

# TOPODRONE PPK Upgrade operation guide

TOPODRONE PPK upgrade is a compact GNSS receiver based on the uBlox chip, integrated with the camera shutter. TOPODRONE PPK is installed in front of the drone, inside a plastic case, it has four holes for the front visual positioning system cameras.

The TOPODRONE PPK upgrade writes data to a Micro-SD memory card formatted in FAT32 format. When the receiver is turned on and initialized, the upgrade creates a folder called YY-MM-DD (year-month-day) with a \*.ubx file inside, called HH-MM-SS (hours-minutes-seconds). The time is recorded in UTC.

The \*.ubx file logs raw GNSS measurement data from an external GNSS antenna, as well as high-precision shutter triggers of the drone camera, also called timestamps or events. One timestamp is assigned to each photo from the moment of initialization. Based on the \*.ubx file, as well as the source photos and the base station file, it is possible to geotag the received images using the PC method using TOPODRONE Post Processing software. By processing the source photos, the \*.usb file and the base station file, using the PPK method, the TOPODRONE Post Processing program can perform geotagging of the received images.

Initialization of the TOPODRONE PPK upgrade and the start of recording the \*.ubx file is performed when the GNSS antenna receives a signal within a few seconds, while the drone is in a static state. After initialization, the \*.ubx file will be written until the aircraft is powered off.

After initialization, the \*.ubx file will be written until the aircraft is powered off. The \*.ubx file will continue to be written even if the GNSS signal is lost. The TOPODRONE PPK upgrade cannot be initialized after the drone has already taken off.

After the drone is powered off, the \*.ubx file is automatically stopped being written. With normal operation, a stable satellite signal and a runtime of 20-30 minutes, the size of the \*.ubx file should be 20-40 MB.

The indicator of successful initialization is a flashing orange and a constant light - blue LEDs. If the blue LED is flashing, it is recommended to put the drone in a more open space until the blue LED is a constant light.

It is strongly recommended to check the initialization status every time before and after each drone flight. Data recording may stop due to poor GNSS antenna contact, satellite signal

interference, free memory overflow, or memory card failure. If there is no \*.ubx file or timestamps for photos, their further post-processing and obtaining high-precision coordinates are impossible.

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