FLYABILITY

ELIOS 3

January release notes

Bug fixes, new features and known limitations

January 30th, 2023

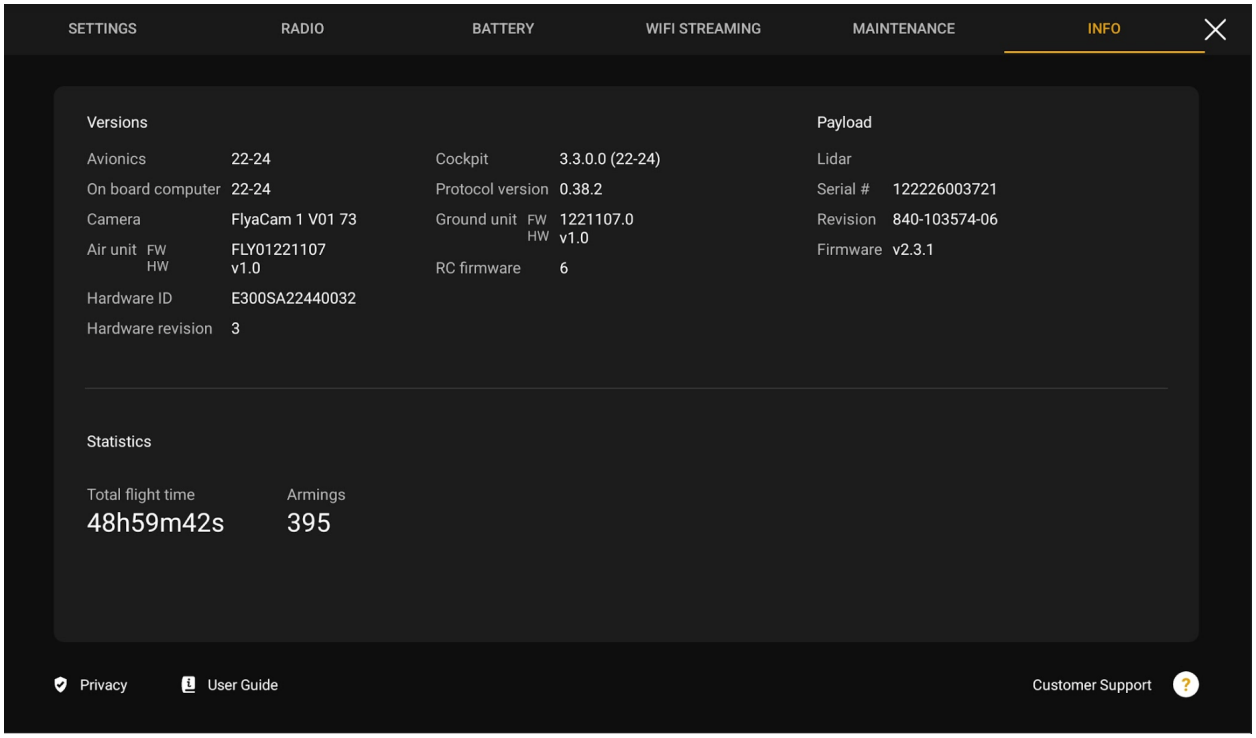
Updated E3 components versions

NEW : Drone firmware: gaston_22-24.swu

NEW : Cockpit software: Flyability-Cockpit-3.3.0.0-8-full-release.apk

NEW : Inspector software: InspectorSetup-4.3.0.253-x64-Release.msi

INFO panel versions after update



IMPORTANT NOTES

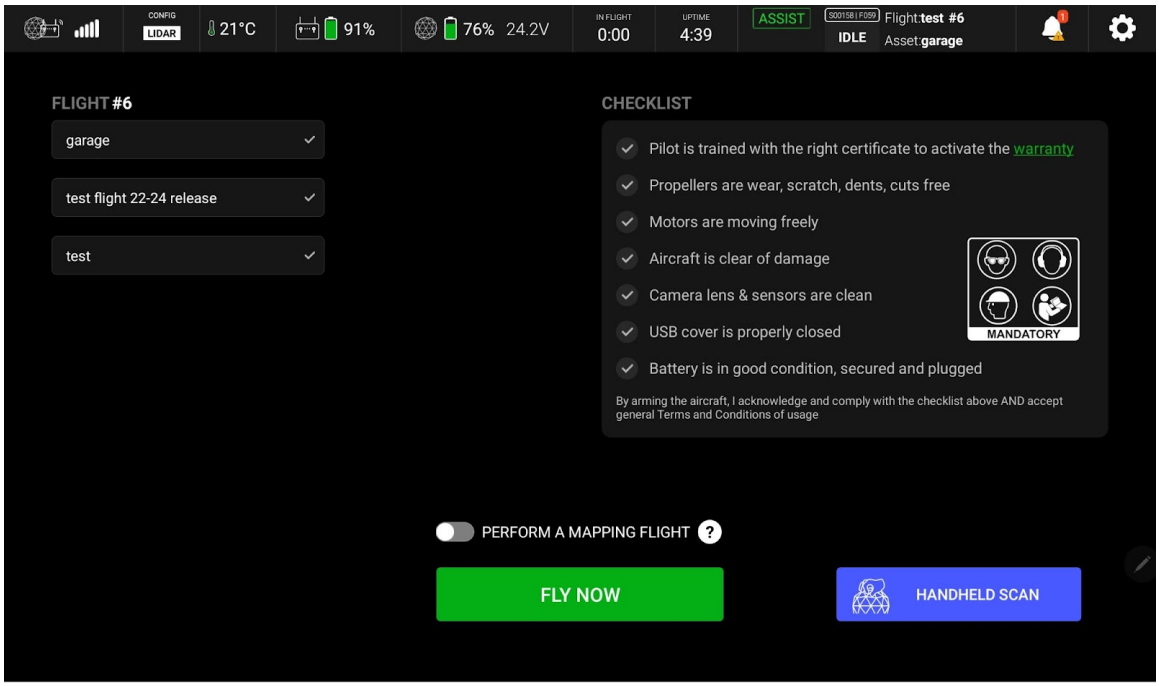
