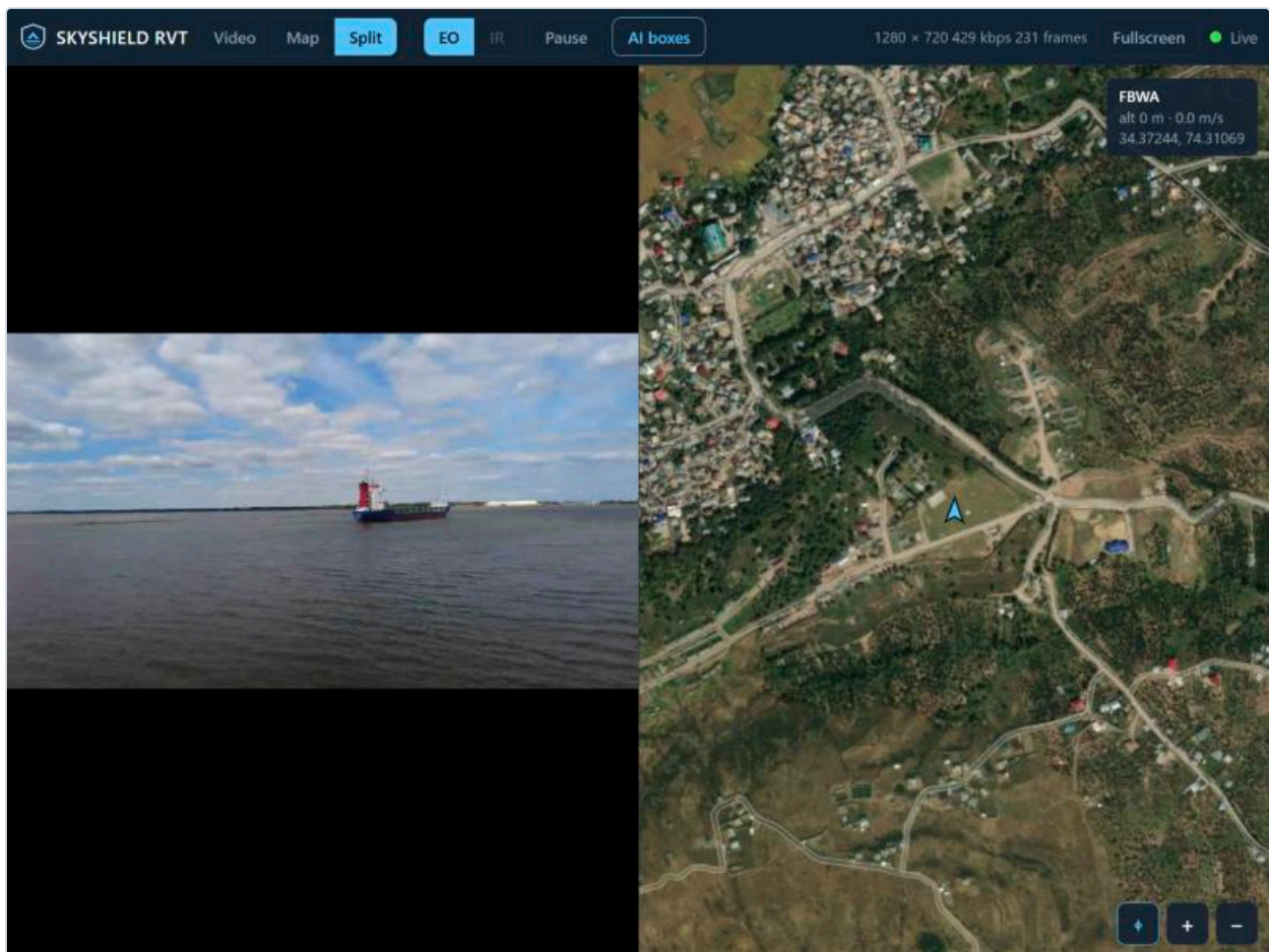


Figure 9.3 — The viewer page in Split view: video and map.

Control	What it does
Video / Map / Split	Shows the video, the map, or both side by side.
EO / IR	Chooses the daylight or thermal camera. A camera that is not being received is greyed out.
Pause	Freezes the picture to study it. Alerts still arrive while paused. Resuming jumps to live.
AI boxes	Shows or hides detection boxes.
Fullscreen	Fills the screen.
Status	Picture size, data rate and frames received, and Live when connected.

The map shows the aircraft pointing the way it is heading (green when armed), its recent track, flight mode, altitude, ground speed and position. Buttons at the bottom right follow the aircraft and zoom. Alerts appear as a banner in the same colours as on the ground station.

Each viewer's choices affect only their own screen. The map shows the areas the operator has already viewed on the ground station. Other areas appear as blank squares when the ground station has no internet connection.

9.4 Security

- The link contains an access key that is created fresh each time the service starts. A link from an earlier session does not work.

- The connection is not encrypted by SkyShield. It relies on the network underneath: the Wi-Fi password, your own network, or the VPN.
- Do not expose the ground station directly to the internet.
- Turn the Video Terminal off when you have finished.

10. Flight replay and Analyze Tools

10.1 Replaying a flight

SkyShield records the telemetry of every flight, and the video when you record it, in a folder named for that flight.

1. Turn on **General > Show Flight Replay Bar**. A bar appears along the bottom of the window.
2. Choose the flight from the list. Flights are named by aircraft, flight number and date. **Browse...** opens a log file directly.
3. Press play. The telemetry replays in the Fly View as if the aircraft were connected, and the recorded video starts with it.
4. Click **Close** when finished.

Dragging the slider moves the telemetry only. The video does not jump with it. Older logs recorded before flights had their own folders are listed without a flight number.

10.2 Analyze Tools

Shown in the application menu when Advanced Mode is on (2.3).



Figure 10.1 — Analyze Tools, Log Download page.

Page	What it is for
Log Download	Lists the flight logs stored on the aircraft. Refresh reads the list, Download copies the ticked logs, Erase All clears the aircraft's log storage.
GeoTag Images	Writes positions from a flight log into photographs taken on that flight.
MAVLink Console	A command line to the autopilot, for technicians.
MAVLink Inspector	Shows every message the aircraft is sending, with live values and charts.
Vibration	Vibration levels measured by the autopilot.

