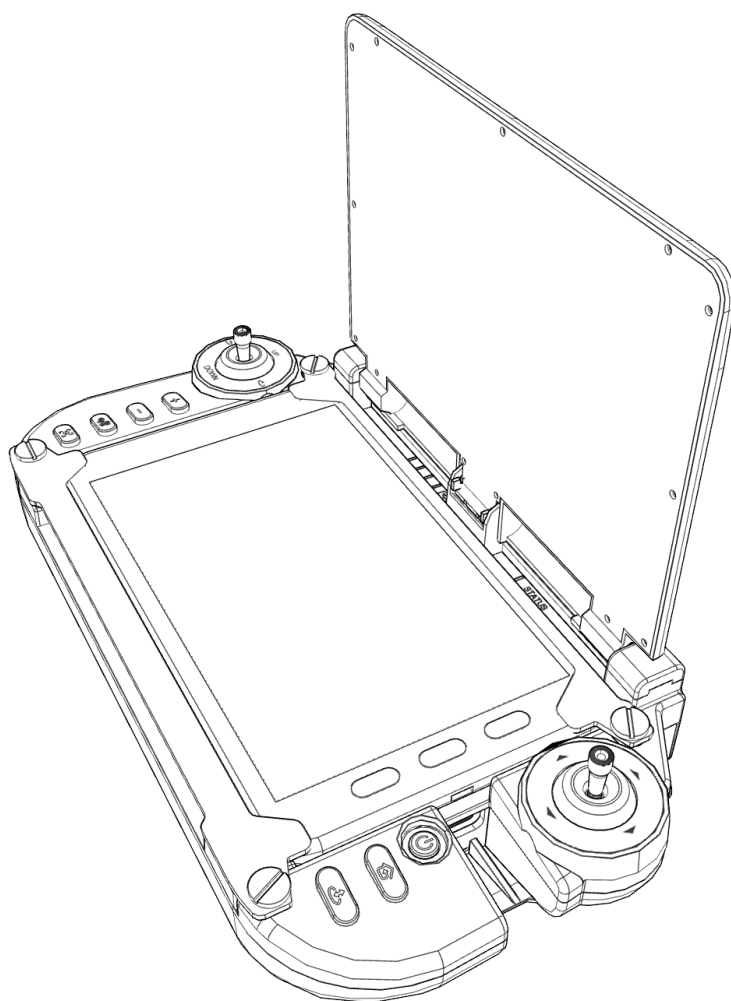


SKYCONTROLLER UKR & FreeFlight 8

User Guide



Version: 8.4.0.0

Updated: May 15th, 2026

Parrot

1. Documentation changelog

This section details the major changes to Parrot's technical documentation since version 8.3.4.0 released on January 29th, 2026.

What changed	Where
<i>Technical specifications</i> chapter updated.	Page 7
<i>Landmarks</i> subchapter added.	Page 31
<i>Flight parameters</i> subchapter updated.	Page 66
<i>RTH and Safety</i> subchapter separated into 2 individual chapters; <i>RTH</i> , and <i>Safety</i> .	Pages 67, and 71
<i>Flight area</i> subchapter removed, and text moved to <i>Safety</i> subchapter.	Page 71
<i>Maps</i> subchapter updated with information about offline map limits.	Page 89
<i>Stream sharing</i> subchapter updated.	Page 90
<i>Drone</i> subchapter updated.	Page 98
<i>Upload logs</i> subchapter added.	Page 124
<i>Developer</i> subchapter updated.	Page 126
<i>Appendix 2: EU Data Act information and system data overview</i> chapter updated.	Page 136

1.1. Ecosystem versions

This section details the software versions for the full ecosystem available at the time of writing this user guide:

Ecosystem element	Software version
Application	8.4.0
Controller	8.4.0

2. Using this guide

Parrot recommends that you read the following user guide thoroughly before your first flight. This user guide completes the ANAFI UKR documentation, which also includes the:

- Skycontroller UKR and FreeFlight 8 release notes – available upon request.

Read the Flight Safety Guide to have complementary information about safety, operational limitations for use and maintenance of the ecosystem. Always verify that you are using the latest version of the user guide.

This guide is specific to a single controller configuration, consisting of:

- The Parrot Skycontroller UKR ground control station.
- The Parrot FreeFlight 8 flight application.

Read fully at least one time . It answers most questions that most users may encounter when they use Skycontroller UKR and FreeFlight 8.

Keep it for reference and stay alert for updates. Updates are mandatory and must be systematically performed prior to any flight to ensure maximum performance and safety.

The Table of contents, starting on page 4, is active. Click a title to access the corresponding section.

This user guide has no index. the keyboard shortcut **Ctrl + F** (Windows) or **Command + F** (Mac) to browse all occurrences of any keyword (*flight, settings, obstacle avoidance, gimbal, photo, ISO, etc*)

3. Table of contents

1. Documentation changelog	2	10.3. Flying	24
1.1. Ecosystem versions	2	10.4. Gimbal controls	24
2. Using this guide	3	10.5. Landing	25
3. Table of contents	4	10.6. Hand Landing.....	25
4. Foreword	6	10.7. Return to Home	26
4.1. Skycontroller UKR ecosystem and variants	6	11. FreeFlight 8	28
4.2. Skycontroller UKR smart battery....	6	11.1. Cursor on Target	30
4.3. HDMI	6	11.2. Landmarks	31
4.4. Technical support	6	11.3. Image mode.....	32
5. Technical specifications	7	11.4. Exposure adjustments	34
6. Pre-flight checklist	8	11.5. White balance.....	36
6.1. Transport & handling	8	11.6. Thermal camera.....	37
6.2. Equipment.....	8	12. Flight modes.....	41
7. Getting started	9	12.1. Piloting.....	41
8. Skycontroller UKR	11	12.2. Tracking.....	41
8.1. Connectivity	13	12.3. Touch & Fly	44
8.2. HDMI video output	13	12.4. Flight plan	47
8.3. LED status indicator color codes ..	13	13. Settings.....	60
8.4. Pairing the aircraft to a Skycontroller UKR	13	13.1. Quick settings	60
8.5. Remote antenna feature with a second Skycontroller UKR.....	14	13.2. Gallery	62
9. Skycontroller UKR Mission.....	16	13.3. Flight logs.....	63
9.1. Connectivity	18	13.4. Flight parameters.....	66
9.2. HDMI video output	18	13.5. RTH	67
9.3. LED status indicator color codes ..	18	13.6. Safety	71
9.4. MARS Ranger.....	18	13.7. GPS	74
9.5. Pairing the aircraft to a Skycontroller UKR Mission.....	20	13.8. Connection	78
9.6. Cloud antenna	21	13.9. Recording.....	84
10. Piloting basics	23	13.10. Interface	85
10.1. Ground Take-off	23	13.11. Maps.....	86
10.2. Hand launch	23	13.12. Stream sharing.....	90
		13.13. Software	95
		13.14. Drone	98
		13.15. Controller.....	110

13.16. Storage	117	16. Appendix 1: Operational Checklist.....	134
13.17. Account	119	16.1. Software update & calibration ..	134
13.18. Upload logs	124	16.2. Skycontroller UKR & Aircraft off	134
13.19. Certificates	126	16.3. Skycontroller UKR & Aircraft on	134
13.20. Developer	126	16.4. Before Take-off	135
14. Maintenance and troubleshooting.....	127	16.5. After Take-off	135
14.1. Skycontroller UKR hard reset	127	16.6. Before landing	135
14.2. FreeFlight 8 device hard reset....	127	16.7. After landing	135
14.3. Webserver	127	17. Appendix 2: EU Data Act information and	
14.4. Aircraft end of service life	129	System data overview	136
15. Accessories	130	17.1. Product data	136
15.1. Open-source 3D printable		17.2. Related service data	136
accessories.....	130	17.3. How to access data.....	136
15.2. Proprietary accessories	130	17.4. How to contact us.....	137
15.3. 3rd party accessories	133	18. Appendix 3: Disclaimer	138

4. Foreword

4.1. Skycontroller UKR ecosystem and variants

In the following pages, the word *ecosystem* refers to the controller (Skycontroller UKR) and the FreeFlight 8 flying app. The word *device* refers to the tablet on which FreeFlight 8 is installed.

This user guide documents the Skycontroller UKR, Skycontroller UKR Mission, and MARS Ranger which can be used with 4 Parrot aircraft ecosystem variants:

- ANAFI UKR
- ANAFI UKR GOV
- ANAFI UKR XLR
- ANAFI UKR Mission

Screenshots throughout this guide may differ from the user's FreeFlight 8 application interface due to individual variant configurations.

4.2. Skycontroller UKR smart battery

The Skycontroller UKR battery enters a **Wintering mode** when not in use for 10 consecutive days. Users must connect a charger to the Skycontroller UKR USB-C charging port to wake the battery up and charge it completely before you fly for the first time.

4.3. HDMI

The Skycontroller UKR has an HDMI port, which enables you to stream images to a screen or to HDMI goggles. Parrot recommends using a certified HDMI to HDMI cable (not included in the box) to connect external pieces of equipment to the Skycontroller UKR.

4.4. Technical support

Parrot recommends that you use your Parrot.CLOUD account to allow Parrot to store your flight data. Sharing your data, even anonymously, enables us to improve our products. It also directly benefits all identifiable users in case they need to contact Parrot support teams.

CAUTION: If you do not share flight data / logs for the purposes of receiving support, you limit your ability to receive technical support, warranty, or both from Parrot.

5. Technical specifications

GROUND CONTROL STATION

- Size folded: 171 x 302 x 77 mm (6.7 x 11.9 x 3.0")
- Size unfolded: 171 x 302 x 215 mm (6.7 x 11.9 x 8.5")
- Mass:
 - Skycontroller UKR: 1,765 g (3.89 lb)
 - Skycontroller UKR Mission: 1,450 g (3.2 lb)
 - Skycontroller UKR GOV: 1,765 g (3.89 lb)
 - Skycontroller UKR XLR: 1,765 g (3.89 lb)
- Battery capacity: 10,000 mAh
- Battery voltage (nominal): 7.2 V
- Battery charging duration: 2 h (2 h 30 min with tablet)
- Battery life: 4 h 30 min[1]
- Connectivity:
 - USB-C port
 - USB-A port
 - HDMI port
 - Ethernet port
- IP53: Rain and dust resistant
- Operating temperature: -36 °C to 50 °C (-33 °F to 122 °F)

MARS RANGER

- Size folded: 170 x 240 x 50 mm (6.7 x 9.4 x 2.0 ")
- Size unfolded: 170 x 240 x 200 mm (6.7 x 9.4 x 7.9 ")
- Mass: 1,200 g (2.65 lb)
- Battery capacity: 10,000 mAh
- Battery voltage (nominal): 7.2 V
- Battery charging duration: 2 h
- Battery life: 4 h 30 min[1]
- Connectivity:
 - USB-C port
 - Ethernet port
- IP53: Rain and dust resistant
- Operating temperature: -36 °C to 50 °C (-33 °F to 122 °F)

[1] Extreme temperatures, or suboptimal conditions may affect battery autonomy.

[2] Radio link switching depends on individual configurations.

CYBERSECURITY

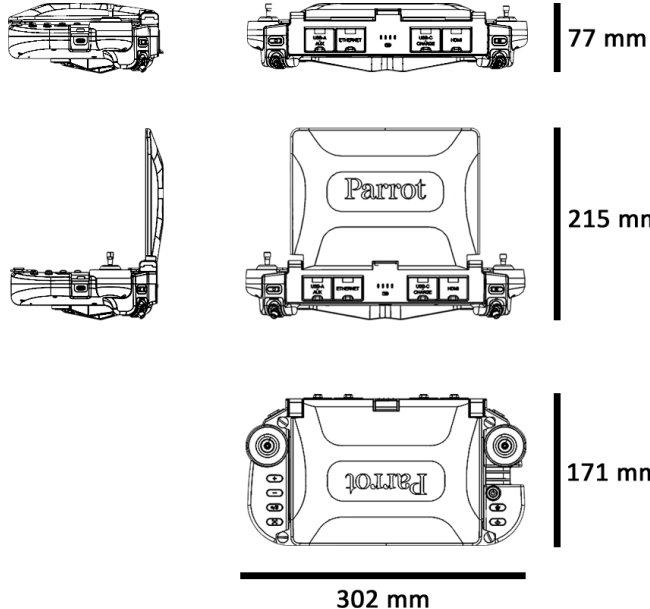
- Zero data shared without user consent
- TAA & NDAA compliant
- Blue UAS program approved
- Manage your data privately between drone and device OR share anonymous data on secured European servers
- Digitally signed firmware
- Compliant with FIPS140-2

RADIO LINK

- MARS (ANAFI UKR & ANAFI UKR XLR only):
 - Over 1.5 GHz bandwidth:
 - spread across 8 bands 1.8 – 5 GHz (ANAFI UKR)
 - spread across 10 bands 1.8 – 5.85 GHz (ANAFI UKR XLR)
 - TX & RX differentiated frequencies
 - Radio-jamming resistance through Frequency hopping
 - Direct video stream resolution: 1080p 30 fps
 - AES 256 encryption: packet and radio level
- Wi-Fi (ANAFI UKR GOV only):
 - Wi-Fi 802.11ax
 - Direct video stream resolution: 1080p 30 fps
 - AES 256 encryption: Packet and radio level
 - Operating frequencies: 2.4 GHz, 5GHz UNII-1, & UNII-3
- LoRa:
 - Activates when main link is lost
 - AES 128 and ChaCha20 encryption
 - Frequency bands: EU - 863 to 870 MHz, US - 902 to 928 MHz
- Cellular (ANAFI UKR GOV & ANAFI UKR XLR only):
 - Cellular connectivity: 5G NR with 4G LTE fallback
 - AES 256 encryption: Packet level
 - Seamless switching^[2]:
 - 5G / Wi-Fi
 - 5G /MARS
 - Flies Beyond Visual Line of Sight

DIMENSIONS

Ground control station



MARS Ranger

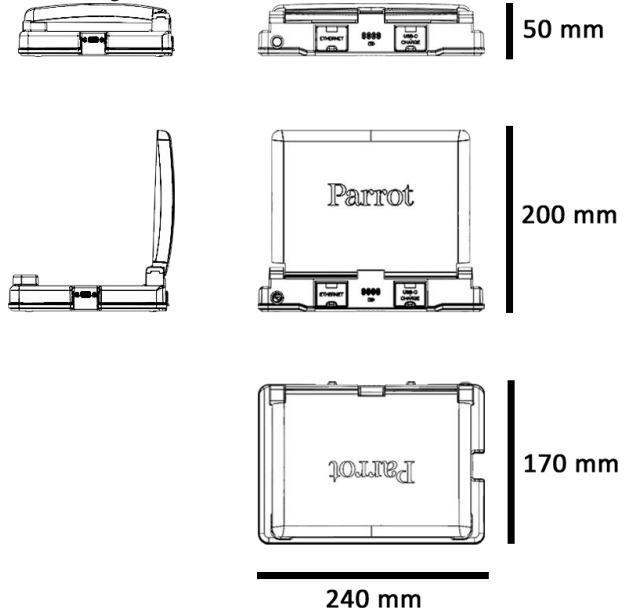


Figure 1: Skycontroller UKR dimensions

Images not to scale

6. Pre-flight checklist

6.1. Transport & handling

- Always transport the Skycontroller UKR safely in the relevant location in the hard case.
- Protect the battery from extreme temperature, both low and high. Try to keep the battery as close as possible to 25 °C (77 °F).
- Always keep the hard case with the Skycontroller UKR and device in dry places.

6.2. Equipment

- Ensure that you download the latest version of FreeFlight 8, and that your Skycontroller UKR is up to date with the latest version of firmware.

IMPORTANT: Updates are mandatory and must be performed systematically prior to any flight to ensure maximum performance and safety.

- Ensure that the Skycontroller UKR battery is fully charged.

7. Getting started

1. Open the Skycontroller UKR's **USB-C CHARGE** cover to expose the USB-C charging port.

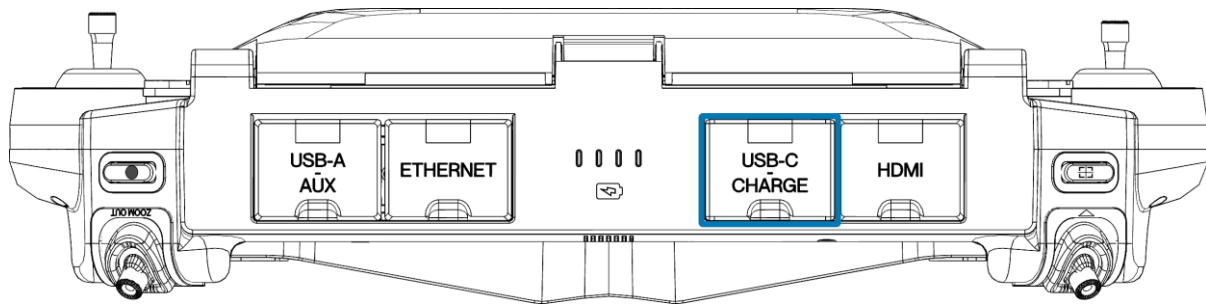


Figure 2: Skycontroller UKR rear view with interface ports closed

2. Connect Skycontroller UKR to the enclosed USB-PD charger with one of the enclosed USB-C to USB-C cables.
3. Wait until the entire ecosystem is fully charged.
4. Press and hold the **Power** button on the integrated tablet in Skycontroller UKR for 3 seconds.
5. Press and hold the **Power** button on Skycontroller UKR for 2 seconds.