New updated elements

1. TRANSMISSION SYSTEM. The update will be done automatically when updating the Elios 3 fw through Inspector for the drone transmission. For the remote controller transmission it will be done by the action of the user on a notification once the Elios 3 and Cockpit are updated, powered on and connected. New fw version : **1221107**

What's new?

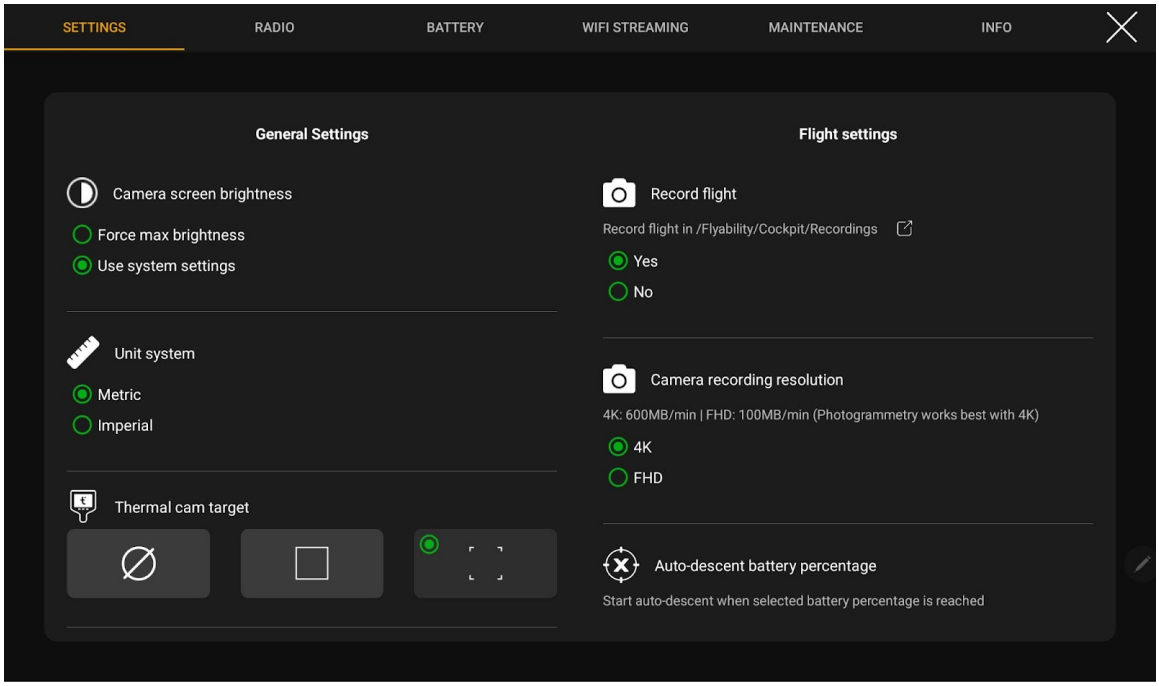
A handheld lidar mapping workflow has been introduced in Cockpit