11. Settings reference

11.1 General

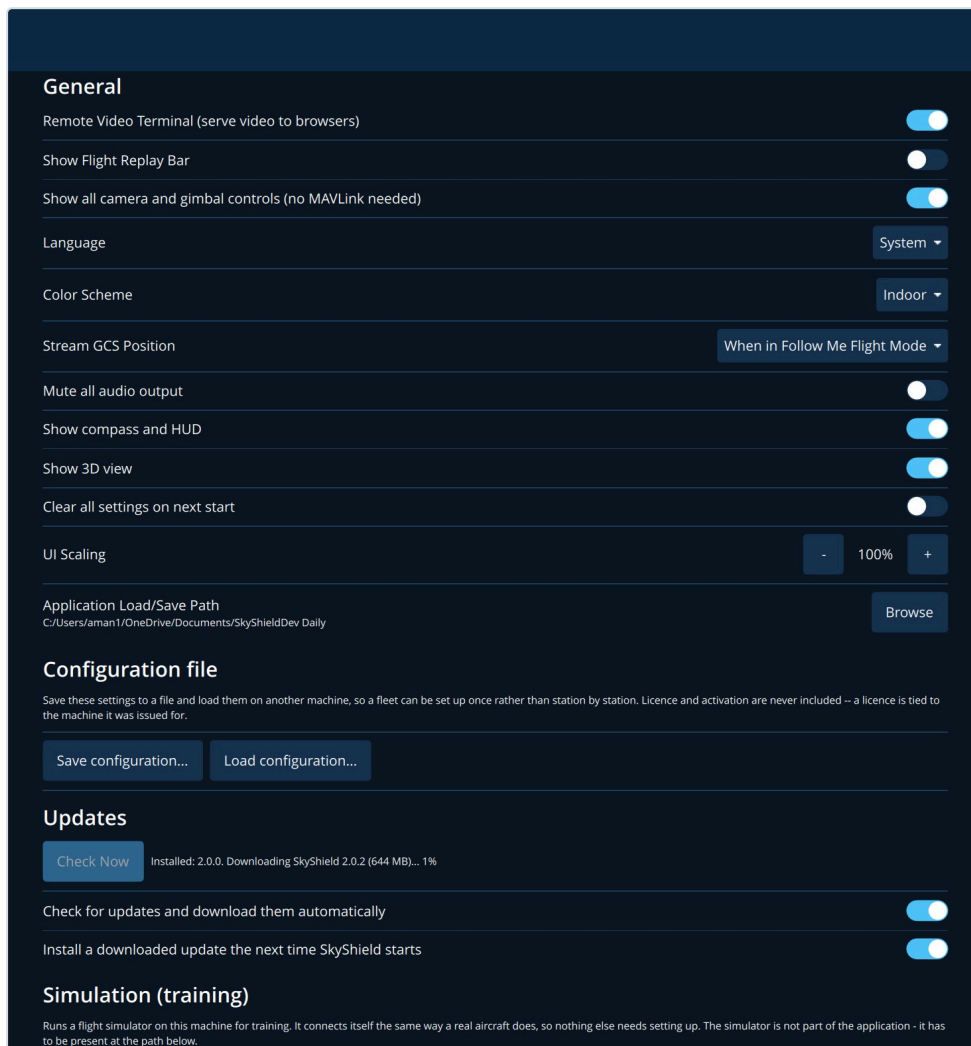


Figure 11.1 — General settings.

Setting	Meaning
Remote Video Terminal (serve video to browsers)	The same switch as on the Video Terminal page (chapter 9).
Show Flight Replay Bar	Shows the replay bar (10.1).
Show all camera and gimbal controls (no MAVLink needed)	Keeps every camera and gimbal control visible without the hardware connected (4.3).
Language	Language of the application.
Color Scheme	Indoor (dark) or Outdoor .
Stream GCS Position	Whether the ground station sends its own position to the aircraft: never, always, or only in Follow Me flight mode.
Mute all audio output	Silences spoken messages and alerts.
Show compass and HUD	Shows the compass and attitude display (3.3).

Show 3D view	Makes the 3D view available (chapter 8).
Clear all settings on next start	Returns every setting to its default the next time SkyShield starts.
UI Scaling	- and + make all text and controls smaller or larger.
Application Load/Save Path	The folder where plans, logs, recordings and other files are kept. Browse changes it.
Configuration file	See 13.3.
Updates	See 13.1.
Simulation (training)	See 2.5.
Units	Units for horizontal distance, vertical distance, area, speed and temperature.

11.2 Maps

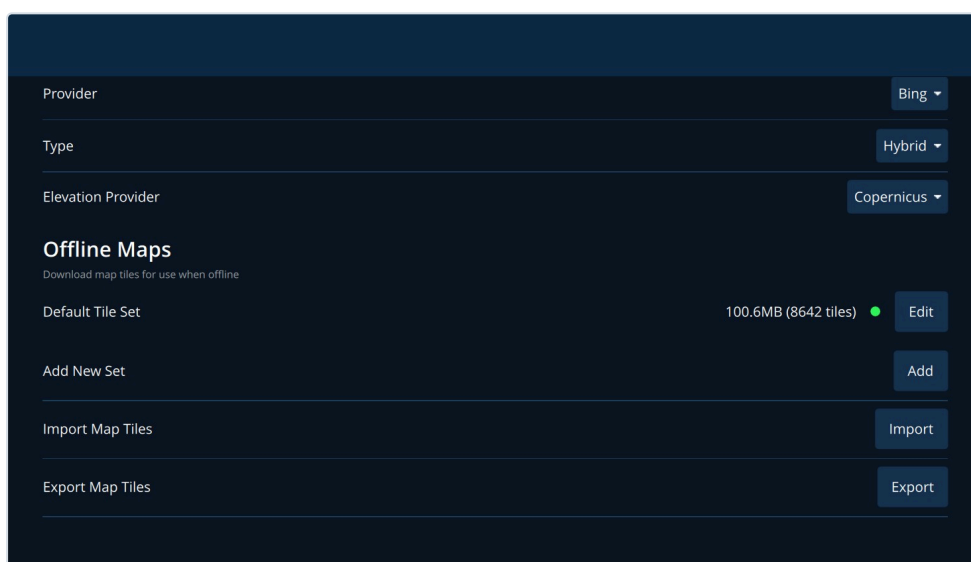


Figure 11.2 — Maps.

Setting	Meaning
Provider, Type	The source of map imagery and its style, such as satellite, street or hybrid.
Elevation Provider	The source of terrain heights used for terrain altitude and the terrain check.
Default Tile Set	Map imagery saved automatically as you look around, with its size. Edit shows details.
Add New Set	Add downloads an area of your choice for use without internet. Select the area on the map and the zoom levels to keep.
Import / Export Map Tiles	Moves saved maps between computers.

Before going to a site with no internet

Download the operating area with **Add New Set** while you still have a connection. The map, the terrain check, the 3D view and the Remote Video Terminal map all rely on these saved maps.

11.3 Application Settings

Open with **Advanced > Application Settings**. Pages are listed down the left side.

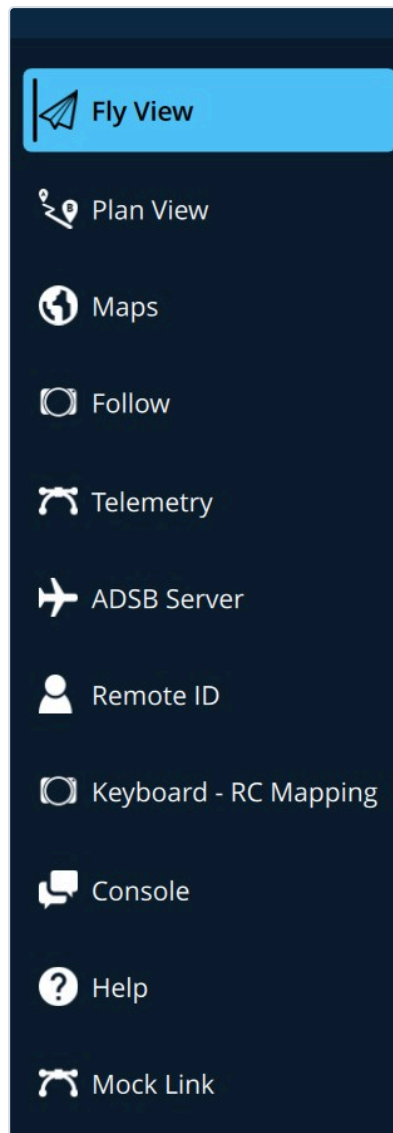


Figure 11.3 — Application Settings pages.

