# Product features

The TOPODRONE P61 photogrammetric camera is equipped with a full-frame CMOS sensor with a global mechanical shutter and supports the replacement of standard lenses for visible spectrum imaging with lenses for multispectral imaging. This camera can be mounted on a 3-axis suspension or together with one of the TOPODRONE laser scanners.


Photogrammetric camera TOPODRONE P61 with AGROWING QUAD lens mounted on 3-axis suspension.

## Supply package

1. Photogrammetric camera TOPODRONE P61

2. Lens for TOPODRONE P61*
3. 3-axis suspension*
4. GNSS receiver TOPODRONE UAV PPK UPGRADE Kit with MicroSD card 16 GB*
5. Power and shutter connection cable LEMO 4 PIN / LEMO 6 PIN*
6. USB to LEMO 6 PIN cable for connecting the camera to the internet and diagnostics
7. GNSS antenna plate with cable and mounting screws*
8. External GNSS antenna*
9. SD XC-I 64 GB memory card*
10. Protective case for transportation*
11. L-shaped platform with screws for attaching the camera to the laser scanner*
12. Skyport-SHLD adapter*
13. AGROWING Quad/Sextuple Lens
14. UV/IR Magnetic Clip-In Filter for Sony E-Mount
15. Cleaning Tools

* - *depends on the delivery package.*

## TOPODRONE photogrammetric camera device


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TOPODRONE
TOPODRONE
COLOR-SKOPAR
21mm F3.5


1. Main body
2. SD memory card
3. Lens
4. SHLD connector for connecting a camera with a 3-axis suspension or connecting to a drone through a Skyport-SHLD adapter.
5. LEMO 6 pin connector for camera maintenance and connection to the TOPODRONE laser scanner when used together.
6. Connector for 3-axis stabilizer X-Port
7. Connector for connection to the TOPODRONE UAV PPK Upgrade Kit or to the TOPODRONE laser scanner.
8. Camera rotation motor
9. Tilt axis motor
10. Roll axis motor
11. Micro HDMI - for connecting camera to monitor
12. USB type-C connector
13. Multi/Micro USB.

## Supported drone

The TOPODRONE P61 photogrammetric camera can be used on almost any drone, it is recommended to consult the manufacturer of the equipment.

> Full control and transmission of the video stream in real time to the remote control is possible only on DJI Matrice 2** and 3** series drones.

## Compatible lenses

TOPODRONE P61 supports lenses with Sony E mount. The camera can be supplied with one of the following lenses: Sony FE 24mm f/2.8 G or Voigtlander Color-Skopar 21mm f/3.5. Specifications are shown in the table below.

| Characteristic | Sony FE 24mm f/2.8 G | Sigma AF 24mm F/3.5 DG DN | Voigtlander Color-Skopar 21mm f/3.5 |
|---|---|---|---|
| Bayonet | Sony E | Sony E | Sony E |
| Focal length, mm | 24 | 24 | 21 |
| Angle of view (APS-C), ° | 73.3 | 73.3 | 80.7 |
| Minimum aperture value | 2.8 | 3.5 | 3.5 |
| Maximum aperture value | 22 | 22 | 22 |
| Minimum focusing distance, m | 0.24 | 0.11 | 0.20 |
| Size (diameter × length), mm | 68 × 45 | 64 x 48.8 | 62,8 × 39,9 |
| Weight, g | 162 | 230 | 230 |

## TOPODRONE P24 Specification

| | |
|---|---|
| Camera Type | Mirrorless with interchangeable lens |
| Bayonet | Sony E |
| Image stabilization | Disabled |
| Number of megapixels | 61 |
| Sensor size | Full frame (35.7x23.8 мм) |
| Maximum photo size, pixel | 9504 x 6336 |
| Sensor type | CMOS |
| Cropping factor | 1 |
| Shooting Modes | Shutter priority, Aperture priority, Manual, auto ISO |
| ISO range | 100-32000 |
| Shutter speed range, s | 30 – 1/8000 |

| | |
|---|---|
| Supported memory card formats | SD, SDHC (UHS-I/II compatible), SDXC (UHS-I/II compatible), microSD, microSDHC, microSDXC memory cards |
| Maximum supported memory capacity, Gb | 512 |
| Supported file system type | FAT32 |
| Built-in battery | None |
| Camera weight without 3-axis stabilizer, g | 685 |
| Camera weight with 3-axis stabilizer, g | 1045 |
| Video shooting capability | None |
| Operating temperature range, °C | -20 ... +40 |
| Stabilizer tilt angle range, ° | -130 ... +140 |
| Stabilizer rotation angle range, ° | ±320 |

## TOPODRONE UAV PPK Upgrade Kit

TOPODRONE UAV PPK Upgrade Kit is a small GNSS receiver with the ability to connect an external GNSS antenna and integrate with various payloads.

| | |
|---|---|
| Supported GNSS systems and frequencies | GPS: L1C/A, L2C; GLONASS: L1OF, L2OF; GALILEO: E1B/C, E5b; BEIDOU: B1I, B2I |
| Raw measurement recording frequency, Hz | 10 |
| Number of GNSS receiver channels, pcs. | 184 |
| Supported memory card formats | microSD, microSDHC, microSDXC |
| Maximum supported memory capacity, GB | 16 |
| Supported file system type | FAT32 |

| | |
|---|---|
| Minimum number of satellites for initialization, pcs. | 8 |

## Characteristics of AGROWING lenses

| Characteristics | AGROWING Quad | AGROWING Sextuple |
|---|---|---|
| Photo |  |  |
| Matrix size, mm | 35.7x23.8 | 35.7x23.8 |
| Resolution of each multispectral image, pixel | 4300 x 2800<br>12 megapixels | 2700 x 2600<br>7.2 megapixels |
| Weight, g | 180 | 190 |
| Focal length, mm | 25 | 21.8 |
| Aperture | 6 | 5.6 |
| Field of view:<br>Diagonal<br>Horizontal<br>Vertical | <br>46.0<br>40.7<br>27.6 | <br>40.8<br>33.0<br>25.0 |
| Number of channels | 10 or 9+RGB | 14 or 13+RGB |

For Quad and Sextuple lenses, it is possible to replace filters from the basic configuration with filters from an additional category before purchase. This is necessary if the subjects you are shooting are better seen in a particular spectrum at a particular wavelength.

| **Lens type** | **Basic configuration** | | | | **Additional filters** | |
|---|---|---|---|---|---|---|
| AGROWING Quad | R: 850 | R: 650 | R: 710 | R: 685 | R: 710 | R: 795 |
| | G: - | G: 550 | G: 570 | G: 560 | G: 570 | G: - |
| | B: - | B: 430 | B: 405 | B: 450 | B: 480 | B: 470 |
| AGROWING Sextuple | R: 850 | R: 650 | R: 630 | R: 735 | R: 710 | R: 795 |
| | G: - | G: 550 | G: 525 | G: - | G: 570 | G: - |
| | B: - | B: 430 | B: - | B: 490 | B: 480 | B: 470 |
| | | R: 710 | R: 685 | | | |
| | | G: 570 | G: 560 | | | |
| | | B: 405 | B: 450 | | | |

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