With a lidar mounted on the drone you can now use the device as a handheld, more information can be found in the user manual. You may find it on our knowledge base https://knowledge.flyability.com/



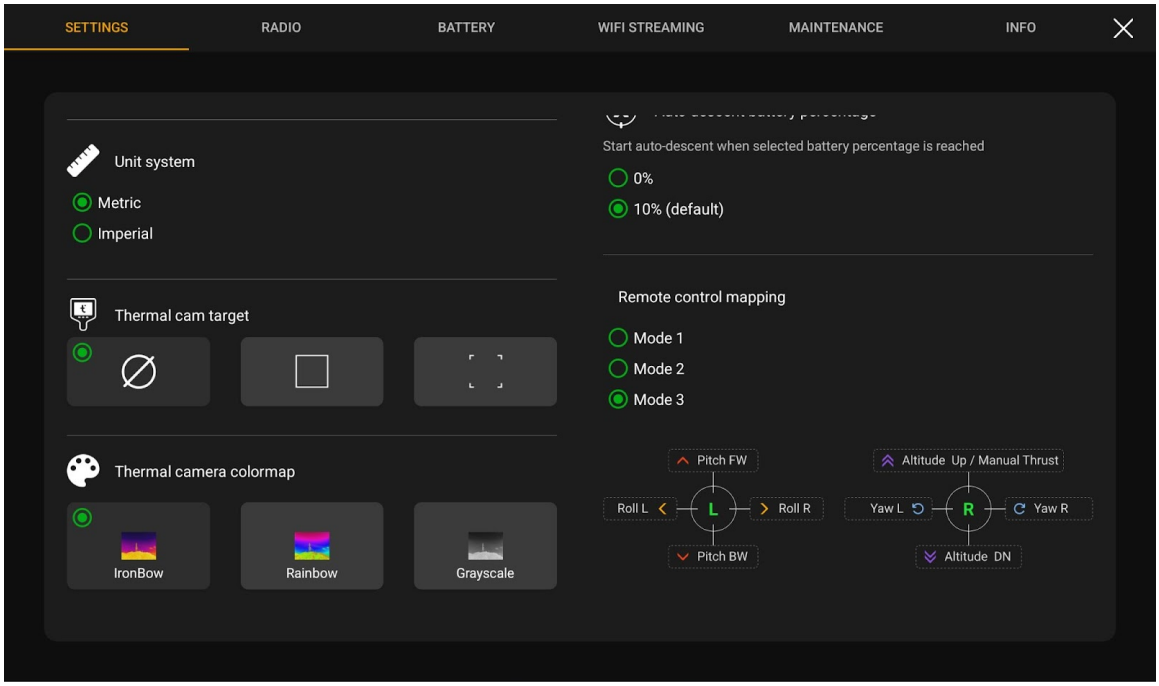
Video recording quality can be chosen: FHD or 4k

From Cockpit Settings, you can now choose if you prefer to record in 4K or in FHD, this setting must be set prior arming the drone.