Fly View

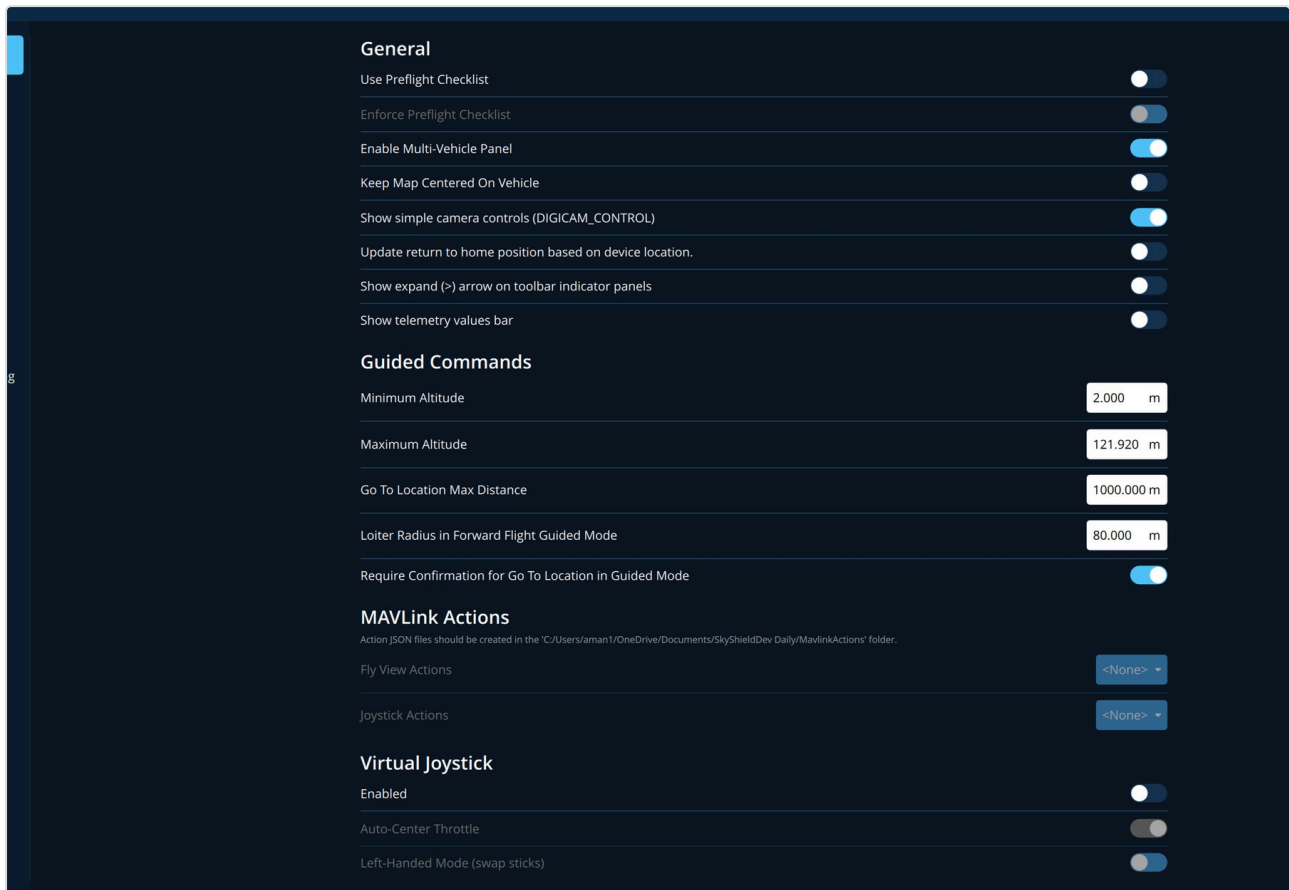


Figure 11.4 — Fly View settings, upper part.

Setting	Meaning
Use Preflight Checklist / Enforce Preflight Checklist	See 3.7.
Enable Multi-Vehicle Panel	Shows a panel for selecting and commanding several aircraft when more than one is connected.
Keep Map Centered On Vehicle	The map follows the aircraft.
Show simple camera controls	Shows photo controls for cameras that only accept a basic trigger command.
Update return to home position based on device location	Sends the ground station's position to the aircraft as its home.
Show expand (>) arrow on toolbar indicator panels	Adds an arrow to the toolbar drop-downs that reveals configuration options. Off by default to prevent accidental changes in flight.
Show telemetry values bar	Shows a bar of telemetry values at the bottom of the map: altitude, climb rate, ground speed, air speed or throttle, distance to home, flight time and flight distance.
Guided Commands: Minimum / Maximum Altitude	The range offered when changing altitude (2 m and 121.92 m unless changed).
Go To Location Max Distance	The farthest Go to location may send the aircraft.
Loiter Radius in Forward Flight Guided Mode	The circle a fixed-wing aircraft flies around a Go To point.

Require Confirmation for Go To Location in Guided Mode	Keeps the confirmation slider for Go To.
MAVLink Actions	Custom command buttons defined by your organisation.
Virtual Joystick	On-screen control sticks.