The Skycontroller UKR's status LED flashes white to indicate that the controller is booting.

Refer to [chapter 8. Skycontroller UKR](#) for more information.

The fully secure piloting software of Skycontroller UKR, FreeFlight 8, guarantees the integrity of data exchanges for the full ecosystem, and manages updates (piloting software, drone, remote control).

FreeFlight 8 is preinstalled on Skycontroller UKR's tablet and launches automatically when Skycontroller UKR is powered on.



Skycontroller UKR tablet displays FreeFlight 8's homepage.

NOTE: FreeFlight 8 requires Android 14, or later.

Refer to [chapter 11. FreeFlight 8](#) for more information.

6. Pair Skycontroller UKR to your aircraft.

Refer to [chapter 8.4. Pairing the aircraft to a Skycontroller UKR](#) for more information.

7. Check for ecosystem updates to ensure maximum performance and safety. Refer to [chapter 13.13. Software](#) for more information.

IMPORTANT: Regularly refer to the Skycontroller UKR Release Notes available upon request, to ensure that you have the latest versions of the controller firmware, and FreeFlight 8 App.

8. Calibrate Skycontroller UKR if required. Follow the instructions on your Skycontroller UKR's screen.

All systems are ready for flight.

9. Ensure that your flying zone is safe and clear.
10. Stay at least 2 m (6 ft) from the aircraft, press  **Take-off/land** to start the flight operation.

8. Skycontroller UKR

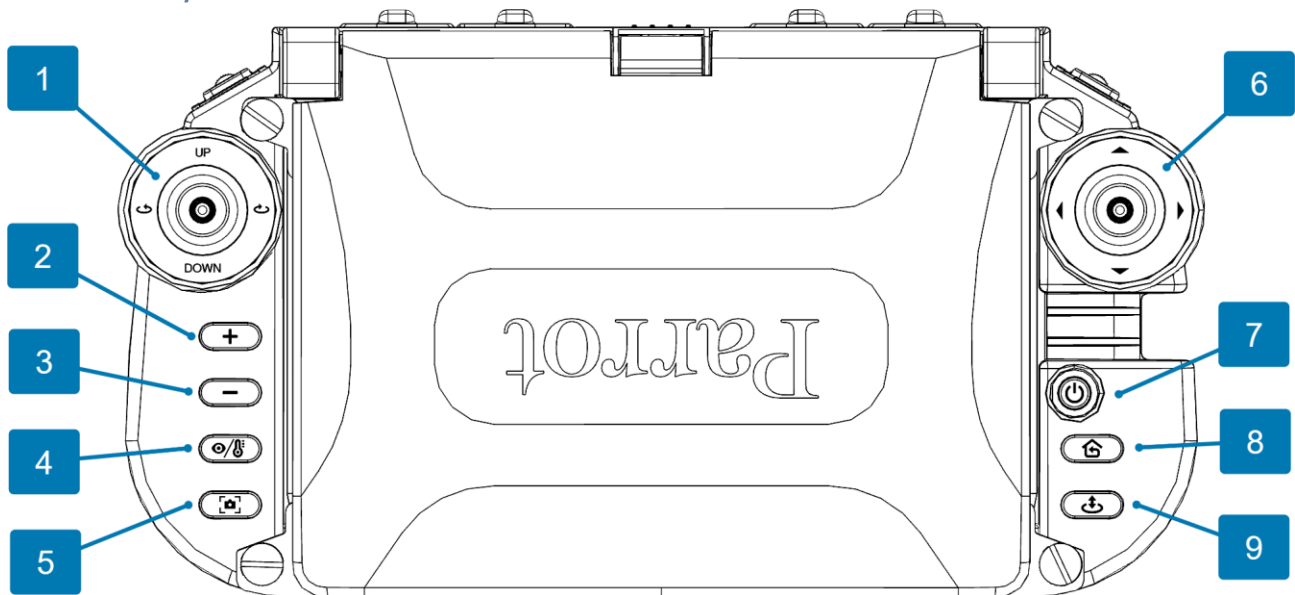


Figure 3: Skycontroller UKR top view closed

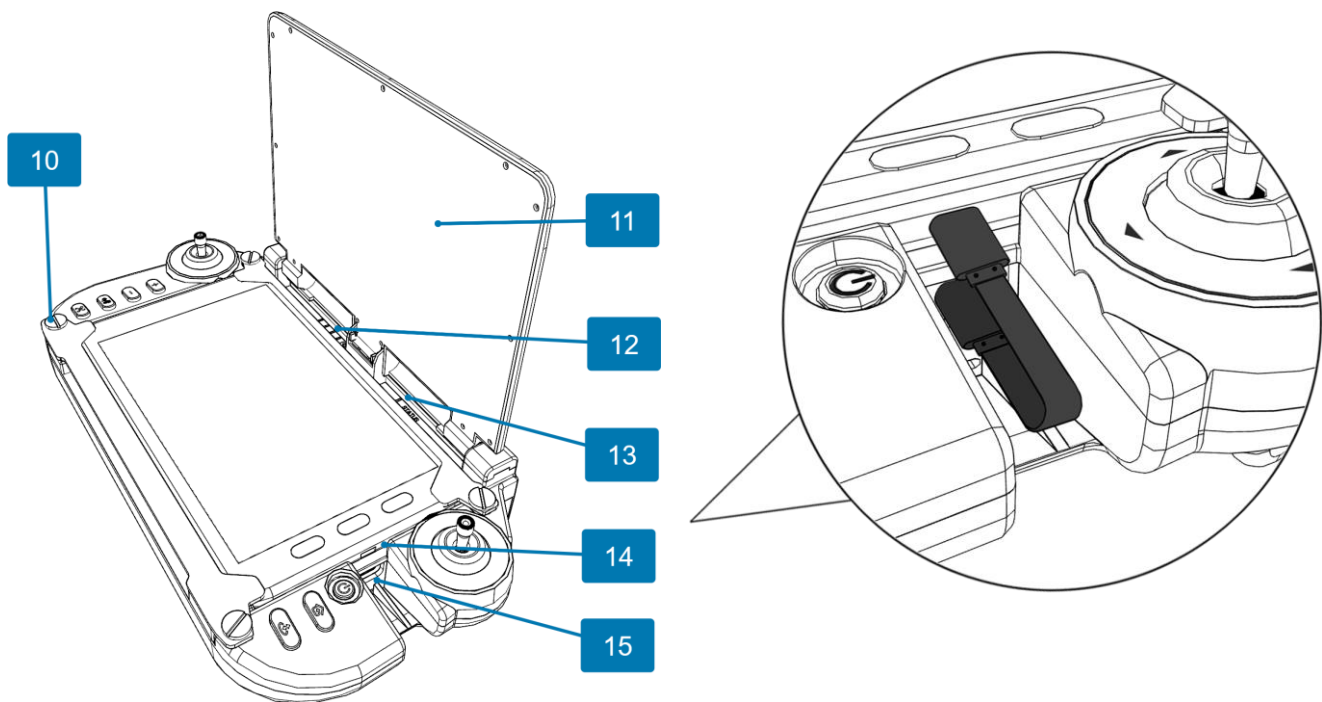


Figure 4: Skycontroller UKR open, showing USB-C to USB-C cable

1. Left joystick
2. + EV button
3. - EV button
4. **Thermal camera activation** button
5. **Screenshot** button
6. Right joystick
7. **Power** button
8. **RTH (Return to Home)** button

9. **Take-off / Land** button
10. Device retaining screw (1 of 4)
11. Antenna
12. Skycontroller UKR battery status LEDs
13. Top charge level LED indicators
14. Tablet USB-C port
15. USB-C Device connection port
16. USB-C to USB-C cable

NOTE: The USB-C to USB-C cable which connects the tablet to Skycontroller UKR comes preinstalled.

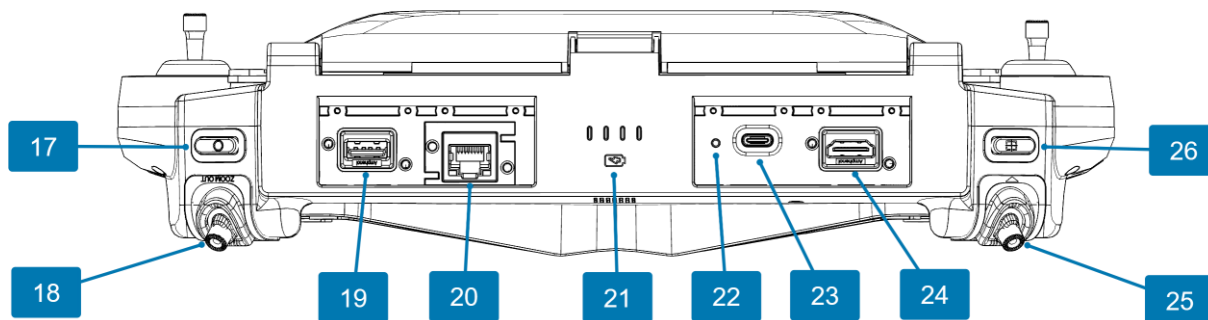


Figure 5: Skycontroller UKR rear view, plastic covers removed

- | | |
|---|---|
| 17. ● Shutter (photo) or Start / Stop recording | 22. Factory reset button |
| 18. Zoom trigger (right) | 23. USB-C charging port |
| 19. USB-A port | 24. HDMI port |
| 20. Ethernet port | 25. Gimbal tilt trigger (left) |
| 21. 📶 Rear Charge level LED indicators | 26. 🔄 Reset camera (Zoom and gimbal tilt) |

NOTE: Nos. 19, 20, 22, 23, and 24 (Figure 5) are underneath the 4 plastic covers on Skycontroller UKR. The plastic covers are not shown in the image above for clarity.

The device on Skycontroller UKR is held in place by 2 brackets and 4 screws (No. 10 in Figure 4). The device can be removed or replaced by unscrewing the screws and lifting the device out of Skycontroller UKR.

WARNING: If you press 🛫 **Take-Off/Land**, 🏠 **RTH**, and ● **Shutter** simultaneously, the EMERGENCY MODE on the aircraft activates immediately. EMERGENCY MODE instantly cuts power to all motors on the aircraft, which causes the drone to fall from the sky.

The Skycontroller UKR battery charging time is 2 hours.

4 LEDs show the charging status.

The LEDs turn off when charging is complete.

Press and hold the ⏻ **Power** button (No. 7 in Figure 3) for 2 seconds to turn on the Skycontroller UKR.

The 4 green LEDs turn on one after the other.

Press and hold the tablet's ⏻ **Power** button to turn on the tablet.

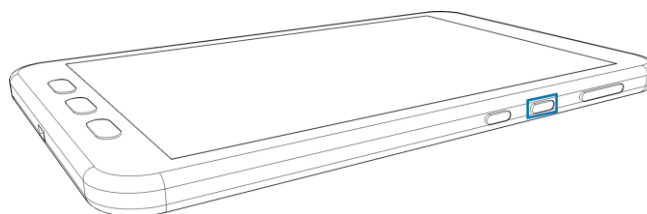


Figure 6: Skycontroller UKR's Android tablet showing the power button

8.1. Connectivity

Skycontroller UKR has the following connectors:

- USB-A port (No. 19 in Figure 5) – used for drone/controller pairing
- Ethernet port (No. 20 in Figure 5) – used for remote antenna connection, webserver access
- USB-C charging port (No. 23 in Figure 5) – used for charging
- HDMI port (No. 24 in Figure 5) – used for video output

8.2. HDMI video output

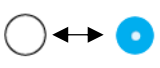
Use an HDMI-to-HDMI cable to connect the Skycontroller UKR to an external screen (or VR goggles). The screen displays the aircraft's video stream.

NOTE: External screens only display the drone's video stream, and none of the additional information provided by FreeFlight 8. Operators can watch the drone's view on an external screen, while they navigate FreeFlight 8 menus (settings or dashboard) on the device associated to the Skycontroller UKR.

TIP: Use a certified HDMI-to-HDMI cable (not included in the box) to connect external pieces of equipment to the Skycontroller UKR. Uncertified cables may lead to display issues.

8.3. LED status indicator color codes

When the Skycontroller UKR is powered on, its status LED indicator (No. 13 in Figure 4) and its charging LED (No. 12 in Figure 4, No. 21 in Figure 5) provide an instant visual indication:

Status LED indicator colors and behavior		
	White Flashing	Controller is booting
	Red Flashing	Power-off button is pressed
	Red Steady	Power-off button held for 2 seconds, controller will power-off
	White Fade	Controller is booted, no active drone
	White/Blue Fade	Controller is trying to connect to a drone
	Blue Steady	Controller is connected to a drone
	Green Fade	Controller is connected to a drone by USB cable and is in pairing state
	Magenta Fade	Controller has lost MARS connection and is trying to connect on the backup radio link
	Magenta Steady	Controller has lost MARS connection and is receiving drone telemetry through backup radio

8.4. Pairing the aircraft to a Skycontroller UKR

The aircraft must be paired with the Skycontroller UKR in order to connect. After the aircraft and controller are paired, they remember each other. Follow this procedure to pair an aircraft and a controller for the first time, and to restore the lost pairing between an aircraft and a controller.

1. Power on the aircraft.
2. Press **Power** on the Skycontroller UKR.
3. When both the aircraft and Skycontroller UKR have booted, connect the aircraft and the controller with a USB cable (USB-A connection to the USB-A port under the controller's plastic cover, USB-C connection to the drone).

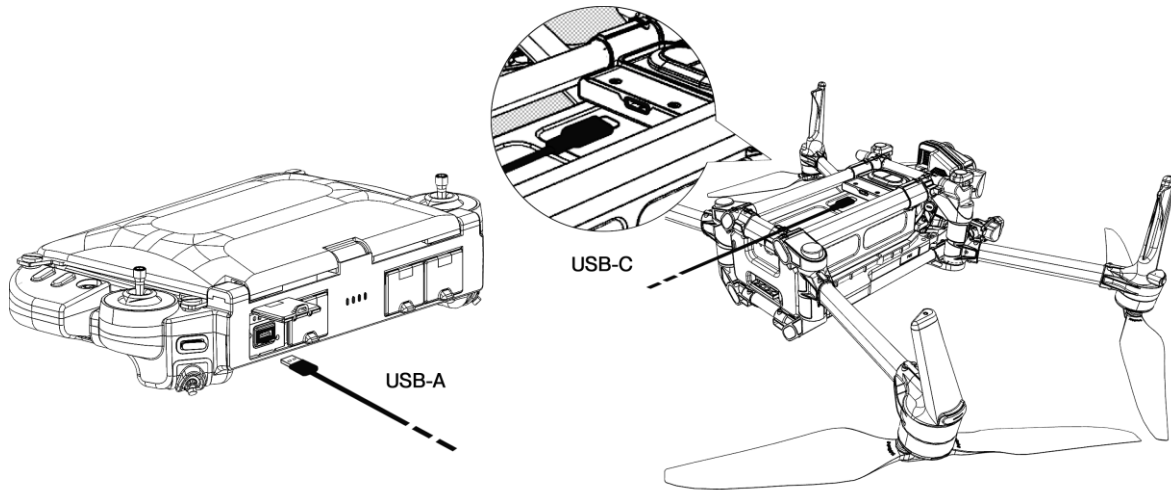


Figure 7: Pairing the drone with the controller

NOTE: Ensure that you connect the aircraft via the USB-C port on the underside of the drone, not the USB-C port on the battery.

The Skycontroller UKR status LED blinks green to indicate it acknowledges the aircraft, and to establish pairing protocols.

4. Wait for synchronization between Skycontroller UKR and the aircraft.

The status LED turns solid blue when the aircraft and the controller are connected, and FreeFlight 8 displays a message **Pairing successful**.

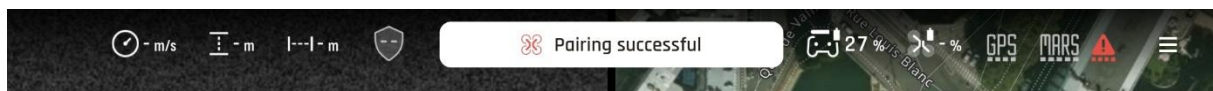


Figure 8: Pairing successful

5. Verify that the left trigger of the Skycontroller UKR activates the aircraft's gimbal to ensure the synchronization is complete.
6. Disconnect the USB cable between Skycontroller UKR and aircraft.

8.5. Remote antenna feature with a second Skycontroller UKR

Skycontroller UKR's remote antenna feature allows the drone pilot to be in one location and a remote antenna to be in a second location. This feature requires:

- A main (piloting) Skycontroller UKR used to pilot the drone.
- An RJ45 ethernet cable up to 100 m (328 ft) long (minimum classification Cat5).
- A second (remote antenna) Skycontroller UKR.

This allows the drone pilot to control the drone indoors, or in a vehicle for example, with an external antenna fixed outdoors for optimal radio link performance. The remote antenna Skycontroller UKR can be powered ON and powered OFF remotely via the main (piloting) Skycontroller UKR.

SKYCONTROLLER UKR

Follow this procedure to connect the remote antenna Skycontroller UKR:

1. Ensure that the main Skycontroller UKR and the remote antenna Skycontroller UKR are powered off.
2. Connect the main Skycontroller UKR and the remote antenna Skycontroller UKR via an RJ45 cable.

NOTE: The RJ45 ethernet cable must be at least Cat5 and must not exceed 100 m (328 ft) in length.