Flight control stick mapping “mode 3” is now available

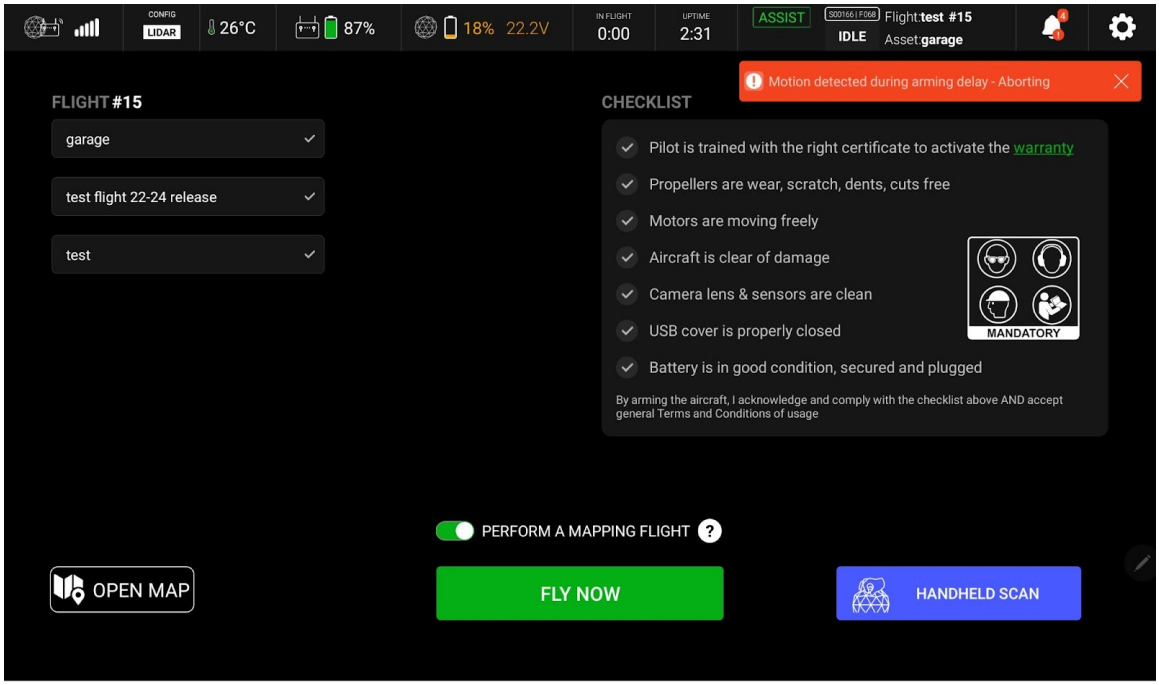
From Cockpit setting you can now set the remote control mapping to mode 3