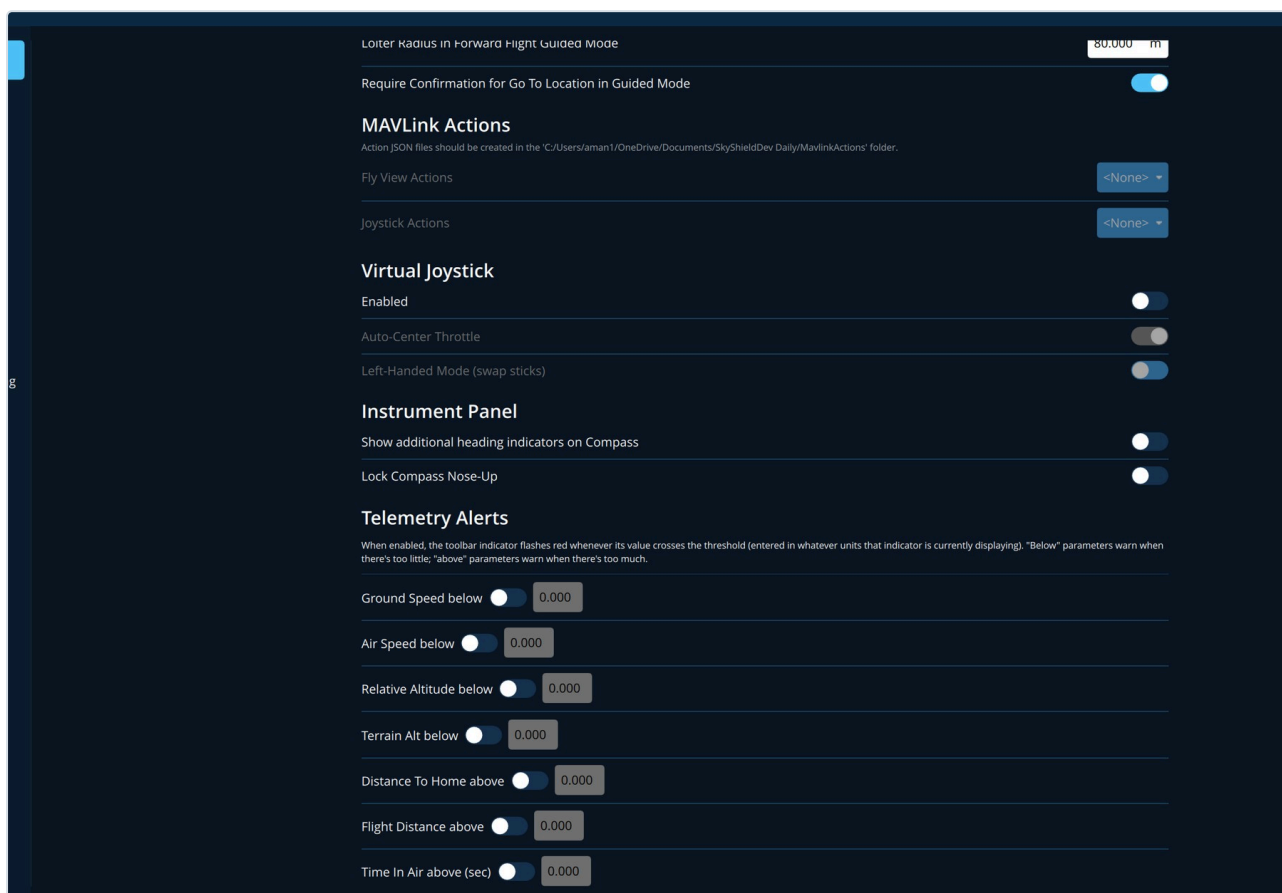


Figure 11.5 — Fly View settings, lower part, with Telemetry Alerts.

Telemetry Alerts. Each row has a switch and a limit. When the switch is on, the matching toolbar readout flashes red whenever the value crosses the limit. **Ground Speed below**, **Air Speed below**, **Relative Alt below** and **Terrain Alt below** warn when there is too little. **Distance To Home above**, **Flight Distance above** and **Time In Air above (sec)** warn when there is too much. Limits are in the units the readout is showing.

Plan View

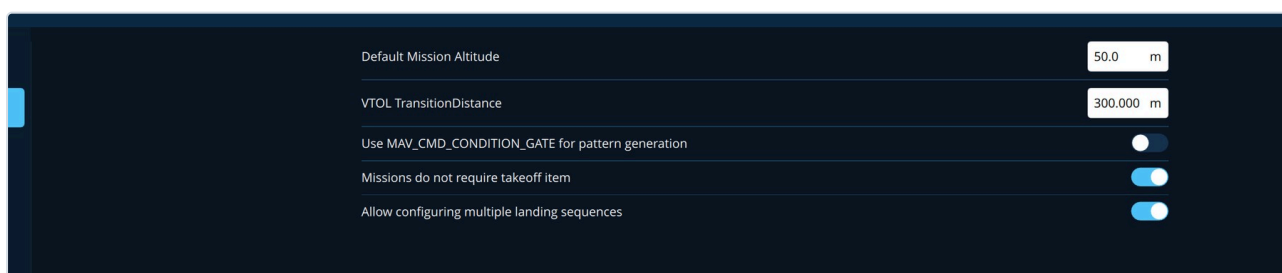
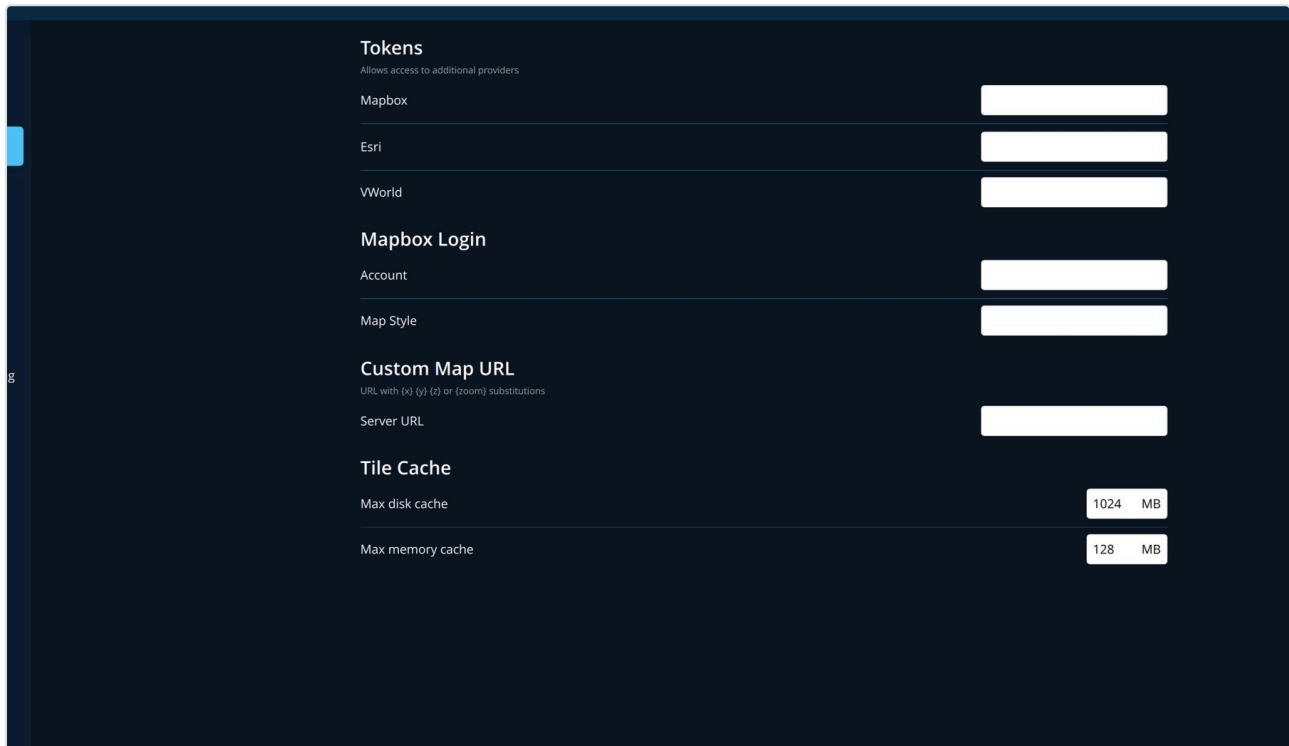


Figure 11.6 — Plan View settings.

Setting	Meaning
---------	---------

Default Mission Altitude	The altitude given to new waypoints (50 m unless changed).
VTOL TransitionDistance	The distance allowed for a VTOL aircraft to change between hover and forward flight.
Missions do not require takeoff item	Allows a mission that does not begin with a take-off.
Allow configuring multiple landing sequences	Allows more than one landing pattern in a plan.

Maps (advanced)



Tokens
Allows access to additional providers

Mapbox

Esri

VWorld

Mapbox Login

Account

Map Style

Custom Map URL
URL with {x} {y} {z} or {zoom} substitutions

Server URL

Tile Cache

Max disk cache MB

Max memory cache MB

Figure 11.7 — Advanced map settings.

Access tokens for map providers that need an account, the address of a custom map server, and the size of the map cache on disk and in memory.

Follow

Gimbal follow. See chapter 6.