3. Power on the main Skycontroller UKR.
4. Activate the **Use remote antenna** setting in FreeFlight 8 settings. Refer to [chapter 13.15.1. Remote antenna](#) for more information.

The MARS link radio of the main Skycontroller UKR disconnects. The remote antenna Skycontroller UKR powers on.

NOTE: The remote antenna Skycontroller UKR status LED remains switched off

5. Wait several seconds before the status LED of the main Skycontroller UKR turns solid blue.

The main Skycontroller UKR now uses the MARS link radio and the LoRa of the remote antenna Skycontroller UKR.

NOTE: When using a second Skycontroller UKR as a remote antenna, the tablet is not required for the remote Skycontroller UKR.

The remote antenna Skycontroller UKR can be attached to a tripod using a standard UNC ¼" screw. An additional accessory (MARS Orbiter) is available which rotates the remote Skycontroller UKR on a tripod to ensure that it always faces the aircraft's direction. Refer to [chapter 15. Accessories](#) for more information.

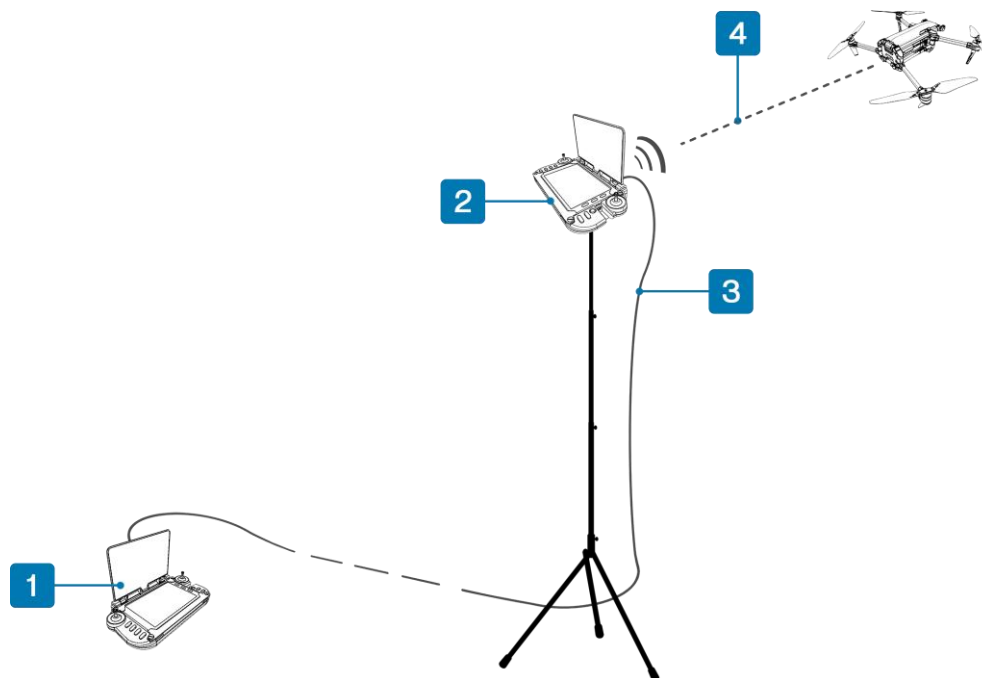


Figure 9: Skycontroller UKR used as a remote antenna

- | | |
|--------------------------------------|-----------------------------|
| 1. Main (piloting) Skycontroller UKR | 3. Cat5 RJ45 ethernet cable |
| 2. Remote Skycontroller UKR | 4. MARS radio link |

9. Skycontroller UKR Mission

The ANAFI UKR mission pack includes a Skycontroller UKR Mission. Skycontroller UKR Mission is a Skycontroller UKR without a radio or antenna. It is designed to be connected with a remote antenna.

Skycontroller UKR's remote antenna feature allows the drone pilot to control the drone from indoors with an external antenna fixed outdoors for optimal radio link performance. The remote antenna Skycontroller UKR can be powered ON and powered OFF remotely via the main (piloting) Skycontroller UKR.

This feature requires:

- A main (piloting) Skycontroller UKR or Skycontroller UKR Mission used to pilot the drone.
- An RJ45 ethernet cable up to 100 m (328 ft) long (minimum classification Cat5).
- A second Skycontroller UKR or MARS Ranger acting as the remote antenna.

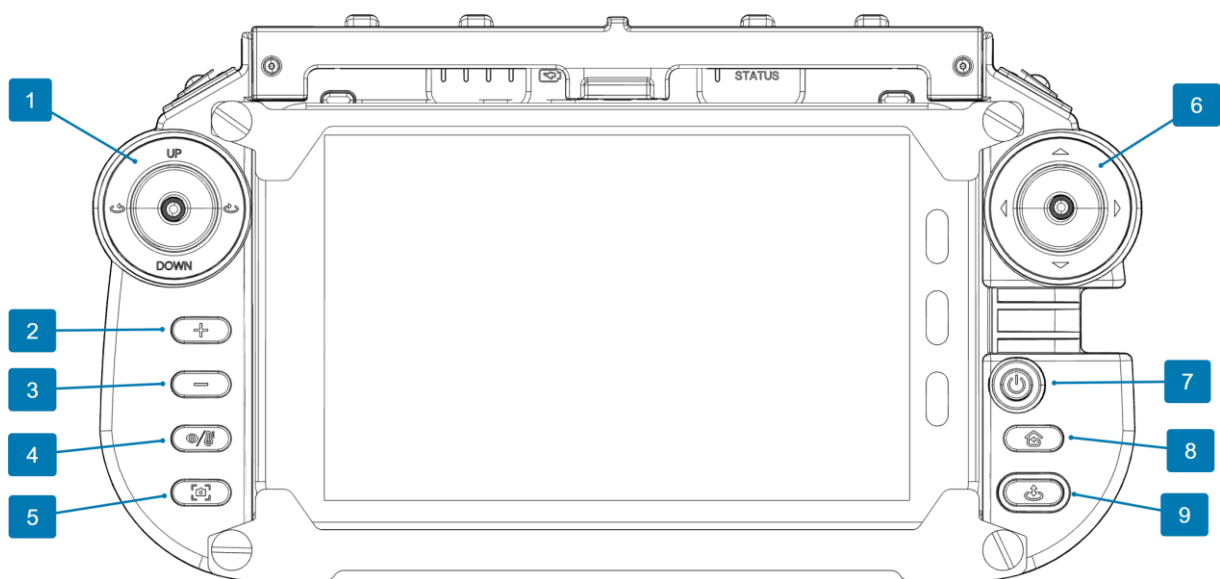


Figure 10: Skycontroller UKR Mission top view

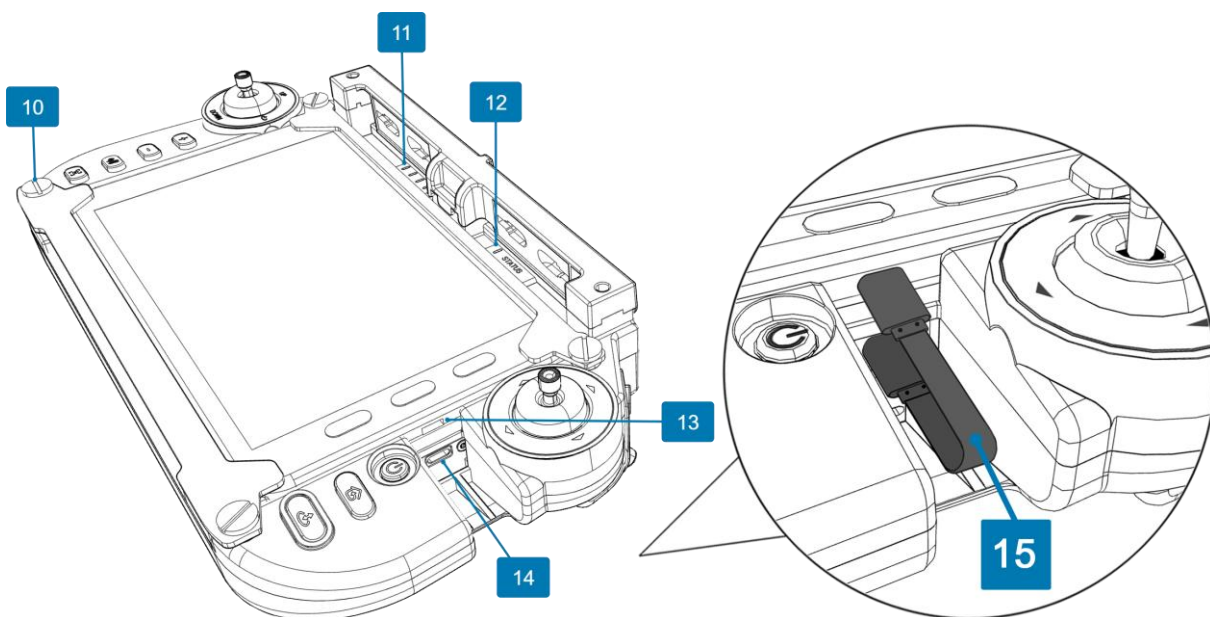


Figure 11: Skycontroller UKR Mission, showing USB-C to USB-C cable

1. Left joystick
2. + EV button
3. – EV button
4.  **Thermal camera activation** button
5.  **Screenshot** button
6. Right joystick
7.  **Power** button
8.  **RTH** (Return to Home) button
9.  **Take-off / Land** button
10. Device retaining screw (1 of 4)
11. Skycontroller UKR battery status LEDs
12. Top charge level LED indicators
13. Tablet USB-C port
14. USB-C Device connection port
15. USB-C to USB-C cable

NOTE: The USB-C to USB-C cable which connects the tablet to Skycontroller UKR Mission comes preinstalled.

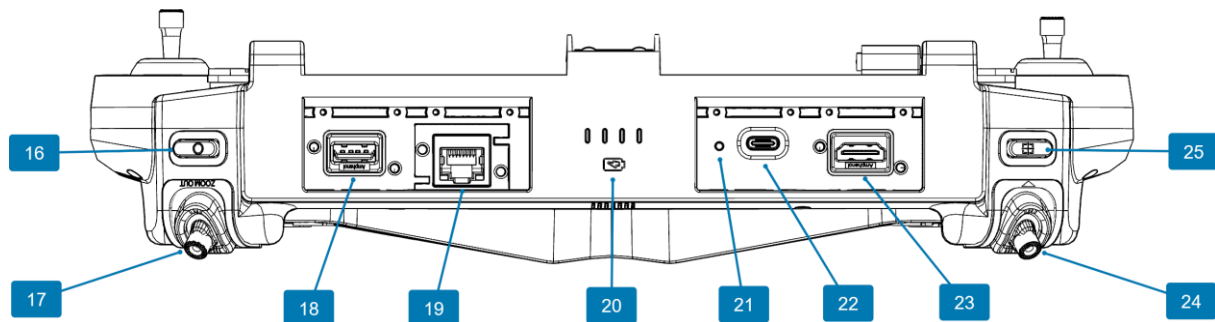


Figure 12: Skycontroller UKR Mission rear view, plastic covers removed

16.  **Shutter** (photo) or Start / Stop recording
17. **Zoom** trigger (right)
18. USB-A port
19. Ethernet port
20.  **Rear Charge level LED indicators**
21. **Factory reset** button
22. USB-C charging port
23. HDMI port
24. **Gimbal tilt** trigger (left)
25.  **Reset camera** (Zoom and gimbal tilt)

NOTE: Nos. 18, 19, 21, 22, and 23 (Figure 12) are underneath the 4 plastic covers on Skycontroller UKR. The plastic covers are not shown in the image above for clarity.

The device on Skycontroller UKR Mission is held in place by 2 brackets and 4 screws (No. 10 in Figure 11). The device can be removed or replaced by unscrewing the screws and lifting the device out of Skycontroller UKR Mission.

WARNING: If you press  **Take-Off/Land**,  **RTH**, and  **Shutter** simultaneously, the EMERGENCY MODE on the aircraft activates immediately. EMERGENCY MODE instantly cuts power to all motors on the aircraft, which causes the drone to fall from the sky.

The Skycontroller UKR Mission battery charging time is 2 hours.

4 LEDs show the charging status.

The LEDs turn off when charging is complete.

Press and hold the  **Power** button (No. 7 in Figure 10) for 2 seconds to turn on the Skycontroller UKR Mission.

The 4 green LEDs turn on one after the other.

Press and hold the tablet's  **Power** button to turn on the tablet.

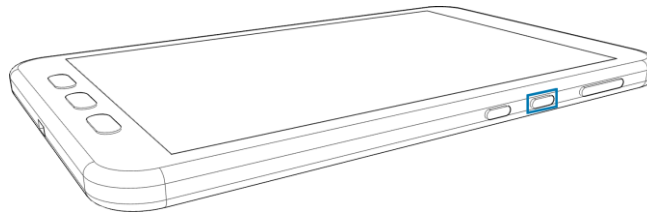


Figure 13: Skycontroller UKR Mission's Android tablet showing the power button

9.1. Connectivity

Skycontroller UKR Mission has the following connectors:

- USB-A port (No. 18 in Figure 12) – used for drone/controller pairing, drone update.
- Ethernet port (No. 19 in Figure 12 – used for remote antenna connection, webserver access.
- USB-C charging port (No. 22 in Figure 12) – used for charging.
- HDMI port (No. 23 in Figure 12) – used for video output.

9.2. HDMI video output

Skycontroller UKR Mission has the same HDMI video output feature as a standard Skycontroller UKR. Refer to [chapter 8.2. HDMI video output](#) for more information.

9.3. LED status indicator color codes

Skycontroller UKR Mission and MARS RANGER have the same LED status indicator feature as a standard Skycontroller UKR. Refer to [chapter 8.3. LED status indicator color codes](#) for more information.

9.4. MARS Ranger

MARS Ranger is a dedicated remote antenna system based on Skycontroller UKR without the piloting interface (MARS Ranger does not include a tablet, the FreeFlight 8 application, or the piloting buttons).

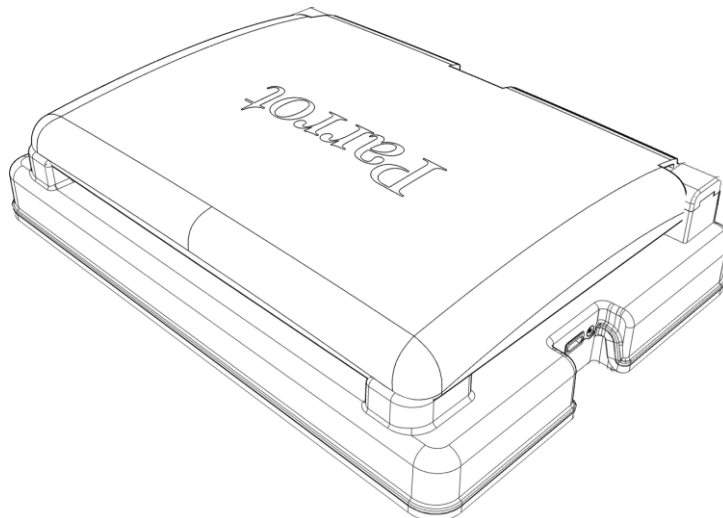


Figure 14: MARS Ranger

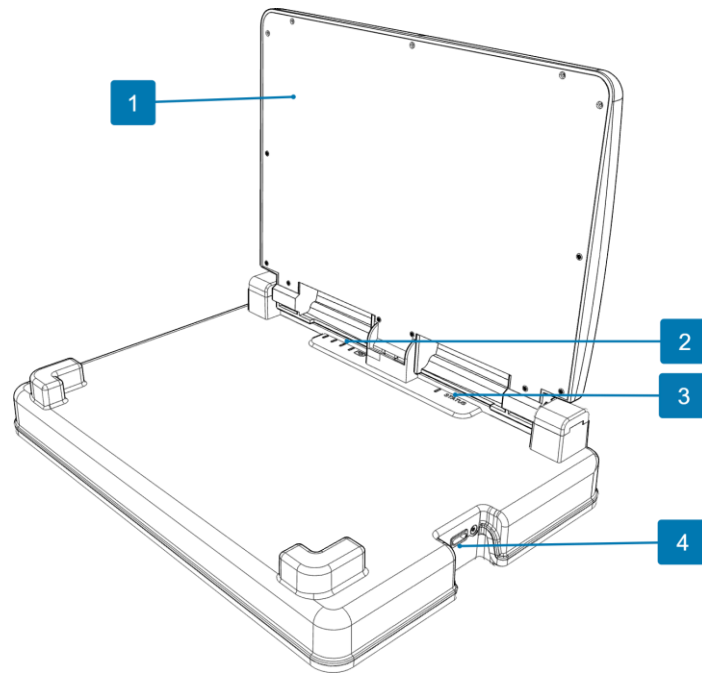


Figure 15: MARS Ranger open

- | | |
|------------------------------------|------------------------------------|
| 1. Antenna | 3. Top charge level LED indicators |
| 2. MARS Ranger battery status LEDs | 4. USB-C port |

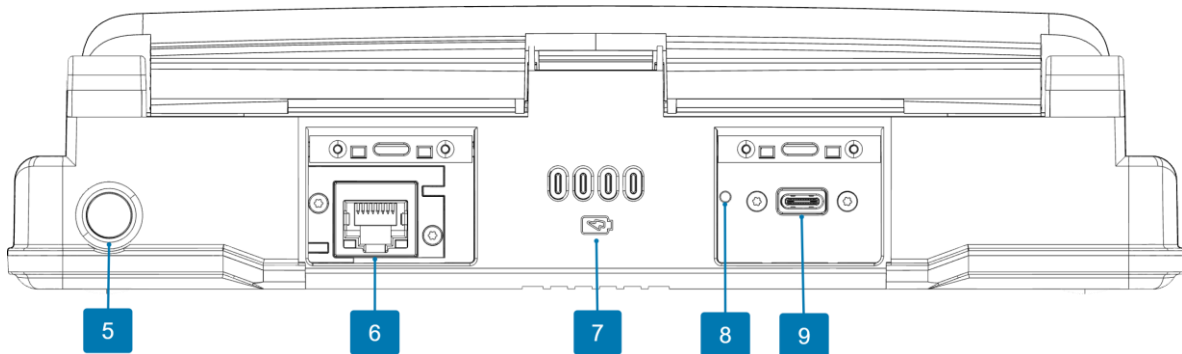


Figure 16: MARS Ranger rear view, plastic covers removed

- | | |
|---|-------------------------|
| 5.  Power button | 8. Factory reset button |
| 6. Ethernet port | 9. USB-C charging port |
| 7.  Rear Charge level LED indicators | |

MARS Ranger has the following connectors:

- Ethernet port (No. 6 in Figure 16) – used for remote antenna connection, webserver access.
- USB-C charging port (No. 8 in Figure 16) – used for charging.