Motion detection during arming

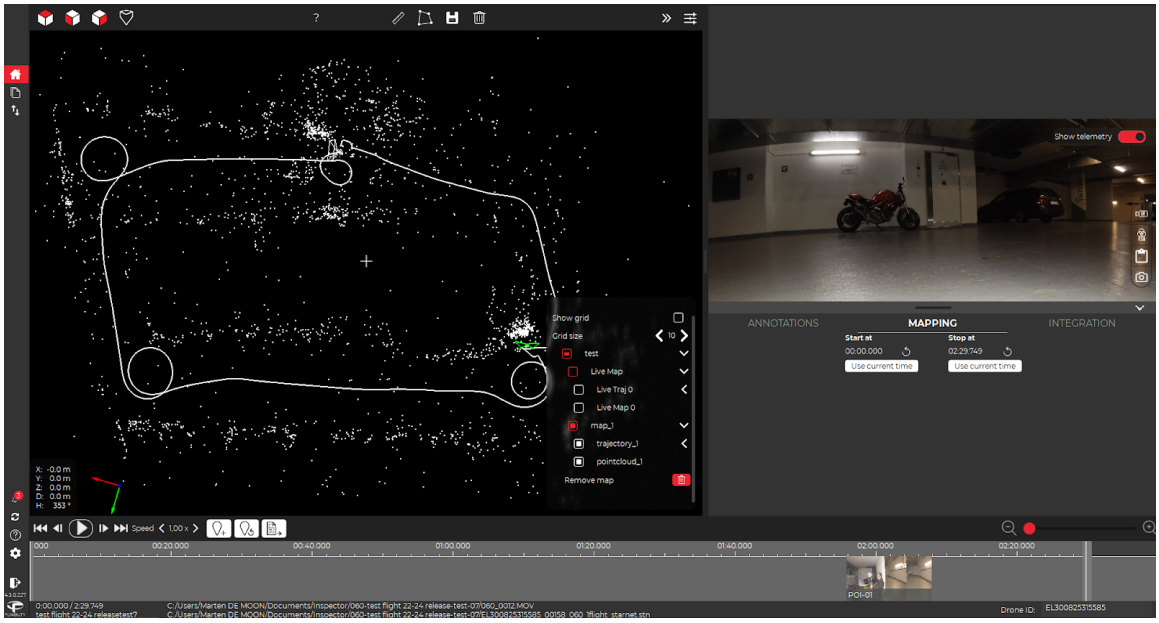
During the arming delay while performing a mapping flight or handheld flight, the drone checks for movement and aborts arming if the drone moves.

This insures the drone is stable and that IMU initialization is done effectively



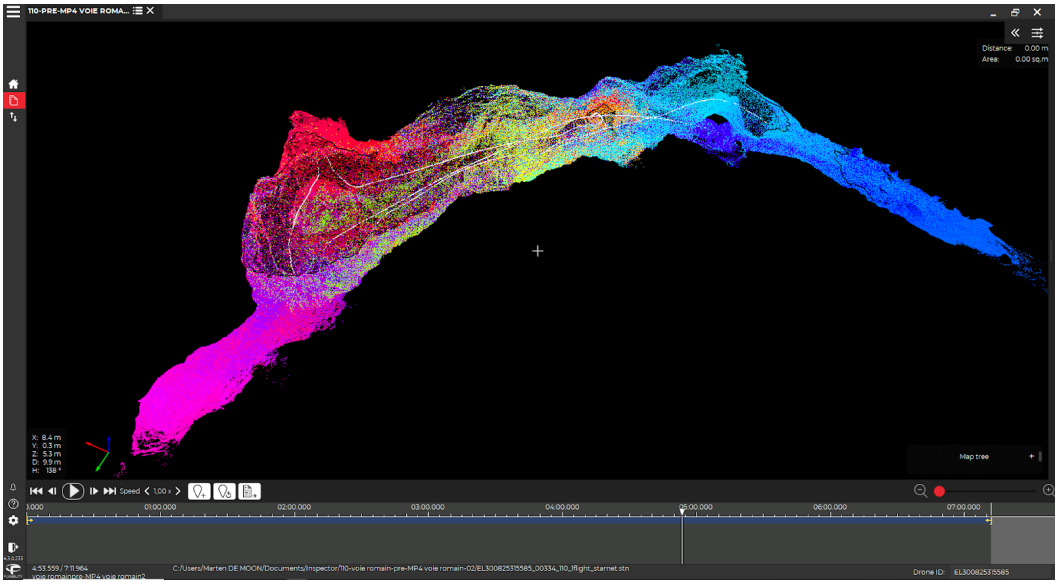
Datamap for E3 is now active in Inspector

You can now generate sparse 3D maps, from an Elios 3 directly from Inspector. This offers the possibility to remove the lidar and have up to 12.5 minutes of flight time while still creating a 3D map.