Telemetry

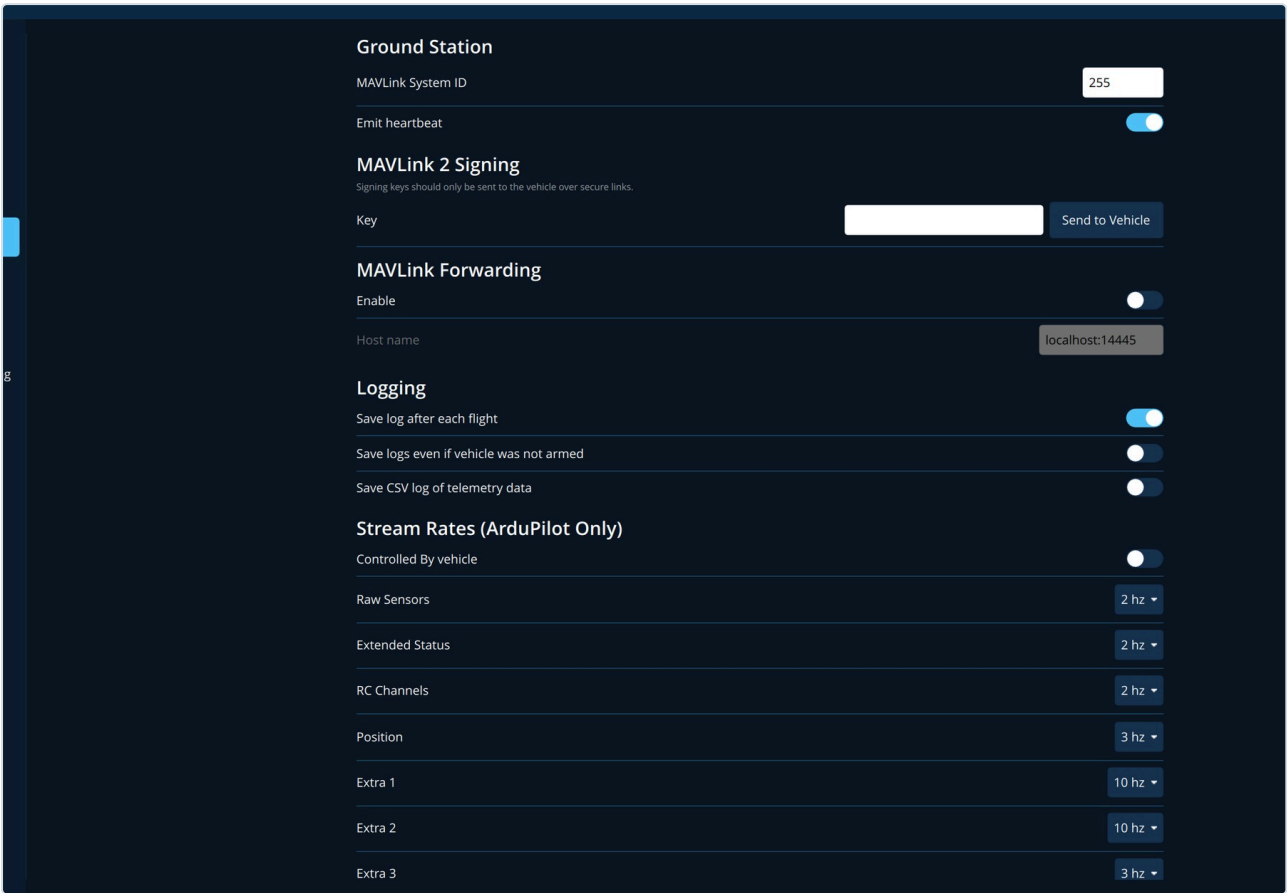


Figure 11.8 — Telemetry settings.

Section	Meaning
Ground Station	The identity this ground station uses on the link, and whether it announces itself.
MAVLink 2 Signing	A key shared with the aircraft so that it accepts commands only from stations that hold it.
MAVLink Forwarding	Passes the aircraft's telemetry on to another computer.
Logging	Save log after each flight , whether to save when the aircraft was never armed, and whether to also save telemetry as a CSV file.
Stream Rates (ArduPilot Only)	How often the aircraft sends each group of data.

ADSB Server and Remote ID

ADSB Server connects to a receiver that reports nearby crewed aircraft, which are then drawn on the map. **Remote ID** configures the identification broadcast that some regulators require, for aircraft fitted with a Remote ID module.

Keyboard - RC Mapping

Keyboard - RC Mapping

Drive RC_CHANNELS_OVERRIDE on channels 1-16 from the keyboard – e.g. for gimbal pan/tilt on a receiver that reads RC channels directly. CHANNELS 1-4 ARE NORMALLY ROLL, PITCH, THROTTLE AND YAW. Mapping a key to one of those overrides the pilot's stick on that axis for as long as the Keyboard toggle is on, so leave them at "None" unless you know the airframe reads them for something else. Assign a "+" key to enable a channel; leave it "None" to leave that channel alone. Add a "-" key to make it a paired (left/right style) channel that returns to Idle when released, or leave "-" as "None" for a single momentary key that jumps from Idle to Idle+Step while held. The toggle to activate the mapped channels is the "Keyboard" button on the Fly View camera panel.

CH1	+	None	-	None	Idle	1500us	Step	200 us
CH2	+	None	-	None	Idle	1500us	Step	200 us
CH3	+	None	-	None	Idle	1500us	Step	200 us
CH4	+	None	-	None	Idle	1500us	Step	200 us
CH5	+	None	-	None	Idle	1500us	Step	200 us
CH6	+	None	-	None	Idle	1500us	Step	200 us
CH7	+	None	-	None	Idle	1500us	Step	200 us
CH8	+	None	-	None	Idle	1500us	Step	200 us
CH9	+	None	-	None	Idle	1500us	Step	200 us
CH10	+	H	-	None	Idle	1100us	Step	800 us
CH11	+	Right	-	Left	Idle	1500us	Step	200 us
CH12	+	Up	-	Down	Idle	1500us	Step	200 us
CH13	+	None	-	None	Idle	1500us	Step	200 us
CH14	+	None	-	None	Idle	1500us	Step	200 us
CH15	+	None	-	None	Idle	1500us	Step	200 us
CH16	+	None	-	None	Idle	1500us	Step	200 us

Figure 11.9 — Keyboard - RC Mapping.

Lets keys on the keyboard drive radio channels, for example to steer a gimbal or operate a payload. For each of channels 1 to 16 choose a key that pushes the channel one way, optionally a key that pushes it the other way, the **Idle** value sent when no key is held, and the **Step** by which a held key moves it. Keyboard control acts only while **Keyboard** is on in the camera panel.

Channels 1 to 4 normally fly the aircraft

Map keys only to channels that drive a payload, unless you fully understand the consequence.

Console and Help

Console shows the application's own diagnostic messages. **Save App Log** writes them to a file to send to support. **Help** lists reference links.

12. Vehicle Configuration

Open with **Advanced > Vehicle Configuration** while an aircraft is connected. These pages set up the aircraft itself. Changes are stored in the autopilot.

For trained personnel

Wrong values here can make an aircraft unflyable. Do not change anything in this section unless you are responsible for the aircraft's configuration.

