

Product Specifications

Product Description

The TOPODRONE UAV PPK UPGRADE Kit is a versatile geodetic GNSS receiver developed on the basis of a u-Blox chip for integration with cameras on various UAVs to obtain high-precision coordinates of image centers. To operate the TOPODRONE UAV PPK UPGRADE Kit, an external GNSS antenna must be connected to receive satellite signals, as well as external power and a signal line from the camera shutter. For connection convenience, the power and signal line are combined in a LEMO connector, while the antenna connector is separate.

The main task of the TOPODRONE UAV PPK UPGRADE Kit is to record raw GNSS measurement data from the external antenna along with the precise timestamp of the connected camera's shutter trigger on the UAV. The output file is a file with the *.ubx extension, which is written to an external storage medium – a MicroSD memory card. The TOPODRONE UAV PPK UPGRADE Kit operates based on Post Processing Kinematic (PPK) technology. To enable post-processing of the acquired data, it requires a static measurement file from a base station for the same operating period and location. The precise shutter trigger time is synchronized with the base station's operating time using GPS time. The results of post-processing the data obtained from aerial surveying with the TOPODRONE UAV PPK UPGRADE Kit in the TOPODRONE Post Processing software are high-precision coordinates of the image centers.

The TOPODRONE UAV PPK UPGRADE Kit is compatible with TOPODRONE-brand cameras (P24 and P61) as well as with third-party cameras: DJI X4S, Sony A6000, Sony A7RM4, etc. To connect to TOPODRONE cameras, a special cable from the camera with a compatible LEMO connector is used in some cases. To connect third-party cameras, the shutter signal option is used via an external flash connection through the camera's Hot Shoe connector. The TOPODRONE UAV PPK UPGRADE Kit can also register external pulses to record the precise shutter trigger time.

The TOPODRONE UAV PPK UPGRADE Kit starts data recording when external power is connected and any GNSS signal is present after the initialization procedure. If the external GNSS antenna is disconnected, or if the device is turned on without an external GNSS signal, data recording to the external storage medium does not start.

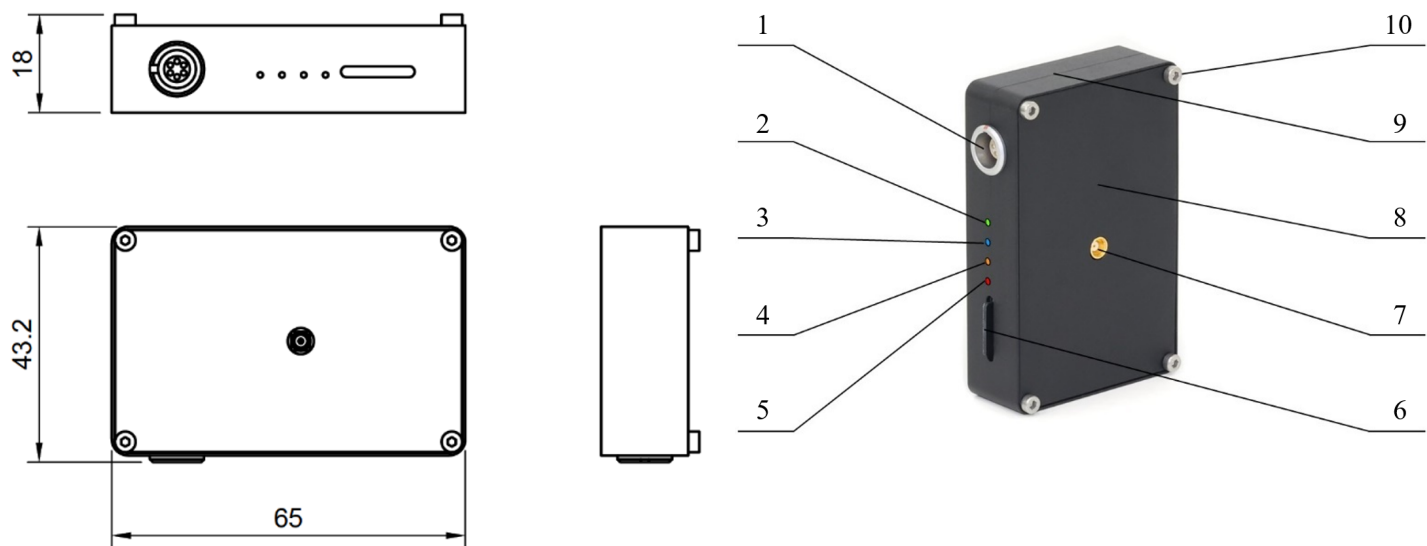
Package Contents

1. 1 pc. TOPODRONE UAV PPK UPGRADE Kit Geodetic GNSS Receiver
2. 1 pc. MicroSD 16 GB Memory Card
3. 1 pc. LEMO 6-Pin Connector (optional, with or without cable)

- 4. 1 pc. Cable with LEMO 6-Pin – LEMO 4-Pin Connector
- 5. 1 pc. Antenna Cable with Connector (optional)
- 6. 1 pc. GNSS Antenna Mount with cable and mounting screws for UAV (optional)
- 7. 1 pc. External GNSS Antenna (optional)

Device Construction

Structurally, the TOPODRONE UAV PPK UPGRADE Kit is manufactured in a compact housing made of aluminum alloy with anodizing (optional). Geometric dimensions in mm are shown in the dimensional diagram below. The housing has a cover fastened with screws to the main housing for access to internal components.



- 1. LEMO 6-Pin connector for external power and camera shutter signal
- 2. Green LED. Indicates external power is present.
- 3. Blue LED. Indicates GNSS antenna signal quality:

Состояние	Описание
Off	PDOP>10
Slow blinking	3<PDOP<10
Fast blinking	2<PDOP<3
Continuously on	PDOP<2

PDOP is a factor indicating the reduction in GNSS receiver positioning accuracy relative to the geometry of satellite positions in the sky. The operator can determine its value from the LED indicator table above and assess the feasibility of surveying. The lower the PDOP value, the more accurate the position calculation result. PDOP is considered

very high at 3 or more; it is not recommended to perform aerial surveys with high PDOP values.

4. Orange LED. Indicates the recording status to the MicroSD memory card. During recording, the LED blinks rapidly. Each blink corresponds to 4 KB of data written.
5. Red LED. Lights up continuously together with the other LEDs. Indicates an error during data writing to the memory card. In case of an error, check the memory card for errors, format it to FAT32, or replace it with another memory card.

If replacing, reconnecting, or formatting the MicroSD card does not resolve the issue, contact TOPODRONE technical support.

6. MicroSD memory card slot
7. Coaxial cable for connecting an external GNSS antenna
8. Enclosure cover
9. Enclosure body
10. Enclosure cover screws

Each time the receiver is turned on, a new *.ubx file is created in a folder named in the DD-MM-YY (day-month-year) format, with a file name in the HH-MM-SS (hours-minutes-seconds) format. Note that the time is recorded in UTC, and the file is created only after the GNSS receiver acquires a signal from satellites.

It is forbidden to insert or remove the memory card while the receiver is operating. This operation should only be performed when the power is disconnected.

In the standard configuration, the GNSS receiver records a *.ubx file at a frequency of 10 Hz and receives signals from GPS, GLONASS, Galileo, and Beidou systems on L1 and L2 frequencies.

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