NOTE: Numbers 6, 8, and 9 (Figure 16) are underneath the 2 plastic covers on MARS Ranger. The plastic covers are not shown in the image above for clarity.

When the **Use Remote Antenna** toggle is set to **Yes** in FreeFlight 8, MARS Ranger turns on automatically if it has been activated in the previous 3 hours. Refer to [chapter 13.15.1 Remote Antenna](#) for more information.

If MARS Ranger has not been activated in the previous 3 hours, it goes into deep sleep mode and must be re-activated so that auto power on is enabled again.

To activate MARS Ranger, perform 1 of the following actions:

- A long press on MARS Ranger's power button to power on MARS Ranger.
- A short press on MARS Ranger's power button to enable Wake-on-Lan.
- Connect MARS Ranger via USB-C to a charger.

9.5. Pairing the aircraft to a Skycontroller UKR Mission

Skycontroller UKR Mission and MARS Ranger allow the drone pilot to be in one location and the MARS Ranger remote antenna to be in a second location. This feature requires:

- A Skycontroller UKR Mission used to pilot the drone.
- The provided RJ45 ethernet cable.
- A MARS Ranger.

This allows the drone pilot to control the drone indoors, or in a vehicle for example, with the MARS Ranger fixed outdoors for optimal radio link performance. MARS Ranger can be powered ON and powered OFF remotely via Skycontroller UKR Mission.

The aircraft must be paired with the Skycontroller UKR Mission in order to connect. After the aircraft and controller are paired, they remember each other. Follow this procedure to pair an aircraft and a controller for the first time, and to restore the lost pairing between an aircraft and a controller.

1. Ensure that the MARS Ranger is activated (refer to [chapter 9.4 MARS Ranger](#) for more information)
2. Connect the Skycontroller UKR Mission and the MARS Ranger via the provided RJ45 cable.
3. Power on the Skycontroller UKR Mission.

The MARS Ranger automatically powers on; the MARS Ranger status LED is switched off.

4. Power on the aircraft.
5. Connect the aircraft and the Skycontroller UKR Mission with a USB cable (USB-A connection to the USB-A port under the Skycontroller UKR Mission plastic cover, USB-C connection to the drone).

NOTE: Ensure that you connect ANAFI UKR via the USB-C port on the underside of the drone, not the USB-C port on the battery

The Skycontroller UKR Mission status LED blinks green to indicate it acknowledges the aircraft, and to establish pairing protocols.

6. Wait for synchronization between Skycontroller UKR Mission and the aircraft.

The status LED turns solid blue when the aircraft and the Skycontroller UKR Mission are connected, and FreeFlight 8 displays a message **Pairing successful**.

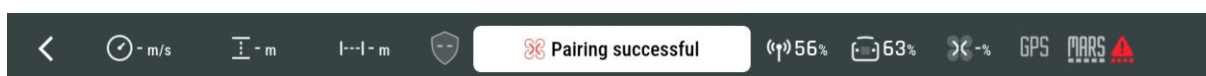


Figure 17: Pairing successful – remote antenna icon

7. Verify that the left trigger of the Skycontroller UKR Mission activates the aircraft's gimbal to ensure the synchronization is complete.

8. Disconnect the USB cable between Skycontroller UKR Mission and aircraft

The MARS Ranger can be attached to a tripod using a standard UNC ¼" screw. An additional accessory (MARS Orbiter) is available which rotates the MARS Ranger on a tripod to ensure that it always faces the aircraft's direction. Refer to [chapter 15. Accessories](#) for more information.

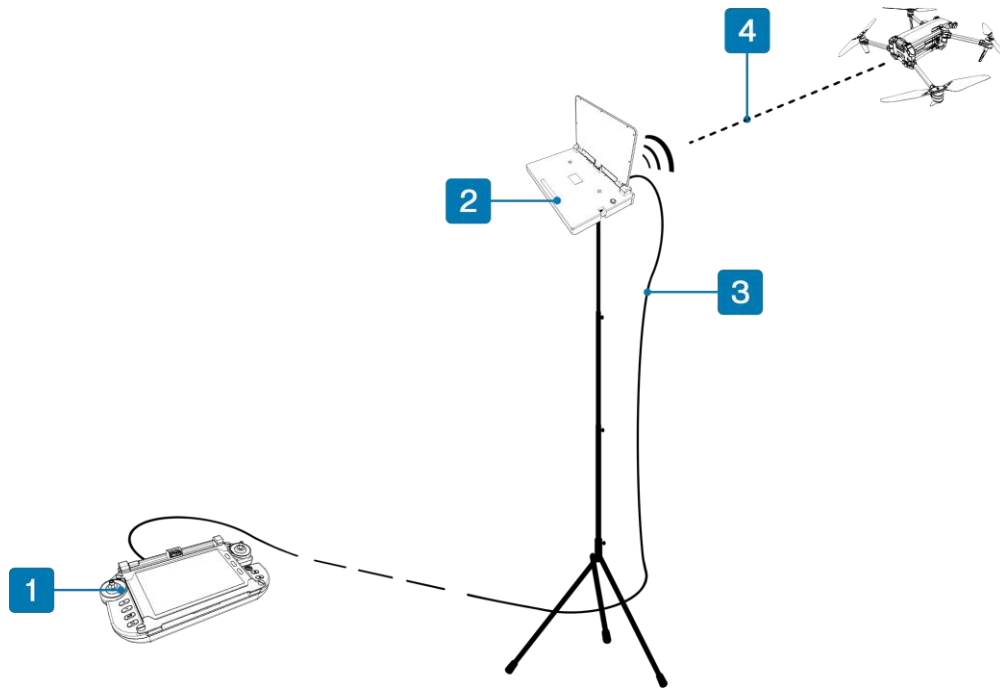


Figure 18: MARS Ranger used as a remote antenna

- | | |
|------------------------------|-----------------------------|
| 1. Skycontroller UKR Mission | 3. Cat5 RJ45 ethernet cable |
| 2. Remote MARS Ranger | 4. MARS radio link |

9.6. Cloud antenna

The Skycontroller UKR Mission can remotely connect to the MARS Ranger via an internet network, eliminating the need for an Ethernet cable.

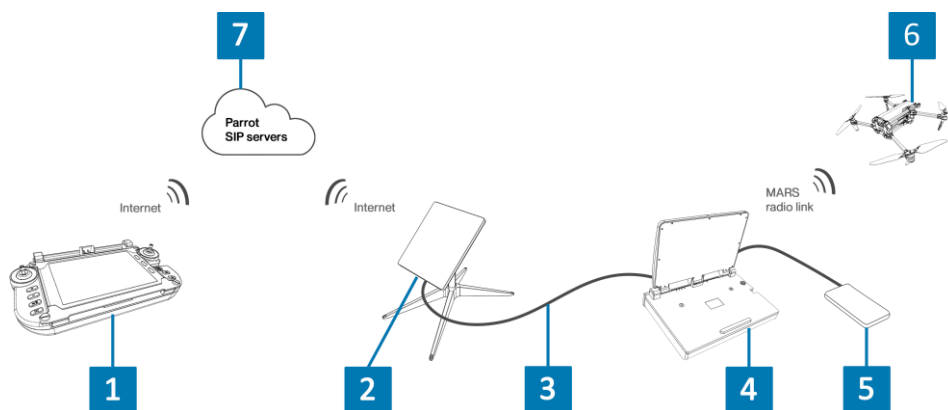


Figure 19: MARS Ranger as a remote antenna using Starlink Mini

- | | |
|------------------------------|-----------------------|
| 1. Skycontroller UKR Mission | 5. Power bank |
| 2. Starlink Mini | 6. ANAFI UKR |
| 3. Ethernet cable | 7. Parrot SIP servers |
| 4. MARS Ranger | |

9.6.1. Prerequisites

The cloud antenna feature requires:

- An internet connection on the tablet connected to Skycontroller UKR Mission.
- A MARS Ranger paired at least once with a FreeFlight 8 user account. To pair the MARS Ranger:
 - a. Power on MARS Ranger.
 - b. Connect the tablet running FreeFlight 8 to the MARS Ranger via the USB-C port.

NOTE: The FreeFlight 8 account can be a Parrot cloud account or an anonymous account.

- An aircraft paired at least once with the Skycontroller UKR Mission. Refer to [*chapter 9.5 Pairing the aircraft to a Skycontroller UKR Mission*](#) for more information.

After the MARS Ranger is paired with FreeFlight 8 user account, it can be connected to the Skycontroller UKR. It is able connect if it is switched on or switched off but connected to a power bank:

1. Connect MARS Ranger to a power bank via the USB-C charging port (only required if MARS Ranger is switched off).
2. Connect the MARS Ranger to the internet.

NOTE: You can use a Starlink system to connect MARS Ranger to the internet.

MARS Ranger registers with the Parrot server as soon as it connects to the internet.

After MARS Ranger registers with the Parrot server, it becomes visible as a cloud antenna on the FreeFlight 8 **Remote Antenna** screen under **Select your remote antenna**.

3. Tap the cloud antenna.

The cloud antenna connects after a few seconds:

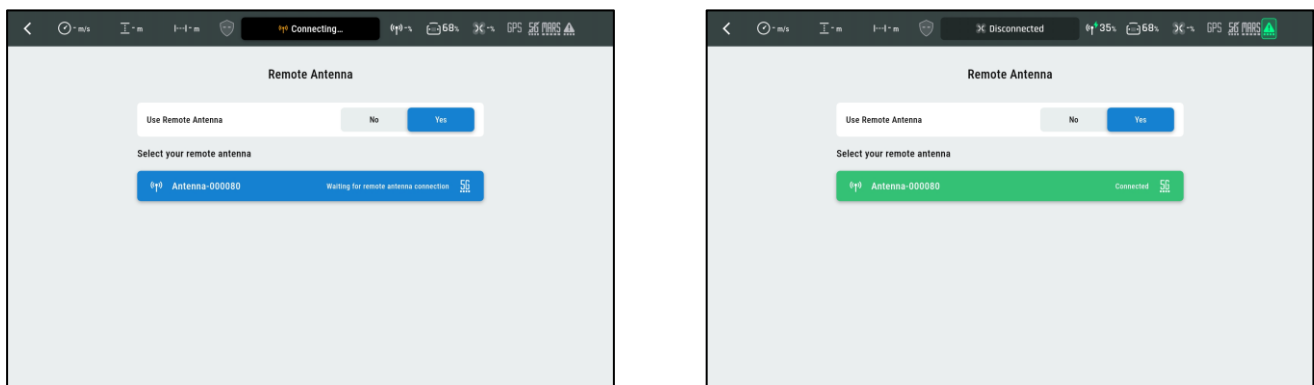


Figure 20: Cloud antenna connection

After the cloud antenna connects to FreeFlight 8, the battery level of the cloud antenna displays in the FreeFlight 8 top bar.

10. Piloting basics

The user has 2 options for taking off: ground take-off or hand launch.

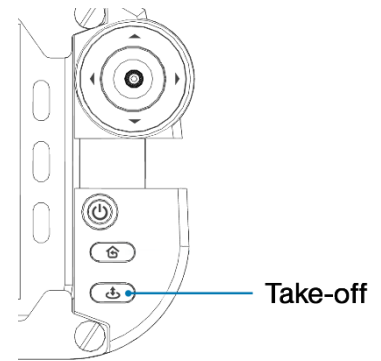
10.1. Ground Take-off

1. Turn on the drone and the controller.
2. Position the drone on a flat, even, and clear surface.

For optimal performance, Parrot recommends that you use the launch pad for ground take-off.

The video stream of the camera is visible on the tablet.

3. Press the  **Take-off / Land** button on Skycontroller UKR.
4. The drone takes off and hovers 1 m / 3 ft above the take-off point.



10.2. Hand launch

Hand launch is enabled by default in FreeFlight 8. However, it can be disabled from the RTH and Safety settings page (Refer to [chapter 13.5. RTH](#) for more information).

You can perform the hand launch procedure alone. However, Parrot recommends that you work as a team of 2 people.

WARNING: Do not attempt a hand launch procedure if FreeFlight 8 does not display the **Handlaunch AVAILABLE** interface. Do not obstruct the downward facing camera, or any of the sensors underneath the drone.

Pay attention to the wind direction and speed. Do not face the wind. Keep yourself at a safe distance from the drone considering the possibility of drifting with the wind.

1. Power on the drone.
2. Position the drone on your flat, open hand.

The **Handlaunch AVAILABLE** interface opens on FreeFlight 8.

3. Press  **Take-off / Land** on the Skycontroller UKR, or tap **Start** on the FreeFlight 8 **Handlaunch** interface.

The Hand launch **STARTING** message appears on FreeFlight 8. The drone's propellers start to rotate slowly, and a 3-second countdown timer starts with a hand animation. When the timer reaches 0, the message **LAUNCH** appears.

NOTE: You can abort the hand launch procedure at any time before you launch the drone by tapping **Stop**.

4. Throw the drone up and forward with your open hand. Aim for 1 meter in front of you.

The drone becomes airborne. It stabilizes and waits for commands from the pilot.

CAUTION: Certain environments are not suitable for ground take-off, and so the hand launch procedure must be used. Use hand launch in the following environments:

- Sandy environments
- Wet or snowy ground
- Tall grass

10.3. Flying

Flying is controlled with the joysticks. Skycontroller UKR has 2 button configurations. Mode 2 is the default configuration.

Left joystick (mode 2)

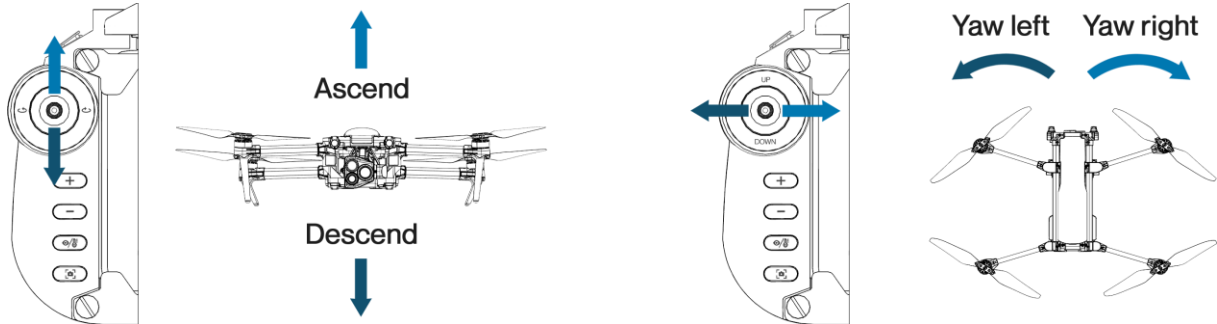


Figure 21: Left joystick

Right joystick (mode 2)

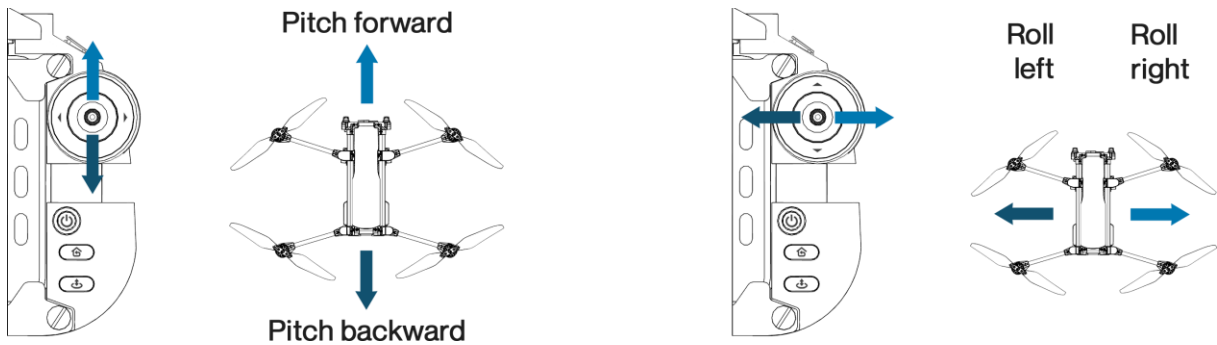


Figure 22: Right joystick

For more information on how to change the button configuration mode, refer to [chapter 13.15. Controller](#).