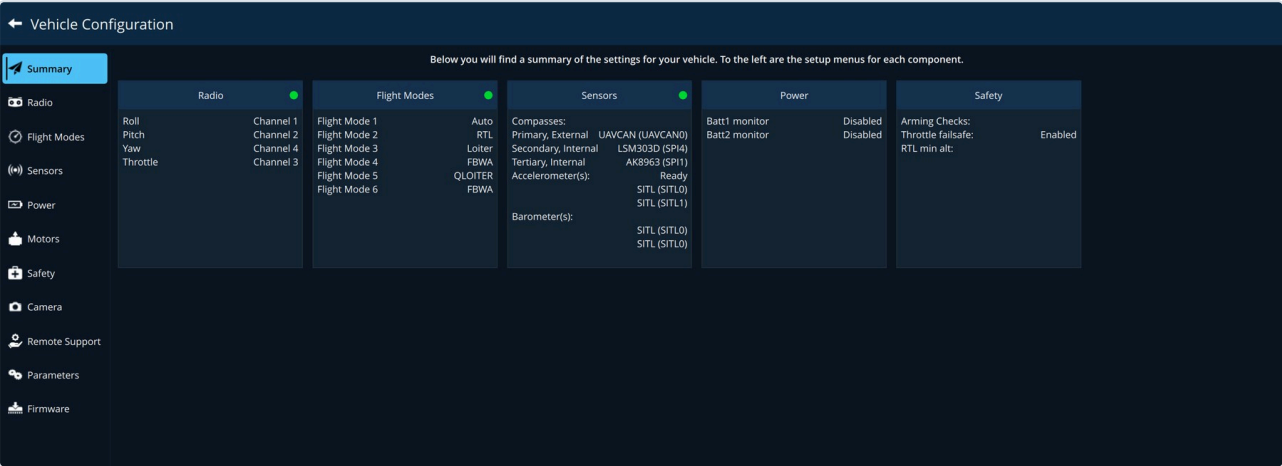


Figure 12.1 — Vehicle Configuration summary. A green dot means the item is set up.

Page	What it is for
Summary	One box per area, showing its main values and whether it needs attention.
Radio	Calibrating the radio control transmitter.
Flight Modes	Which mode each switch position selects.
Sensors	Calibrating the accelerometer, compass, level horizon and airspeed sensor.
Power	Battery monitoring.
Motors	Testing each motor. Remove propellers first.
Safety	What the aircraft does on low battery, lost link or a fence breach.
Camera	Gimbal and camera trigger outputs.
Parameters	Every setting in the autopilot, searchable.
Firmware	Loading autopilot firmware.

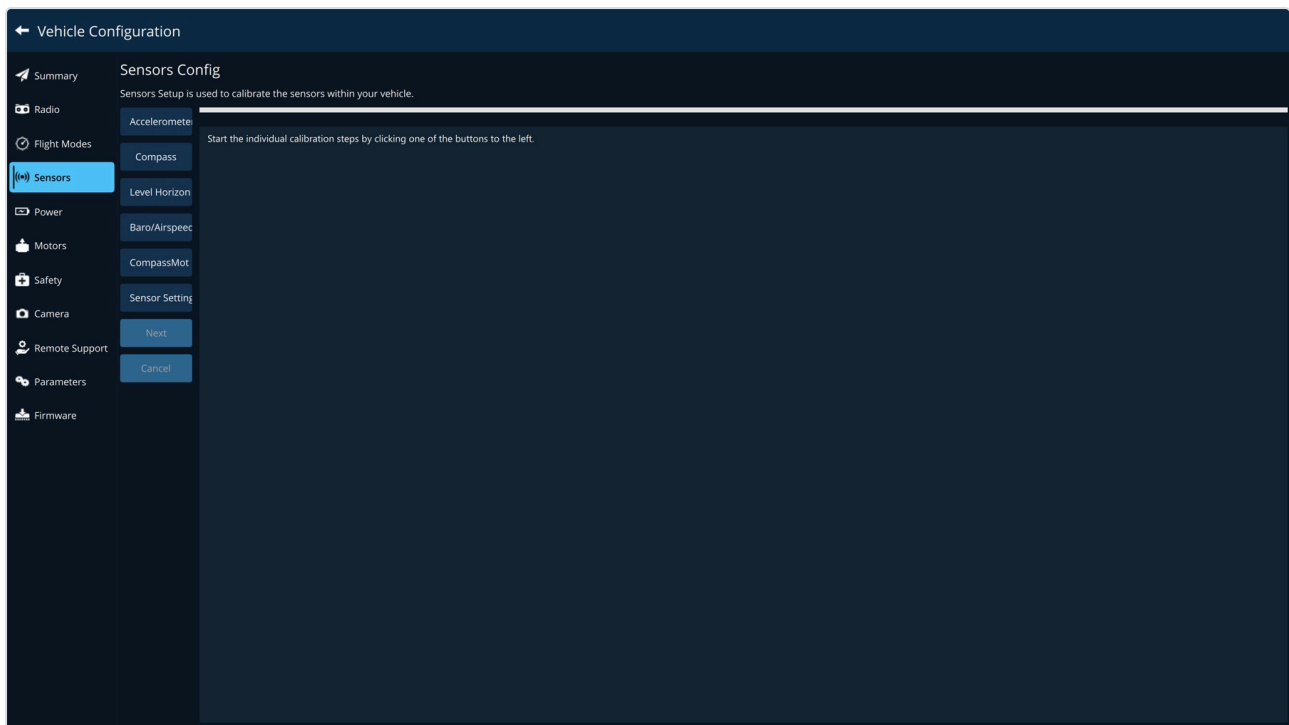


Figure 12.2 — Sensors page. Each button starts one calibration and gives instructions on the right.