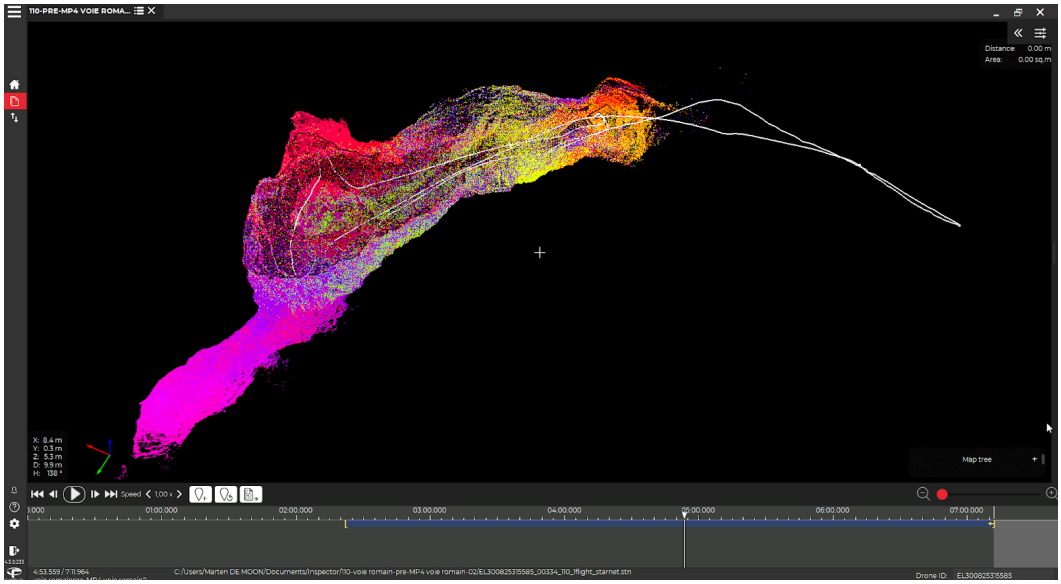


Pointclouds can be trimmed based on time in Inspector

You can now trim the pointcloud to the time range you wish. This can be useful to focus only on a specific part of the inspection or to remove noisy points from the beginning of the flight.



Complete flight inspection



Trimed flight inspection

Improvements

The FlyaAware live mapping has become significantly more robust in chimneys, tunnels and galleries

Exact robustness increase remains very situation dependent. Specifically small tunnels and symmetric confined spaces can still be problematic

High and low altitude flight behavior AMSL or BMSL improved

The drone's flight controller now automatically adapts its settings depending on the air density to make sure the flight behavior and performance is always optimized throughout its operating range of -1500 to +5000m. For flights below -1500m[1] MSL, the flight control parameters are no further optimized and the ATTI mode is no longer available. Instead when ASSIST switches off it will instead activate manual throttle ATTI (ATTI MAN)

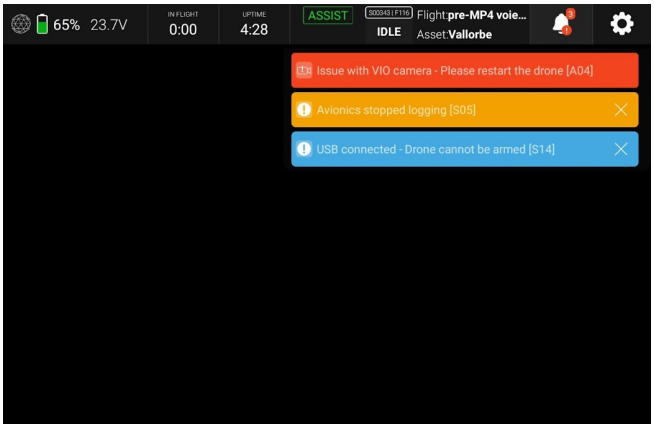
[1]The temperature and humidity level affects the air density at a given altitude. Thus, the low limit where the drone might change to ATTI MAN, may vary from -1300m to -1700m MSL.