10.4. Gimbal controls

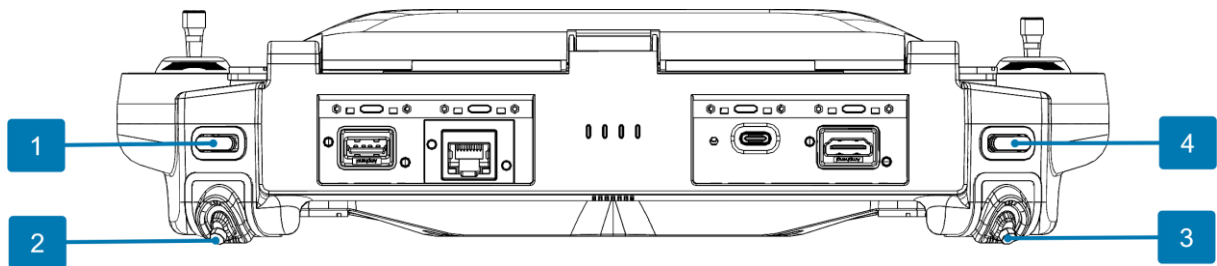


Figure 23: Gimbal and camera controls

- | | |
|---|--|
| <p>1. Shutter:</p> <ul style="list-style-type: none">○ In Video mode: stop and start recording.○ In Photo mode: take a picture. <p>2. Zoom:</p> <ul style="list-style-type: none">○ From x1 to x35 | <p>3. Gimbal tilt:</p> <ul style="list-style-type: none">○ From 90° to -90° <p>4. Reset camera:</p> <ul style="list-style-type: none">○ Reset the zoom to x1.○ Place the gimbal horizontally. |
|---|--|

10.4.1. Advanced zoom controls

You can control the zoom using short or long full-tilt presses on the zoom joystick (*No. 2 in Figure 23*):

- Short full-tilt press (less than 0.4 seconds): skips up or down to the closest zoom level preset
- Long full-tilt press (more than 0.4 seconds): skips up or down to the extreme zoom level preset

The available zoom level presets are:

- Minimum Wide: Minimum zoom of the wide-angle camera
- Minimum Thermal: Minimum zoom of the thermal camera (available in Thermal mode only)
- Minimum Telephoto: Minimum zoom of the telephoto camera
- Maximum Telephoto: Maximum zoom of the telephoto camera

10.5. Landing

Press the  **Take-off / Land** button at any altitude to land the drone.

Press the  **Take-off / Land** button a second time to abort the landing process at any time during the landing.

Alternatively, the user can also land the drone by flying the drone to minimum altitude (1 m /3.3 ft above the ground) and maintaining the left joystick in the down direction for 3 seconds.

An animation is displayed in the FreeFlight 8 HUD during the landing phase:



10.6. Hand Landing

In some environments such as sand, snow or tall grass, it is preferable to land in the pilot's hand rather than on the ground.

The Hand Landing procedure initiates if the aircraft detects a hand during the landing phase. The aircraft software runs a vision algorithm on the bottom stereo camera images to detect a hand.

The procedure to initiate a hand land is described below:

1. Fly the aircraft at least 1 m (3 ft) directly over your open hand, with your arm extended.
2. Press  **Take-off / Land**.
3. If necessary, the aircraft rotates to align perfectly with your hand.
4. The aircraft slowly and safely lands on your hand

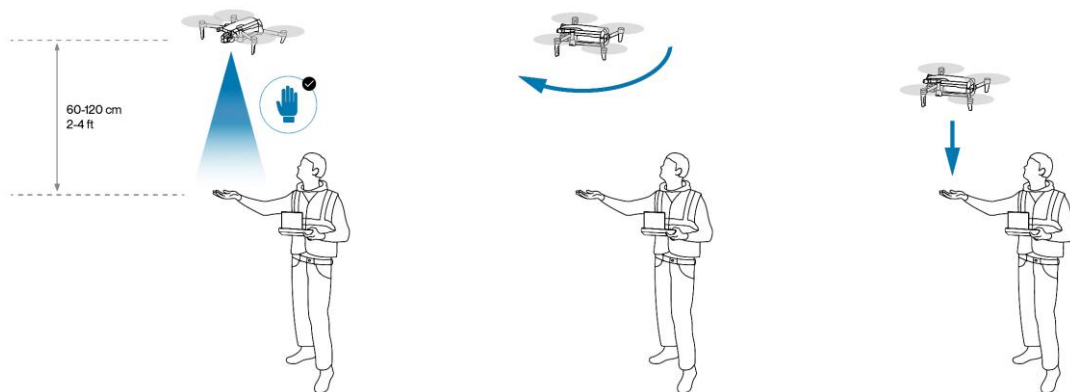


Figure 24: Hand landing procedure

NOTE: During a landing procedure, if the aircraft is still flying at more than 100 cm (3 ft) from your hand, you can extend your arm under the aircraft, with your hand open. The aircraft recognizes your hand and proceeds with the hand landing described above.

You can perform the hand landing procedure alone. However, Parrot recommends that you work as a team of 2 people.

Do not attempt a hand landing in wind strong enough to make the aircraft fight to hold its hovering position. FreeFlight 8 displays a popup as soon as the drone detects your hand. For your safety, if the hand has not been detected, it is recommended to remove your hand and let the drone land on the ground.

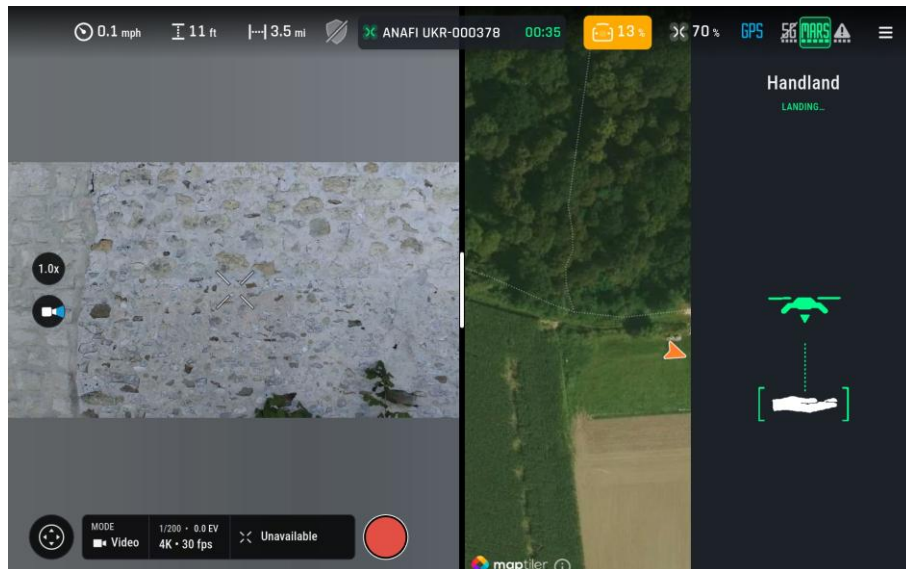


Figure 25: Handland

You can perform the hand landing procedure alone. However, Parrot recommends that you work as a team of 2 people.

Do not attempt a hand landing in wind strong enough to make the aircraft fight to hold its hovering position.

Let the aircraft do the work. Do not forcefully grab the aircraft while it is hovering.

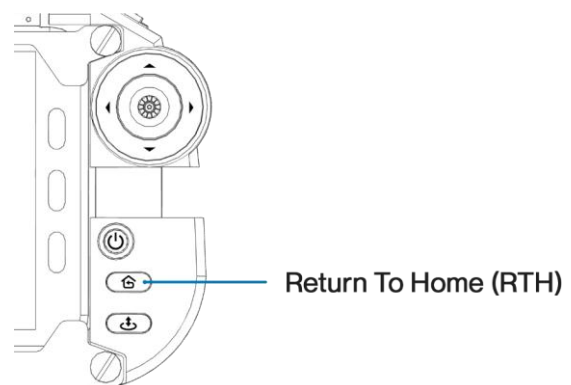
Pay attention to the wind direction and speed. Keep yourself at a safe distance from the drone considering the possibility of drifting with the wind.

10.7. Return to Home

Return to Home is an important safety function. At any time, the pilot can request the aircraft to reach its home position by pressing the Skycontroller UKR's  **Return to Home** button.

3 options are available in FreeFlight 8 setting for the home position:

1. Take-off position
2. Pilot position



3. Custom position defined by the pilot

Refer to [chapter 13.5. RTH](#) for more information.

When the return to home procedure is underway, press the  **Return to Home** button again to cancel the procedure.

On the FreeFlight 8 display:

- A return to home reminder blinks in the center of the display.
- The return path is shown on the map.
- Tap **Stop** to cancel the Return to Home procedure.

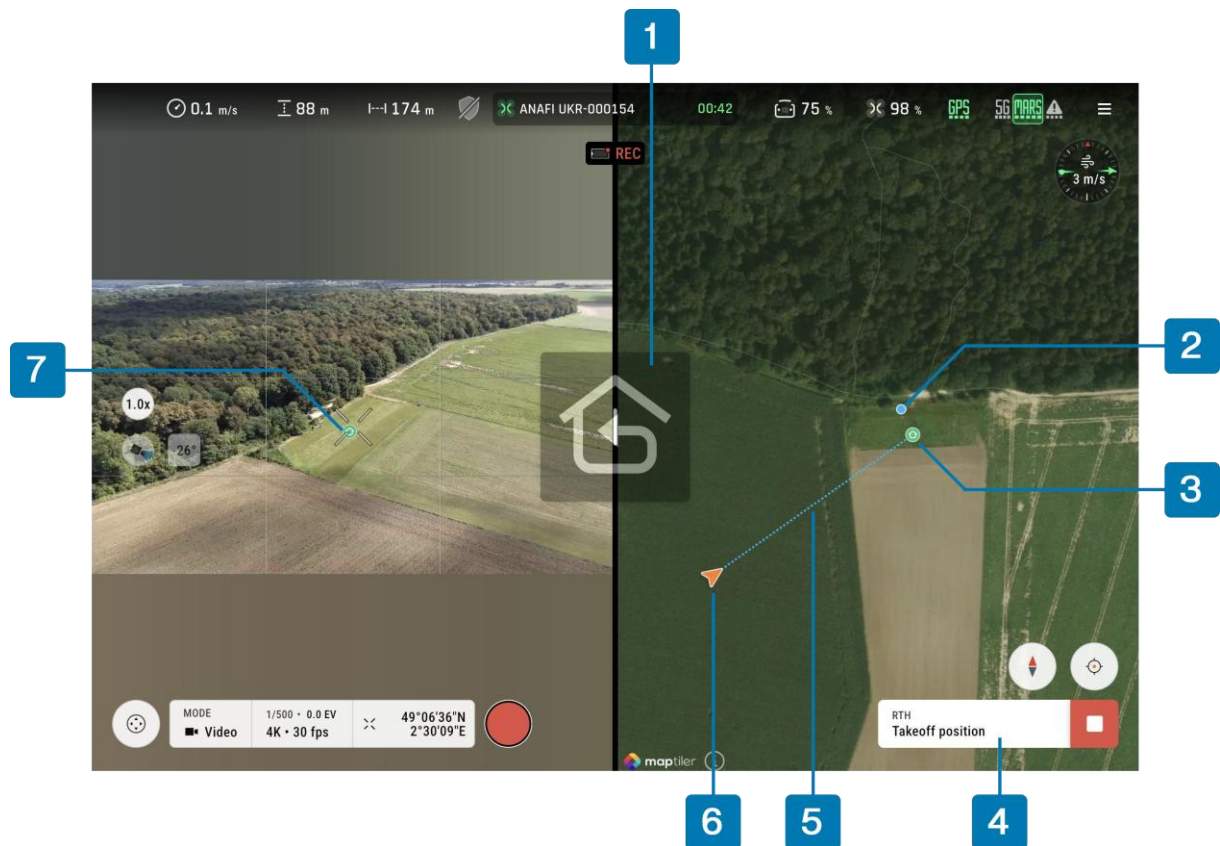


Figure 26: Return to Home in progress

- | | |
|--|---------------------------------|
| 1. RTH animation | 5. RTH return path |
| 2. Map view Skycontroller UKR position | 6. Aircraft position |
| 3. Map view Home position | 7. Streaming view Home position |
| 4. RTH action bar with Stop button | |

11. FreeFlight 8

The FreeFlight 8 HUD (heads-up display) allows the user to control all aircraft features from the Skycontroller UKR screen.

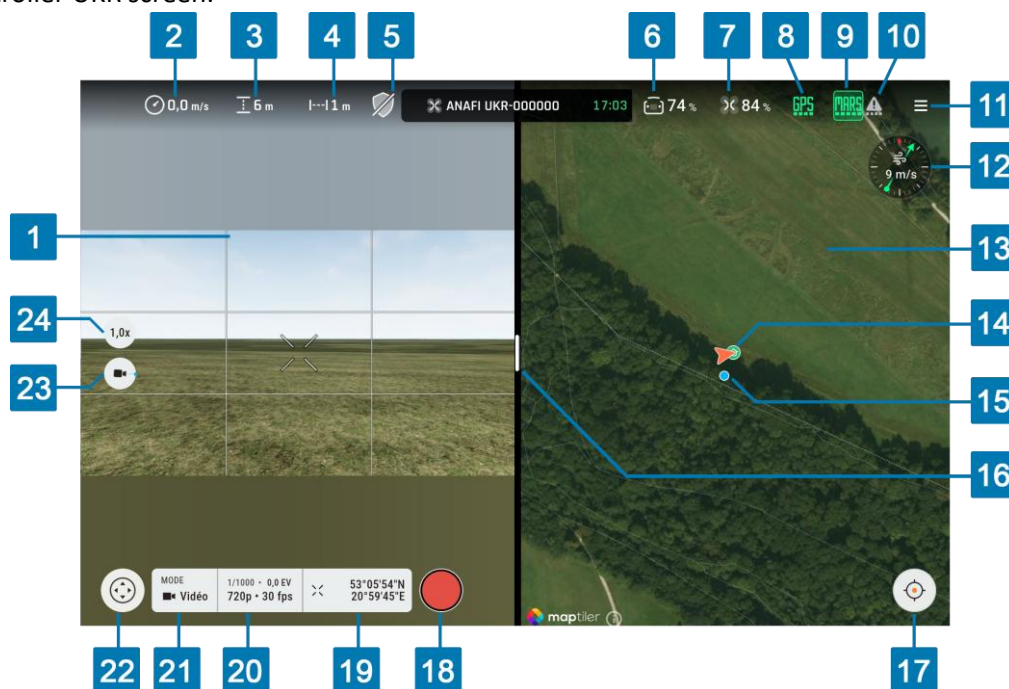


Figure 27: FreeFlight 8 main HUD

- | | |
|---------------------------------|--------------------------------|
| 1. Streaming view | 13. Map view |
| 2. ⌚ Ground speed | 14. Home point |
| 3. ⚡ ATO/ AMSL toggle | 15. Skycontroller UKR position |
| 4. 📏 Distance to home | 16. Split view slider |
| 5. 🛡️ Obstacle avoidance status | 17. 📍 Map center toggle |
| 6. 🔋 Controller battery level | 18. 📹 Recording status |
| 7. 📶 Drone battery level | 19. 🎯 Cursor on Target |
| 8. 📶 Navigation status | 20. 📷 Exposure adjustments |
| 9. 📶 MARS main radio status* | 21. 📷 Image MODE |
| 10. 📶 LoRa backup radio status | 22. 🔄 Flight mode selector |
| 11. ☰ Settings | 23. 📷 Gimbal pitch |
| 12. 🌀 Wind speed and direction | 24. 🔍 Zoom level |

NOTE: You can toggle between Altitude above take-off (ATO) and Altitude above Mean Sea level (AMSL) by tapping No. 3 in Figure 27.

The main view of FreeFlight 8 displays all the information and controls for every phase of flight.

The status bar at the top of the screen permanently shows the most important telemetry data.

** Available icons depend on individual configurations.*

The flight screen is split into two parts:

- The Streaming view (No. 1 in Figure 27),
- The Map view (No. 13 in Figure 27).

Drag the Split view slider (No. 16 in Figure 27) to the left or to the right to adjust the size of the streaming view and the map view.

At the bottom of the main flight view, users can select the flight mode (No. 22 in Figure 27), configure imaging modes (No. 21 in Figure 27), and center the map view (No. 17 in Figure 27).

Obstacle avoidance status:

	OA disabled by user
	OA enabled by user and engaged by supervisor
	OA enabled by user and disengaged by supervisor

Navigation status:

	GNSS navigation (21 satellites or more)
	GNSS navigation (14-20 satellites)
	GNSS navigation (10-13 satellites)
	GNSS navigation (9 satellites or less)
	Optical navigation
	Aero navigation

MARS (Military Adaptive Radio System) main radio status:

	Connected
	Disconnected

Wi-Fi main radio status:

	Connected
	Connection degraded
	Connection poor
	Disconnected

Cellular radio main radio status:

	Connected
	Connection degraded
	Connection poor
	Disconnected

LoRa backup radio status:

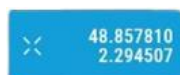
	Backup radio not in use
	Backup radio configuration error

	Backup radio configured but no packet is exchanged
	Controller and drone are exchanging packets

11.1. Cursor on Target

Cursor On Target displays the absolute coordinates of the point at the center of the streaming view. This function works with or without GPS.