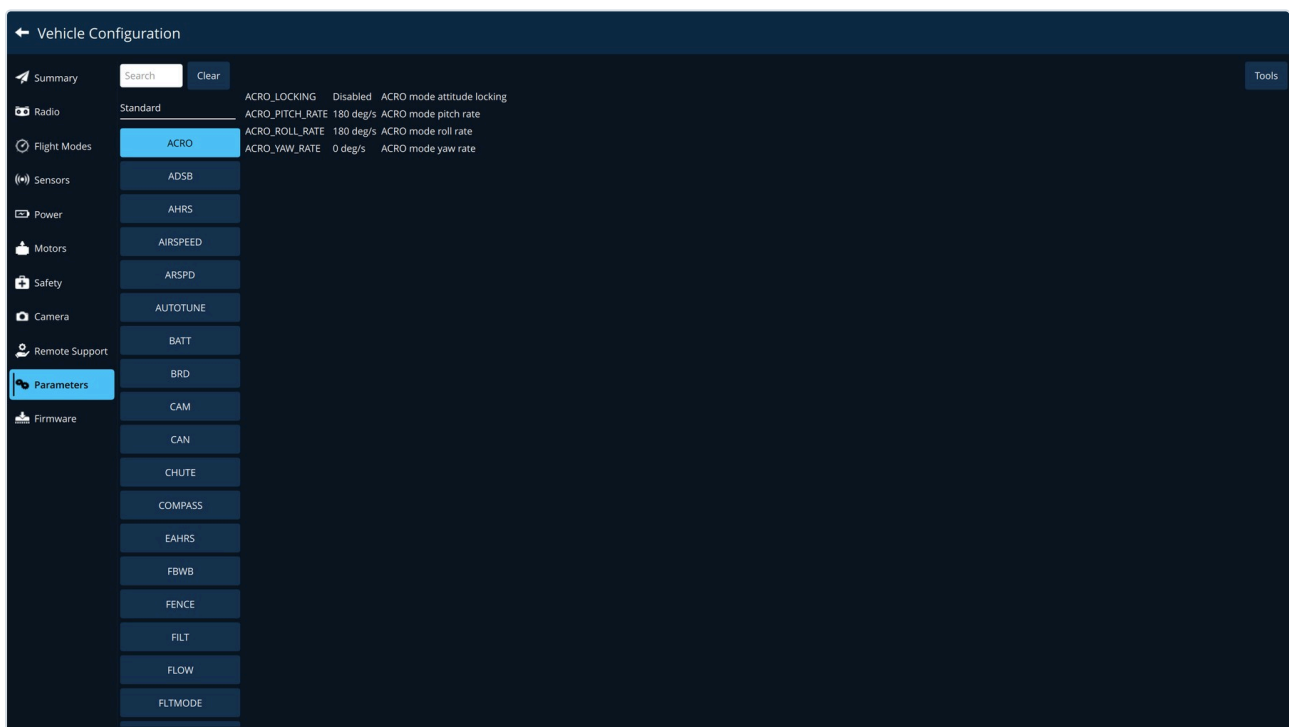


Figure 12.3 — Parameters. Groups are on the left. Type in the search box to find a parameter by name.

On the Parameters page, click a parameter to change it. **Tools** saves all parameters to a file, loads them from a file, or compares the aircraft with a file. Keep a saved copy of a known good configuration for every aircraft.

13. Updates, licence and configuration files

13.1 Updates

In **General > Updates** (Figure 11.1).

Control	What it does
Status line	The installed version, then what the updater is doing: checking, up to date, downloading with a percentage, or ready.
Check Now	Looks for a newer version immediately.
Install Now	Appears when an update has been downloaded and verified. Closes SkyShield and installs it.
What's new	A short note about the downloaded version.
Check for updates and download them automatically	Downloads new versions in the background. An interrupted download resumes where it stopped.
Install a downloaded update the next time SkyShield starts	Installs at the next start, before anything is connected.

- An update is **never installed while an aircraft is armed**. **Install Now** is refused until it is disarmed.
- A download is checked against the published size and fingerprint before it can be installed. A file that does not match is not installed.
- Updates are large (several hundred megabytes). On a metered connection, turn automatic download off and use **Check Now** when convenient.

13.2 Licence

Open **Licence** from the application menu. The page shows:

- The licence status in green when valid, with **Licensed to**, **Expires** and **Features**.
- A warning when the licence expires within 14 days.
- **Device ID**, with **Save licence request...** and **Import licence...** for renewing or changing a licence.

The features of a licence decide which parts of the AI layer run: detection, scene conditions, alerts and autonomous actions. A licence without AI features still gives the full ground station. If AI detection will not start although it is enabled, check here that the licence includes it.

13.3 Configuration files

General > Configuration file copies settings between ground stations so that a fleet is set up once.

1. On the station that is set up as you want, click **Save configuration...** and choose where to save the file.
2. On each other station, click **Load configuration...** and select the file.
3. Restart SkyShield on that station for all settings to take effect.

Licence and activation are never included. Each station needs its own licence.

14. Use cases, step by step

14.1 A first flight, from power-on to landing

1. Start SkyShield. Power the aircraft and its data link. Wait for the status to leave **No Vehicle Connected** and for parameter loading to finish.
2. Read the toolbar: GNSS has a lock with a low HDOP, **LINK** is high, **Drone Battery** is full.
3. Click the status. Read the vehicle messages and confirm the sensors show **Normal**.
4. Check the video is showing and, if you use AI, that the AI status line has a green dot.
5. Open **Plan**, build or load the mission, clear any red sections, and **Upload** (chapter 7).
6. Back in the Fly View, complete the pre-flight checklist if it is in use.
7. Choose **Actions > Start Mission**. Read the confirmation, check the area is clear, and slide.
8. During the flight, watch altitude, distance to home, link and battery. Use **Pause** to hold and **Actions > Continue Mission** to resume.
9. To end early, click **Return** and confirm.
10. After landing, confirm the aircraft has disarmed, or click **Disarm**.

14.2 Searching for a missing person

Goal: cover an area and be told when a person, or a sign of one, comes into view.

1. In **AI Detection**, turn on **Enable AI detection**. In **Classes**, tick **Person** and the vehicle types. Leave animals unticked.
2. Set **Bounding boxes** to **All objects**. Choose an alert voice and make sure audio is not muted.
3. In Plan View, trace or load the search area and use **Auto Plan** or a survey pattern to cover it. Choose terrain-relative altitude over hills. Check the route in **3D View**.
4. Fly the mission. Give the video most of the screen by dragging the divider.
5. On an alert such as **Person seen**, **Person not moving**, **Signs of someone camping** or **Ground signal**, click **Pause**.
6. Use **Zoom** and the gimbal to confirm. To keep the camera on the spot, click the location on the map and choose **ROI at location**.
7. Choose **Mark location** on the map and read the coordinates to the ground team.
8. Resume with **Actions > Continue Mission**.

14.3 Assessing a fire or a flood

1. Enable AI detection as above. Consider **Bounding boxes: Only critical objects**, so that boxes appear only for people and vehicles inside an affected area.
2. Fly towards the incident from upwind and at a safe height. Watch for **Power lines** and **Mast or tower** hazard alerts and **Poor visibility**.
3. Read each alert's action text: **Building on fire — Investigate for occupants**, **Road under water — Route may be impassable**, **People cut off by water — Investigate immediately**.
4. The count in the banner tells you how many people or vehicles are inside the affected area.

5. Click **Record** to keep the footage and **Photo** for stills.
6. Mark blocked roads and damaged bridges on the map for the teams planning access.

14.4 Giving the incident commander a live picture

1. Open **Video Terminal** and turn on **Enable Remote Video Terminal**.
2. With no site network, turn on **Broadcast a Wi-Fi network for viewers**. Have the commander scan **1. JOIN**, then **2. WATCH**.
3. On the page, they choose **Split** to see video and map together.
4. Confirm **Viewers connected** has gone up and **Video** reads **Receiving from aircraft**.
5. For someone at headquarters, use a VPN and send them the link with **Copy link**.
6. Turn the Video Terminal off at the end of the operation.

14.5 Keeping the camera on a moving vehicle

1. Once, on the ground: set up **Follow** with the gimbal's channels, **Dry run** on, and confirm the direction of movement (chapter 6). Then turn **Dry run** off.
2. In flight, click **Track** and drag a box around the vehicle.
3. The gimbal keeps it centred. If the target is lost for longer than **Stop after target lost**, the gimbal is released and you select again.
4. Click **Track** to stop.

14.6 Rehearsing at a desk

1. In **Payload Configuration**, set **Source** to **Local Video File** and choose a recorded aerial video.
2. In **General**, click **Start Simulator**.
3. Plan, upload and fly a mission exactly as you would for real. Practise pausing, changing altitude, returning, and responding to alerts.
4. Click **Stop Simulator** when done and set the video source back to your camera.