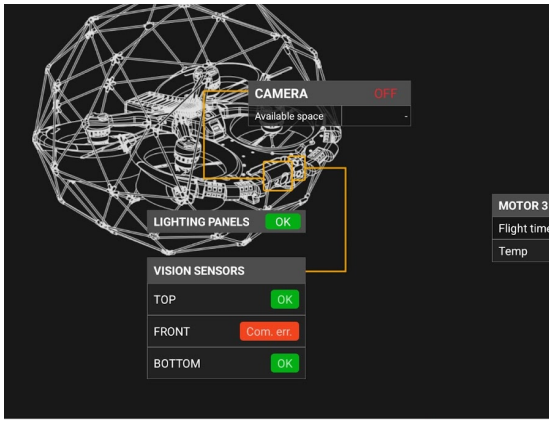
A general motor health warning is activated

Following the motor health check introduced for the 22-19 release, Cockpit will now display an error message if a motor fails the health check. When this happens the pilot should restart the drone. If the problem persists he should contact customer support.

Stability keeps working if one or two VIO cameras are broken

From now on, if one or more of the VIO stabilization cameras break, the stability system will keep working with the remaining camera(s). In that case a red error message will be displayed in Cockpit to warn the customer that one or more cameras are broken.





Camera-based stability has been further improved

The performance of VIO-camera stabilization has been improved, especially in low light conditions. Apart from that the reliability of the automatic switching has also further been improved, reducing the risk for the drone to make unexpected maneuvers .

Cockpit is now compatible with Android 13

Recently, Android 13 was released for the Samsung S7 tablet that is provided with the Elios 3 drone. Cockpit is now compatible with Android 13.

Inspector has persistent viewer setting for the point cloud visualizer

When configuring the point cloud viewer in a specific way for a specific flight, these settings will be saved for the next time you open this flight. Different settings for different flights will automatically be saved.

Inspector can import flights from drones with older FW and drones without a valid configuration or identification

When importing a flight from a drone with an older FW (22-11, 22-15 or 22-19), Inspector will not force the user to update his drone in order to import data. Inspector will still be able to import, open and display

flights, even when those flights don't have a valid configuration. This invalid configuration can occur if a payload or onboard sensor of the drone is not functioning correctly.

Bug fixes

Motor flight time counters do not increment

Since the 22-19 release, this feature is broken: the motor flight time does not increment after having done a flight.

Motor does not start to spin when arming the drone

On rare occasions a motor might not start, making the drone roll over while arming. If this happens a warning message will be displayed on Cockpit stating the pilot should disarm the drone immediately.

Arming countdown in Cockpit is wrong

In some rare occasions when the lidar payload is not mounted on the drone it can happen that the motors don't immediately start to rev up after the countdown is finished in Cockpit. In that case it takes another 10s before the motors rev up. Do not disarm the drone or touch the drone in the meantime.

Drone accelerates or slows down while full stick in ASSIST

In specific assets it can happen that the velocity state estimate starts to drift, making the drone speed up or slow down while the stick input from the pilot doesn't change.

Thermal camera does not work

In some rare occasions the thermal camera is not configured well or simply does not start to stream data. As a result the thermal camera is not available in Cockpit, nor inspector, causing the flight import to fail.

Drone ID name and flight database reset

In some rare occasions the drone EEPROM memory can get corrupted, resetting the drone ID (internal memory stored serial number) and drone internal flight database. In that case the drone ID does not correspond anymore with the hard serial number from the label of the drone. In this situation communication issues between Inspector and the drone may occur.

Flight database contains invalid data

In some rare occasions, the drone flight database contains flights with undefined drone configurations, which prevent the user from seeing those flights in Inspector and importing them.

Known limitations

Stability may fail in very dusty environments

The three cameras on the payload head are used to track visual features in the environment in order to stabilize the drone. When flying in very dusty environments it becomes very difficult for the camera's to see through the dust to detect visual features on the surrounding walls. In that case the stability will automatically turn off and request the pilot to fly in ATTI flight mode.

Wobbliness in very confined spaces

Elios 3 is inherently more susceptible to its own turbulence, and also creates more turbulence due to its higher weight compared to Elios 2.

Thermal camera lags on RGB video in Cockpit

The delay on the thermal camera video stream is higher than the one on the RGB video. Since the first is overlaid on the latter, it is quite noticeable. This delay is inherent to the different HW and SW architecture.