When **Cursor On Target** is activated, click on the widget in the bottom bar to display detailed information about the target coordinates and distance to the drone.



The coordinates system can be changed in the Interface settings (Refer to [chapter 13.10. Interface](#) for more information).

In addition to the point coordinates, both the relative vertical and horizontal distance between the drone and the center point are also displayed.

The center point is shown in the map view. The center point coordinates estimation accuracy is represented by an ellipse in the map if the Cursor On Target bottom bar is deployed.

Cursor On Target is available in all Flight modes. In Tracking mode, if a target on the ground has been selected, Cursor On Target displays the coordinates of the target.

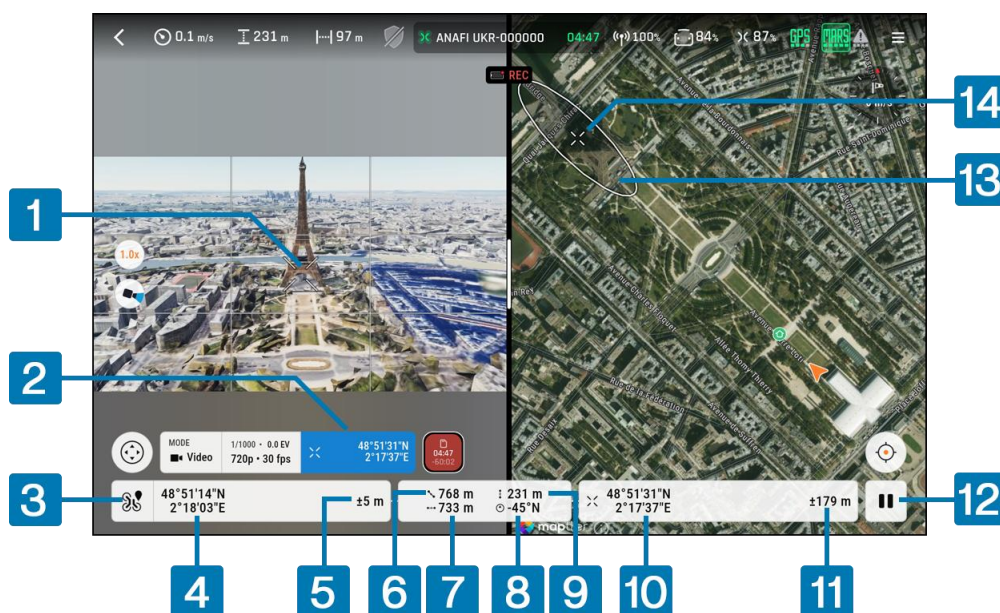


Figure 28: Cursor on Target

- | | |
|---|----------------------------------|
| 1. CoT Reticle | 8. Azimuth in relation to North |
| 2. Target coordinates | 9. Slant range |
| 3. Aircraft/GCS coordinates toggle | 10. Target coordinates |
| 4. Drone coordinates | 11. Target position accuracy |
| 5. Drone position accuracy | 12. Freeze coordinate updates |
| 6. Drone vertical distance to target | 13. Accuracy ellipse |
| 7. Drone horizontal distance to target | 14. CoT reticle in map view |

Press and hold on the coordinates (Nos. 4 and 10 in [Figure 28](#)) to share the displayed data to third party apps.

11.2. Landmarks

You can set a landmark with a long press in the FreeFlight 8 map view. Landmarks can be useful to easily identify points of particular interest in both the FreeFlight 8 map view and streaming view.

You can set a landmark with a long press in the map view.

FreeFlight 8 creates the landmark at ground level. To determine the ground elevation at the landmark location, FreeFlight 8 uses DTED maps if they are available on the drone. If not, it uses an internet API. If neither is available, FreeFlight 8 uses the ground elevation at the takeoff location (flat ground assumption).

You can move a landmark by dragging it in the map view.

You can select a landmark by tapping it in the map view. The coordinates of the selected landmark are indicated. The selected landmark can be deleted by tapping on the bin button close to its coordinates.

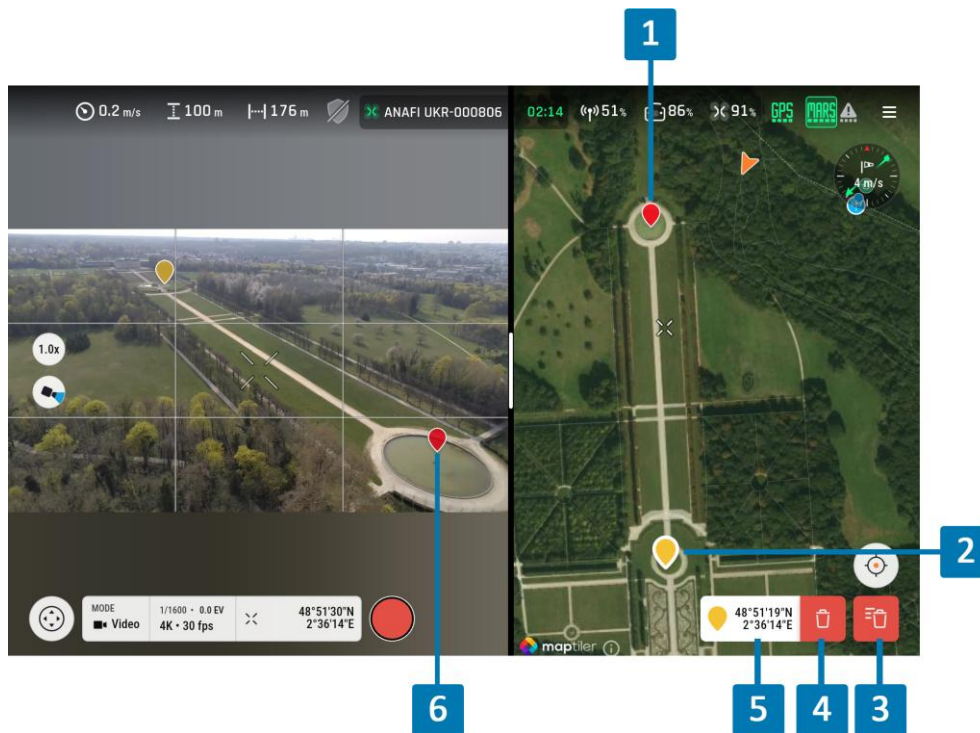


Figure 29: Landmarks

- | | |
|---------------------------------|----------------------------------|
| 1. Landmark (map view) | 5. Selected landmark coordinates |
| 2. Selected landmark (map view) | 6. Landmark (streaming view) |
| 3. Delete all landmarks | |
| 4. Delete selected landmark | |

11.3. Image mode

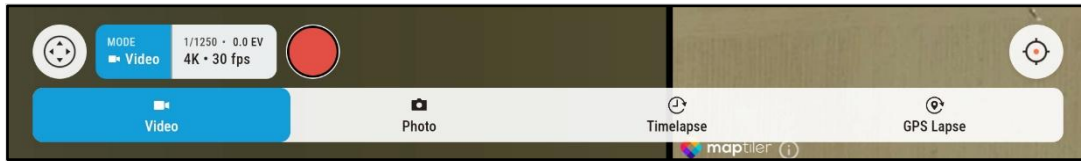


Figure 30: Video and photo modes

Four imaging modes can be configured in the bottom bar:

- **Video**
 - The user can configure the video resolution and video framerate:

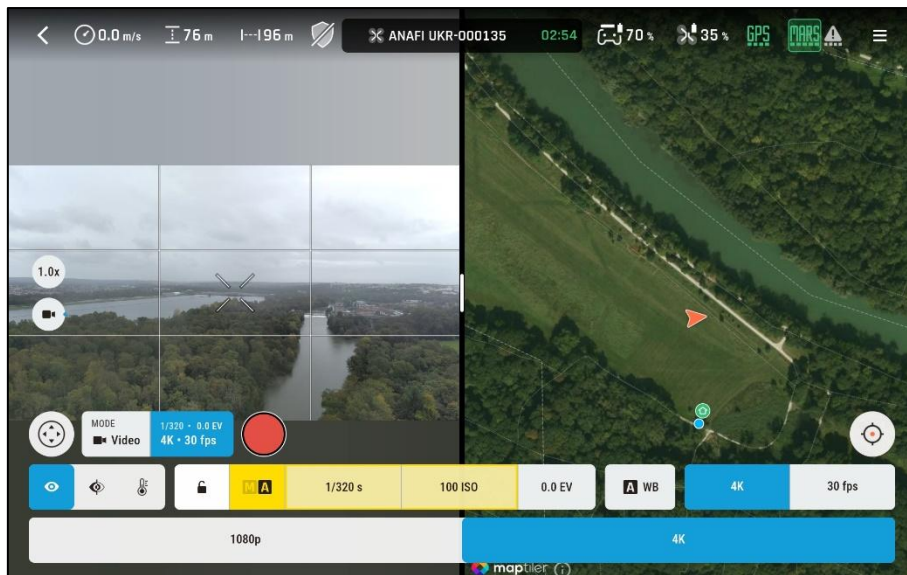


Figure 31: Video resolution configuration

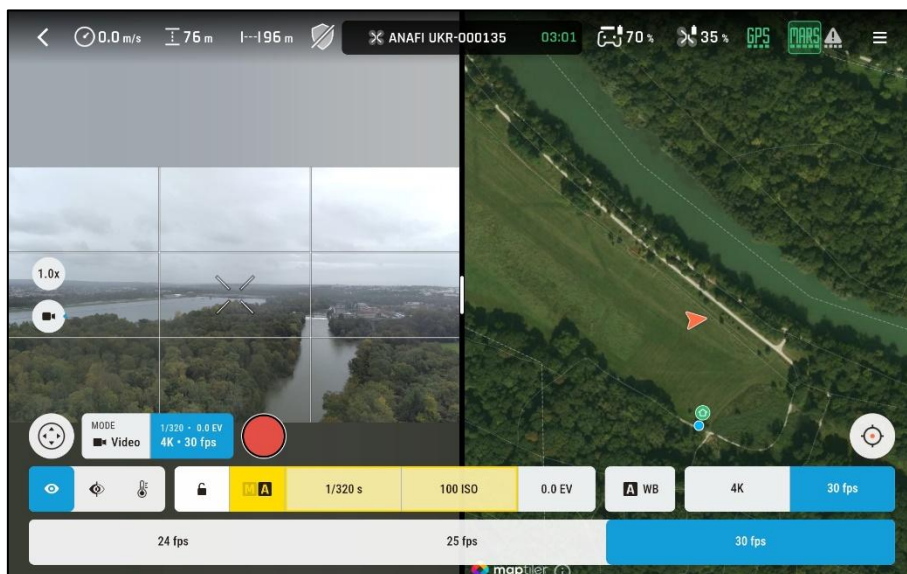


Figure 32: video framerate configuration

- **Photo single**
 - Photo resolution is fixed to 21 MP on the aircraft
 - You can configure the photo file format, 4 formats are available:

- **JPEG:** a rectilinear image encoded in a jpeg file format is recorded on the drone media storage
- **DNG+JPEG:** raw image is recorded in addition to the rectilinear image

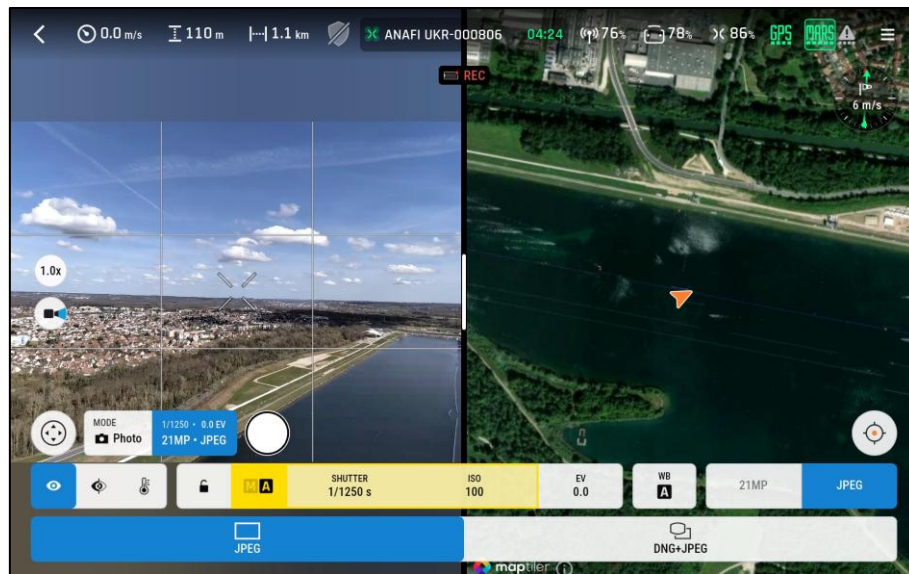


Figure 33: photo file format configuration

- **Timelapse**
 - One photo per time interval (from 1 s to 60 s)

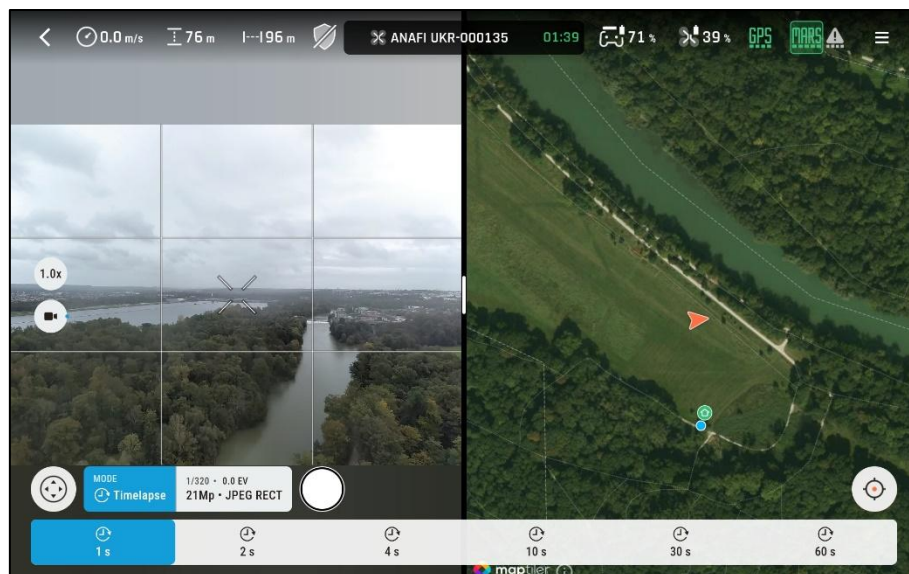


Figure 34: Timelapse period

- **GPS lapse**
 - One photo per distance interval (from 0.5 m to 200 m / 2 ft to 656 ft)

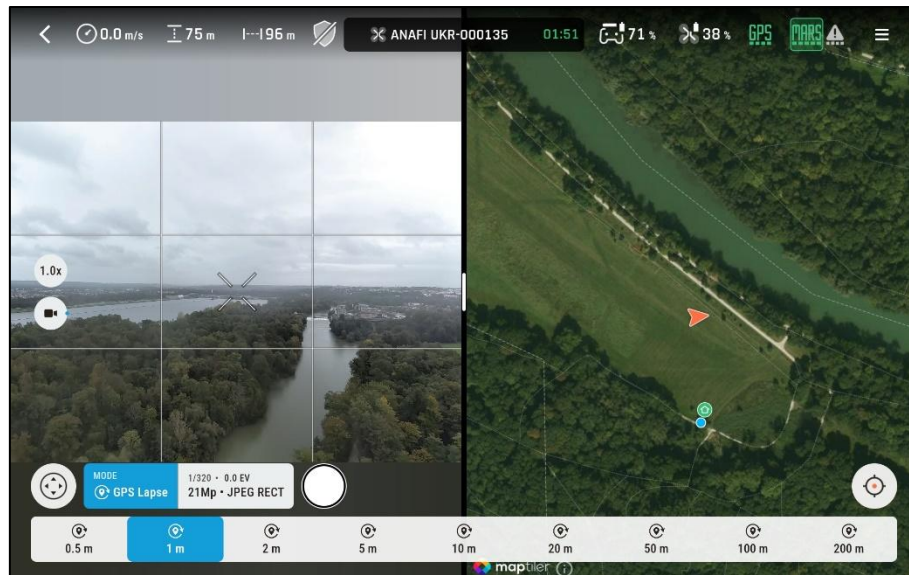


Figure 35: GPS lapse distance

11.4. Exposure adjustments

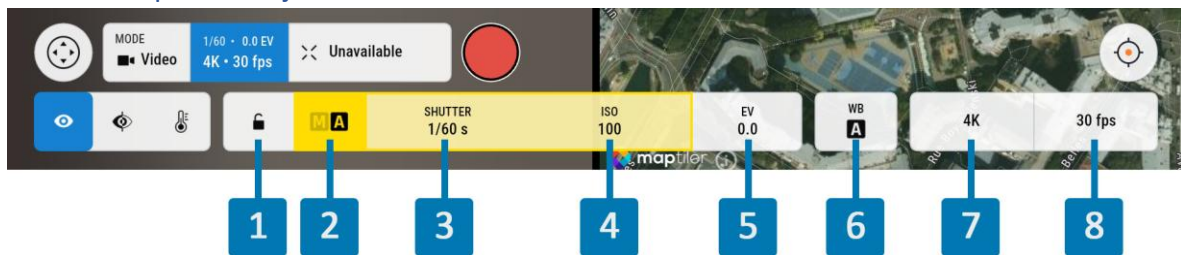


Figure 36: Automatic exposure

- | | |
|---------------------------------------|----------------------------------|
| 1. Lock/Unlock exposure toggle | 5. EV correction |
| 2. Manual/Auto exposure toggle | 6. White Balance |
| 3. SHUTTER speed | 7. Photo/Video resolution |
| 4. ISO value | 8. Video framerate |

The user can control **Image exposure** manually or automatically.