14.7 Reviewing a flight afterwards

1. Turn on **General > Show Flight Replay Bar**.
2. Pick the flight by aircraft, number and date, and press play.
3. Watch the flight unfold on the map with the recorded video alongside.
4. For a deeper look, download the aircraft's own log with **Analyze Tools > Log Download**.

14.8 Preparing for a site with no internet

1. While connected, open **Maps > Add New Set** and download the operating area at the zoom levels you will use.
2. Open Plan View over the area, and open the 3D view once, so that terrain for the area is stored.
3. Check **General > Updates** and install any pending update now, not in the field.
4. Check **Licence** for the expiry date.

15. Troubleshooting

Symptom	Likely cause	What to do
Only an activation window opens	No valid licence for this computer	Follow 2.1. A licence from another computer will not work.
No Vehicle Connected	Link not powered, wrong port, or AutoConnect off for that link type	Check cables and power. Check Communication Link .
A message says parameters are missing from firmware	The aircraft's firmware version does not have a setting the page expects	Click Ok . Report it to whoever maintains the aircraft if it concerns a feature you use.
Aircraft will not arm	A pre-arm check is failing	Click the status and read the vehicle messages.
No video	Wrong source or address, or the camera has not started	Check Payload Configuration .
Video stutters or breaks up	Poor link, or the computer is overloaded	Raise Video buffer a little. Raise Detect every N frames . Close other programs.
Video is clearly delayed	Video buffer set high	Lower it. Do not fly on a delayed picture.
No AI status line on the video	AI is off	Turn on Enable AI detection and the AI button. Check the licence includes AI.
AI runs but never finds anything	Graphics chip returns empty results	Set Compute device to Processor (CPU) .
Too many wrong boxes	Threshold too low, or unneeded classes ticked	Raise Confidence threshold . Untick animal classes.
Alerts are not spoken	Audio muted, or still inside the gap	Check Mute all audio output and Minimum gap between announcements .
Track does not move the gimbal	Follow not enabled, dry run on, or no channel chosen	See chapter 6.
3D View button greyed out	3D view not enabled	Turn on General > Show 3D view .
Video Terminal: the service could not start	Another program is using the port	Change Web page port .
Video Terminal: No video yet	The ground station is not receiving video	Normal before the camera starts. Fix the video on the ground station first.
Viewer page loads but stays black	The viewer cannot reach the ground station for video	Check the viewer is on the same network. Try another listed address. Reload the page.
Viewer picture is poor on the ground station's Wi-Fi	The Wi-Fi radio is also providing internet	Give the computer internet by cable or USB.
Yesterday's viewer link does not work	The access key changes each session	Share the new code or link.
Route drawn in red	The path meets the terrain	See 7.3.
Install Now refused	An aircraft is armed	Disarm first.

When contacting support, include the SkyShield version (bottom of the application menu), a description of what you did and saw, the application log from **Application Settings > Console > Save App Log**, and for AI or Video Terminal problems the contents of the **AILogs** folder.

Appendix A. Alert reference

Severity runs from Info (for awareness) through Advisory and High to Critical (act now).

Category	Alert	Guidance shown	Severity
PEOPLE	Person seen	One person visible	Info
PEOPLE	Group of people seen	Several people together	Advisory
PEOPLE	Person in water	Investigate immediately	Critical
PEOPLE	People cut off by water	Investigate immediately	Critical
PEOPLE	People close to fire	Investigate immediately	Critical
PEOPLE	Person not moving	Investigate - may be a casualty	High
PEOPLE	Person signalling	Investigate immediately	Critical
VEHICLE	Vehicle seen	Car, truck or bus	Info
VEHICLE	Vehicle in water	Investigate - occupants unknown	High
VEHICLE	Vehicle on fire	Investigate for occupants	High
VEHICLE	Vehicle overturned	Investigate for occupants	High
VEHICLE	Boat seen	Any small craft	Info
VEHICLE	Boat in trouble	Investigate immediately	High
FIRE	Fire seen	Investigate extent	High
FIRE	Smoke, no fire visible	Investigate upwind - source is out of frame	Advisory
FIRE	Building on fire	Investigate for occupants	High
FIRE	Fire spreading	Investigate - assess route risk	High
FLOOD	Flooding	Investigate extent and access	Advisory
FLOOD	Road under water	Route may be impassable	High
FLOOD	Buildings in water	Occupants may be cut off - investigate	High
FLOOD	Fast-moving water	Dangerous current	Advisory
ROUTE	Road blocked	Route constraint - verify before planning through	Advisory
ROUTE	Road washed away	Route constraint - verify before planning through	High
ROUTE	Bridge damaged	Crossing unsafe	High
DAMAGE	Building collapsed	Investigate - people may be underneath	Critical
DAMAGE	Building damaged	Standing but not intact	Advisory
SEARCH	Signs of someone camping	Investigate - someone may be here	Advisory
SEARCH	Vehicle parked away from a road	Investigate - someone may have set off on foot	Advisory
SEARCH	Tracks or a trail	Investigate - recent passage	Advisory

SEARCH	Wreckage	Investigate immediately	High
SEARCH	Ground signal	Investigate immediately	Critical
SEARCH	Debris floating on water	Investigate immediately	High
HAZARD	Power lines	Flight hazard - wires across the path	High
HAZARD	Mast or tower	Flight hazard - tall obstruction	Advisory
HAZARD	Other aircraft nearby	Flight hazard - deconflict	High
HAZARD	Clear ground to land on	Usable in an emergency	Info
ACTIVITY	Something changed since last pass	Compare with the previous flight	Advisory
ACTIVITY	Crowd forming	People gathering	Advisory
ACTIVITY	Crowd breaking up	People moving away quickly	Advisory
ACTIVITY	Vehicle convoy	Several vehicles travelling together	Advisory
ACTIVITY	Vehicles blocking a road	Checkpoint or deliberate obstruction	Advisory
ACTIVITY	Digging or earthworks	Ground being disturbed	Advisory
ACTIVITY	Several small boats together	Group of craft in one area	Advisory
INFO	Animals seen	Reported as animals, not people	Info
INFO	Emergency services on scene	Already attended - deconflict	Info
CONDITIONS	Poor visibility	Fog, haze or smoke over the area	Advisory
CONDITIONS	Landing area blocked	Obstruction where you intended to land	Advisory

Appendix B. Glossary

Term	Meaning
AMSL	Above mean sea level.
Arm / disarm	Armed, the motors can run. Disarmed, they cannot.
Autopilot	The flight computer on the aircraft.
EO / IR	Electro-optical (daylight) camera / infrared (thermal) camera.
Fence (geofence)	A boundary the aircraft is not allowed to cross.
GCS	Ground control station: this computer and SkyShield.
Gimbal	The stabilised mount that points the camera.
GNSS	Satellite positioning (GPS and similar systems).
HDOP	A measure of GNSS accuracy. Lower is better.
Home	The point the aircraft returns to, normally where it took off.
MAVLink	The language the ground station and the aircraft use to talk to each other.
Mission	A sequence of steps the aircraft flies by itself.
PWM	The signal value on a radio channel, in microseconds. 1500 is normally centre.
ROI	Region of interest: a point the camera is kept on.
RTL / Return	Return to launch: fly back to home.
RVT	Remote Video Terminal (chapter 9).
Telemetry	The data the aircraft sends about itself.
VTOL	An aircraft that takes off and lands vertically and cruises on a wing.
Waypoint	A position in a mission.