11.4.1. Auto exposure mode

Auto exposure mode is activated by default.

In **Auto** exposure mode, **Shutter** speed and **ISO** parameters are adjusted automatically depending on the scene. You can configure manually **Shutter** speed or **ISO** parameters, and the other one will be adjusted automatically to keep correct exposure in the whole scene.

In **Auto** exposure mode, you can configure EV correction from **-3.0EV** to **+3.0EV** by using the **EV** slider or the + and – buttons on the Skycontroller.

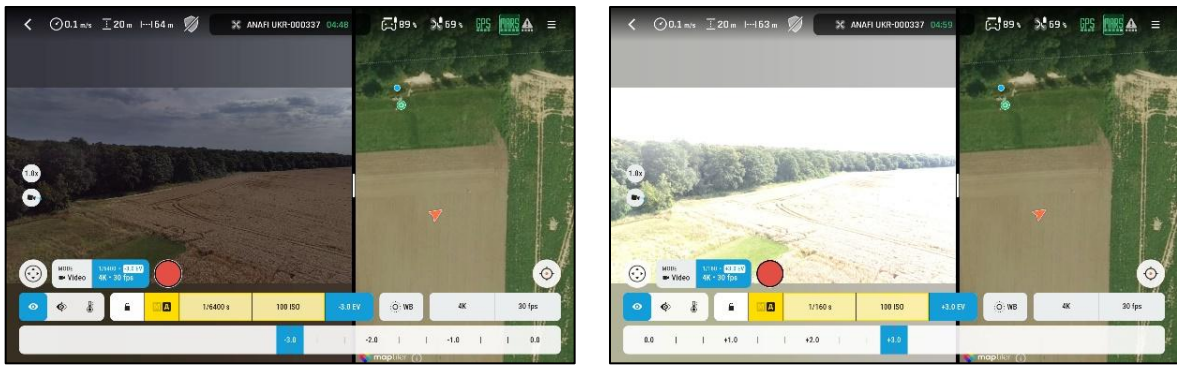


Figure 37: Imaging - Exposure correction -3EV to +3EV

In **Auto** exposure mode, there are two methods to lock the exposure:

- Tap the **Lock** on the left-hand side of the screen to lock the exposure parameters to their current value
- A long-press gesture anywhere in the streaming view to adjust and lock the exposure parameters for that particular region of interest in the scene:

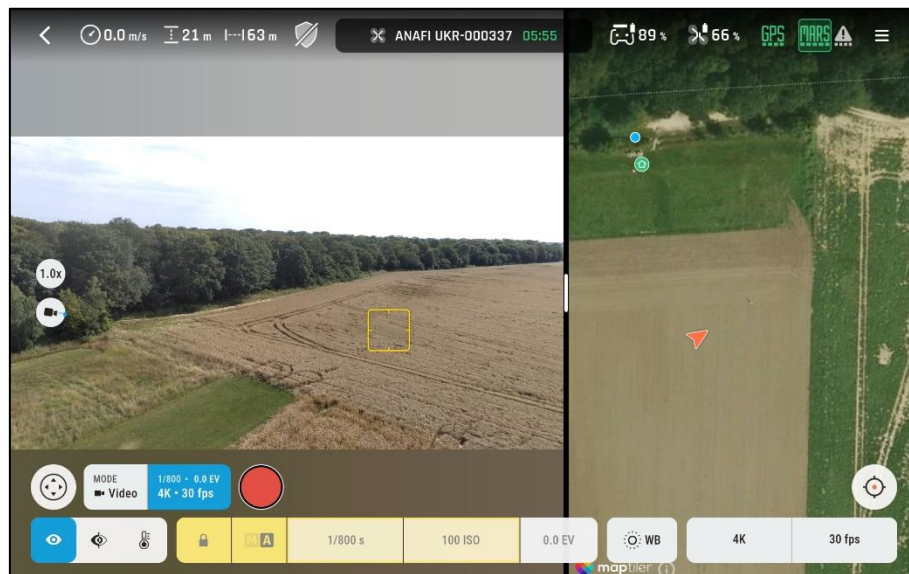


Figure 38: Exposure lock by a long touch on a Region of Interest (ROI) in the streaming view

When the exposure is locked, a message displays in the HUD:

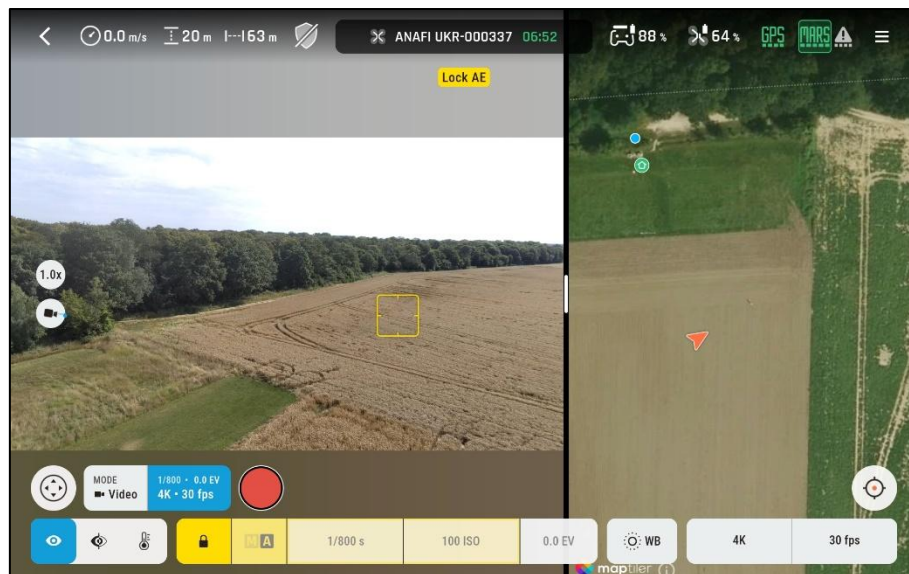


Figure 39: Lock AE message in the HUD

11.4.2. Manual exposure mode

Tap the **Manual/Auto** selector button to switch to **Manual** exposure mode.

In **Manual** exposure mode there is no automatic control of the exposure and therefore the image might be over-exposed or under-exposed. Exposure lock is not available in Manual mode.

In **Manual** exposure mode, you configure both shutter speed and ISO value manually

11.5. White balance

You can control **White Balance** automatically or manually:



Figure 40: White balance automatic mode

5 predefined modes are available:

- Incandescent
- Fluo
- Sunny

SKYCONTROLLER UKR

- Cloudy
- Shaded

In **Custom** mode you can directly select the color temperature:

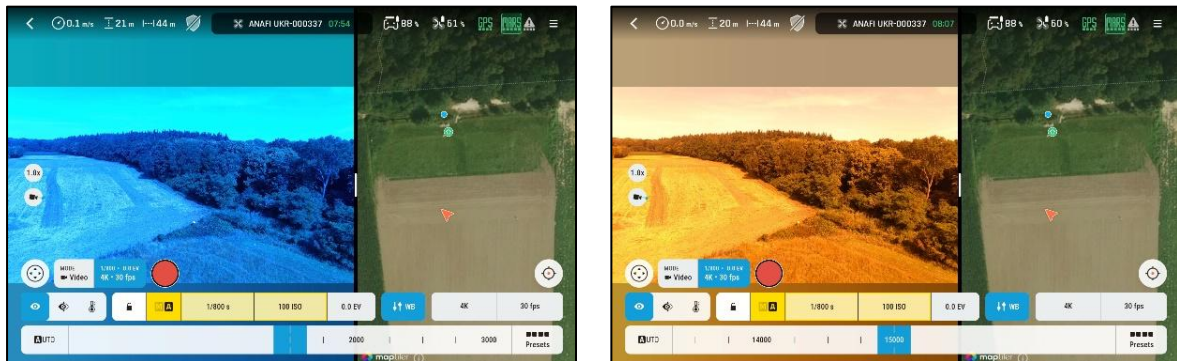


Figure 41: Manual white balance adjustment

11.6. Thermal camera

Activate **Thermal** mode through a dedicated button on the Skycontroller UKR, refer to [chapter 8. Skycontroller UKR](#) for more information.

Alternatively, activate the Thermal camera via Imaging bottom bar, and choose between **Visible** mode, **Thermal blending** mode, and **Thermal only** mode.

11.6.1. Blending mode

In blending mode the raw thermal image is colorized with the plasma colormap and blended with visible image:

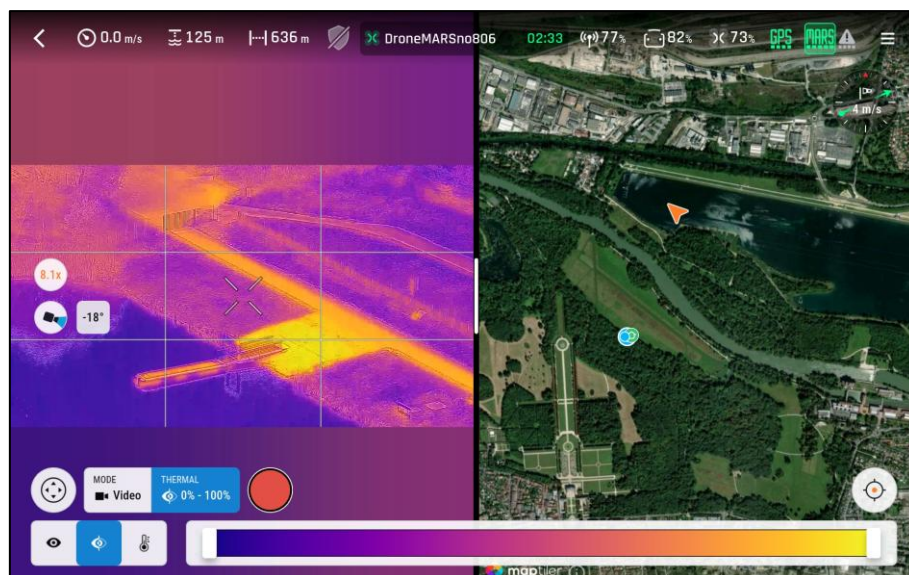


Figure 42: Thermal blending mode

In thermal blending mode, you can adjust the colorization range so that only a portion of the scene is colorized. Either the lowest temperature, highest temperature, or a middle range temperature can be colorized.

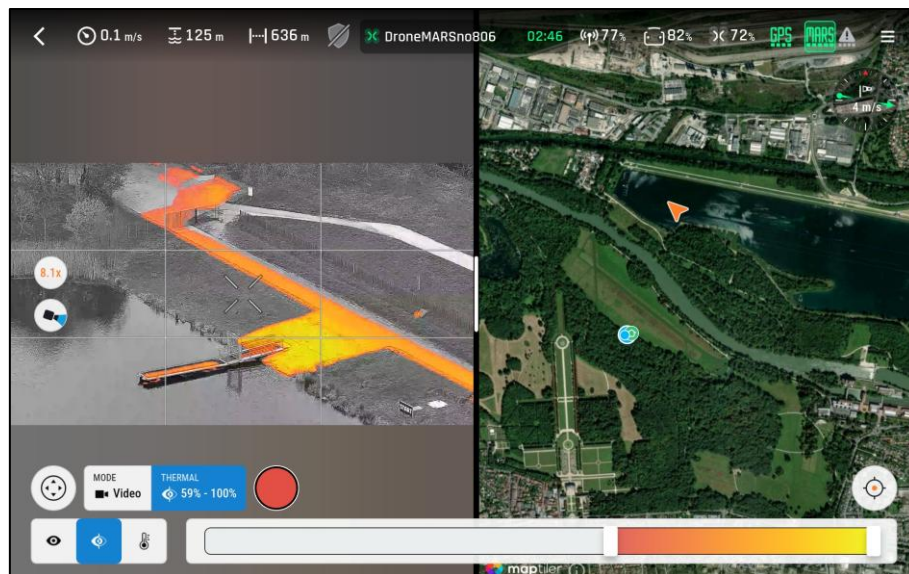


Figure 43: Thermal blending mode, highest temperature

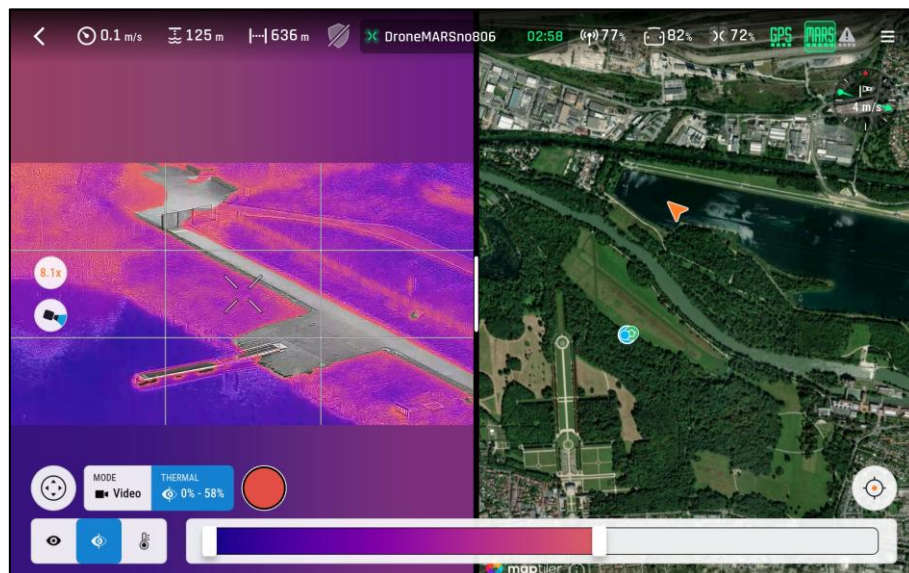


Figure 44: Thermal blending, lowest temperature

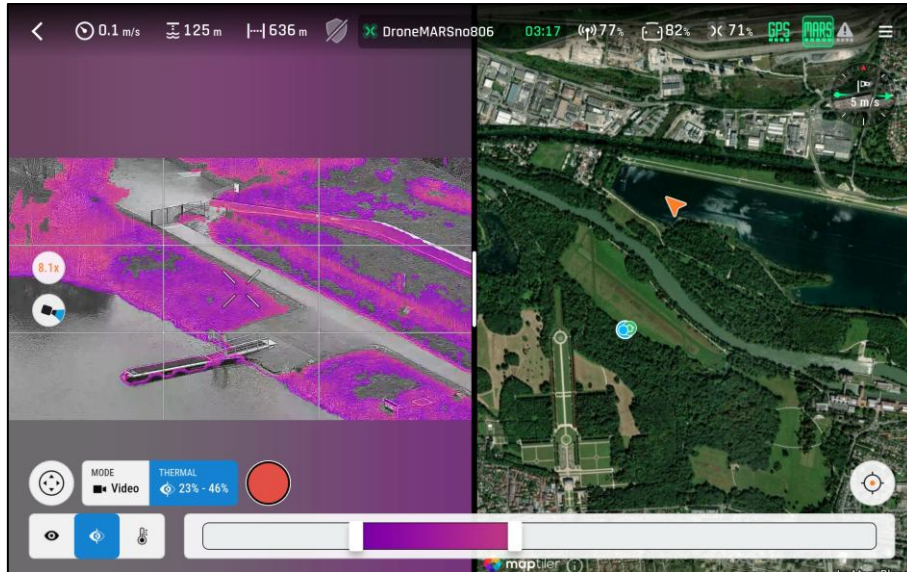


Figure 45: Thermal blending mode, middle range temperature

You can adjust the colorization range either by grabbing the cursors in the FreeFlight 8 user interface, or by using the + and – buttons on the Skycontroller.

11.6.2. Thermal only mode

The user can also configure **Thermal only** mode. In thermal only mode there is no blending of visible image with thermal image. Only the thermal image is displayed:

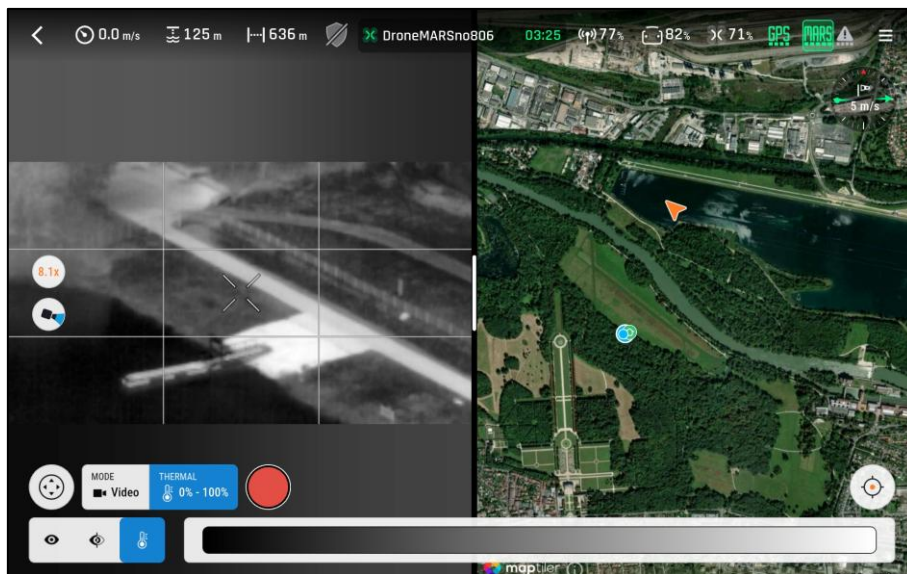


Figure 46: Thermal only mode

In thermal only mode the white hot color palette is used.

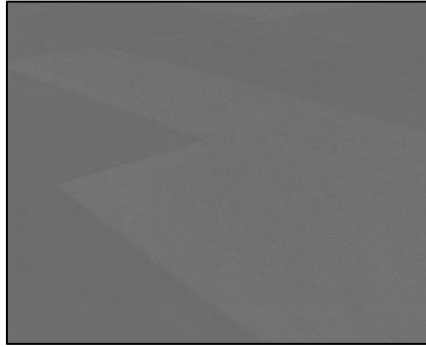
11.6.3. Thermal photo

Each time the aircraft takes a thermal picture, it creates three files:

JPG – Visible Image



PNG – Raw Thermal Image



JPG – Blended Thermal + Visible Image



1. JPG – Visible Image

- A full visible-light image with complete metadata.

2. PNG – Raw Thermal Image

- A raw 16-bit image from the thermal sensor.
- This image has low contrast because it is not normalized to 8-bit.
- Do not use this image directly. It must be processed separately, like a DNG raw image in visible-light photography.

3. JPG – Blended Thermal + Visible Image

- A combined thermal and visible image, based on the selected blending setting.
- Includes complete metadata and additional thermal data.
- Recommended for thermal mapping and analysis.

12. Flight modes

The **Flight modes** button gives access to 4 different flying modes:

- **Piloting:** Manual piloting with joysticks.
- **Tracking:** Lock the gimbal onto a target.
- **Touch & Fly:** Fly the drone towards a way points set into the map view.
- **Flight Plan:** Autonomous flight through way points.

Refer to [chapter 11. FreeFlight 8](#) for more information on how to change the flight mode.

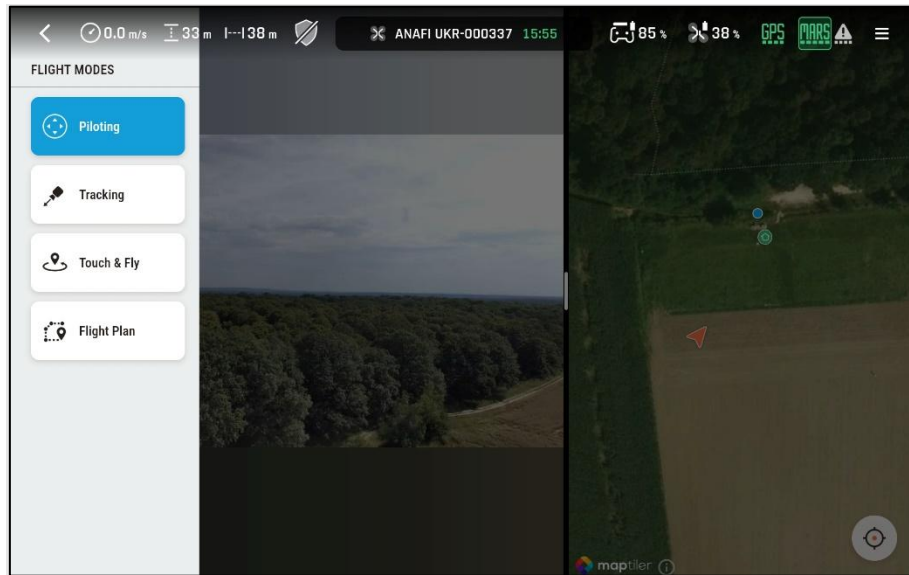
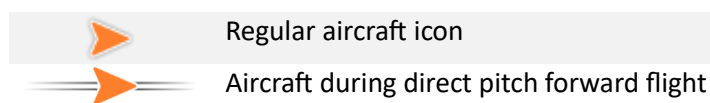


Figure 47: Flight modes

12.1. Piloting

Manual flight mode as described in [chapter 10. Piloting](#).

During flight, a visual indicator appears on the aircraft icon when the Skycontroller UKR's right joystick is pushed forward, while the left joystick is in neutral position (in joystick configuration mode 2). This icon confirms that the command sent to the drone is a pitch forward only command.



12.2. Tracking

Tracking mode allows the user to track a selected target, and to fly the drone relative to that target, keeping the target in the center of the frame. The following table briefly describes the different statuses and the corresponding drone behavior. Refer to the following chapter for more detail.

Rectangle color	Target status	Aircraft behavior
Yellow	Automatic target suggestions	Manual piloting
Blue	Manual target selection	Manual piloting
Red	Manual target selection is too small	Manual piloting
Green	Target is defined and tracked	Piloting and gimbal relative to target
Orange	Target is lost and searched for	Piloting relative to the center of the frame and gimbal is manually piloted

Purple

Tracking is paused

Manual piloting

12.2.1. Target selection

A neural network searches for people and vehicles in the image.

Target suggestions appear within a yellow rectangle. Examples of tracking suggestion selected by the artificial intelligence algorithm can include:

- People
- Vehicles (cars, motorbikes, boats)
- Animals

Tap a target in a yellow rectangle to select it.

Alternatively, manually select a target by drawing a rectangle in the image:



Figure 48: Tracking target suggestion



Figure 49: Manual selection of a target

12.2.2. Target tracking

A green rectangle in the image indicates that the target is being tracked:

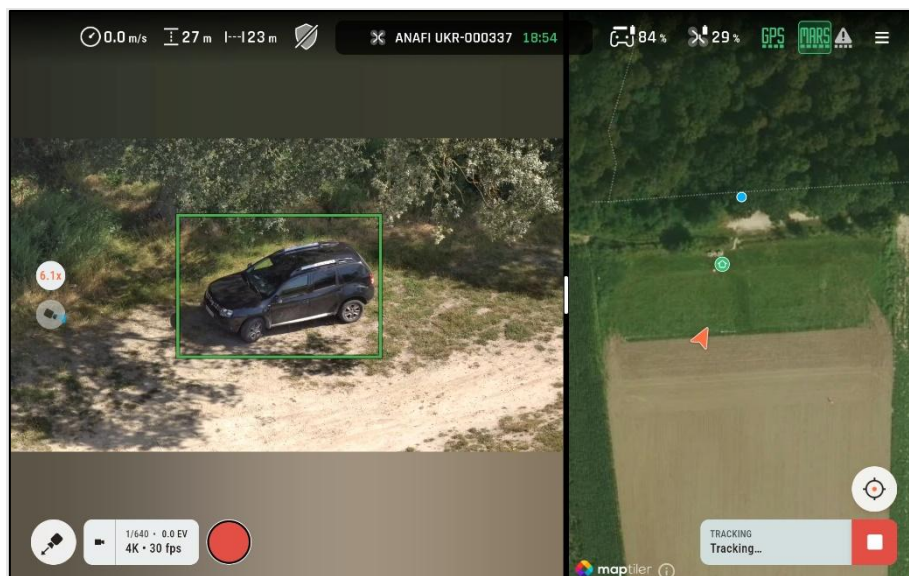


Figure 50: Target tracking

The drone gimbal tracks the target.

The piloting of the drone is relative to the tracked target. The flight commands are relative to the target. If the user moves forward and the target moves to the side the drone will make a curve.

If the drone loses the target, the rectangle turns orange. The algorithm searches for the target while predicting its position for several seconds. It then focuses the search at the center of the frame. The user can change the camera orientation, to facilitate the target redetection. For example, if the target disappears behind a wall, the pilot can move the camera's focus to the end of the wall and the tracking restarts as soon as the target reappears.

If a yaw or pitch piloting command is sent while a target is being tracked, then the tracking enters the "Pause" mode. The rectangle around the target turns purple in color:

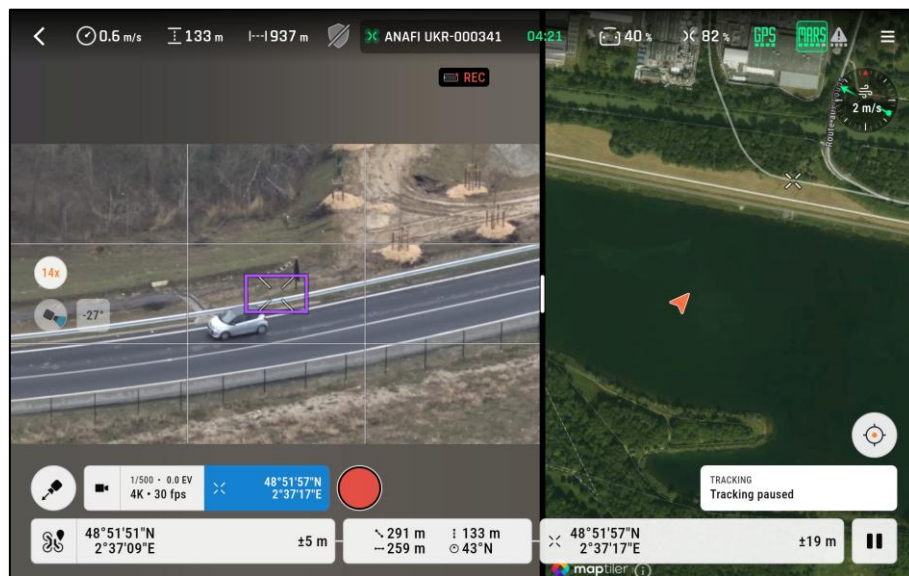


Figure 51: Tracking paused by pitch or yaw piloting command

The "Pause" mode is maintained as long as the yaw or pitch piloting command is received by the drone. As soon as the piloting command stops, the drone enters the "Searching" mode and looks for a target.

The "Pause" mode is designed to allow the pilot to assist the tracking algorithm. For instance, if the tracker starts to follow another target than the expected one, the pilot can switch back to the expected one using this Pause mode.

To end the target tracking, press the **Stop** button (white with red background). The target suggestions reappear, and the drone returns to manual piloting behavior.

Tracking is compatible with the Cursor on Target function.

- A reticle points at the target in both the streaming view and the map view
- Target coordinates are displayed in the bottom bar.

For more information, refer to [chapter 13.14.1.5. Cursor on Target calibration.](#)

Tracking is compatible with the thermal camera display. If the thermal mode is on, the target tracking will use both visible and thermal data at the thermal image framerate.

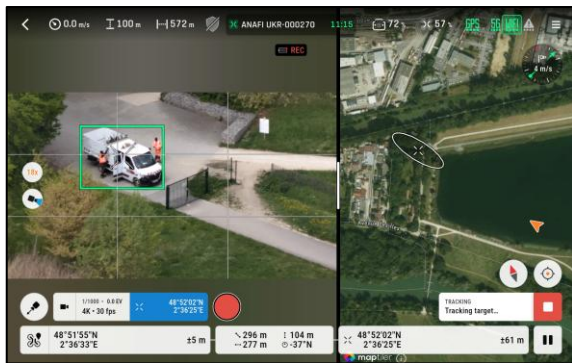


Figure 52: Tracking and Cursor on Target



Figure 53: Tracking in thermal mode

NOTE: Any change on the thermal UI configuration (through the slider for instance), has no effect on the tracking algorithm performance.

12.3. Touch & Fly

Touch & Fly is a flying mode in which you can fly the drone towards a waypoint.

12.3.1. Fly to a waypoint

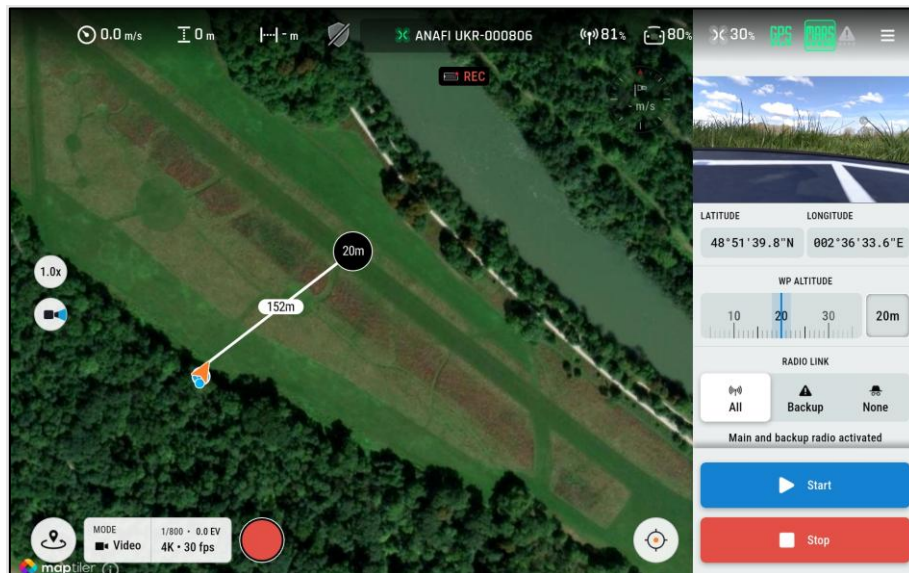


Figure 54: Set a waypoint in the map

Tap in the map view to set a waypoint (WP) at a given location.

The distance between the drone and the waypoint is indicated.

If the drone is flying the waypoint altitude initializes at the drone's current altitude. If the drone is grounded the waypoint altitude initializes at 20 m.

You can modify the WP position in the map view. You can also manually edit the WP coordinates thanks to a virtual keyboard by clicking the coordinates in the right panel:

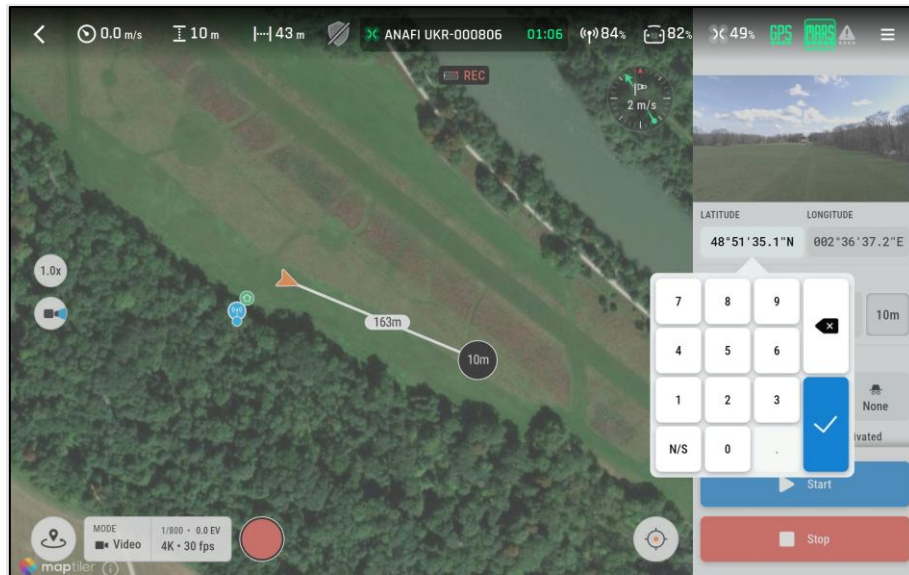


Figure 55: Manual edition of the WP coordinates

You can manually edit the waypoint altitude (relative to the takeoff point). Either move the altitude slider, or tap the button on the right side to open a virtual keyboard:

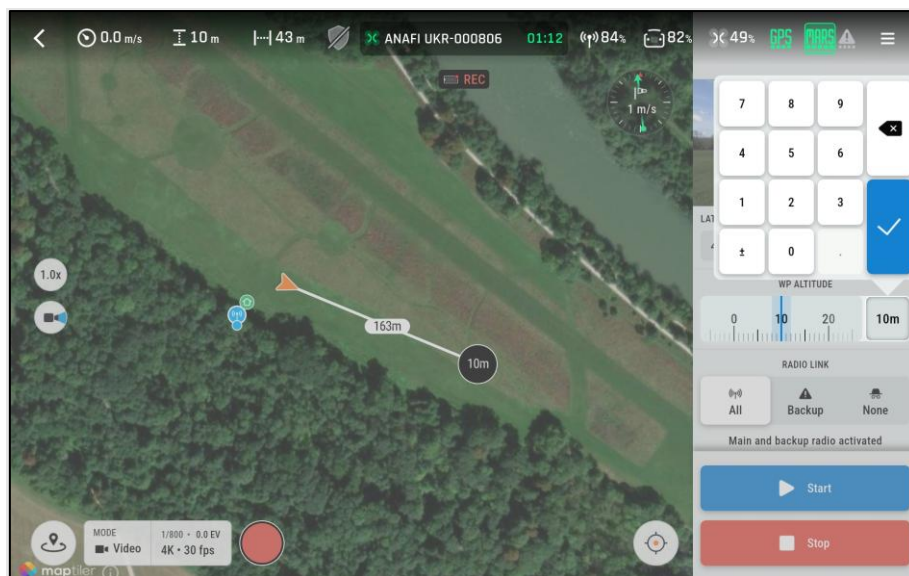


Figure 56: Edit WP altitude with the virtual keyboard

You can set the radio link used on the trajectory towards the waypoint.

Three options are available for the radio link:

- **All:** The user receives the video feed during the flight.
- **Backup:** The user receives only basic telemetry.
- **None:** Radio silence mode, the drone does not transmit any radio signal.

After reaching the waypoint in Backup radio or silence mode the drone will restore the MARS radio link.