en/RTK

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Inhaltsverzeichnis

1 RTK....1/6

2 Connection FlightCtrl....2/6

3 Setting RTK-GPS-receiver....3/6

4 Setting KopterTool....4/6

5 LOG-Daten....5/6

6 RTK-Navigation....6/6

1 RTK

Real Time Kinematic (RTK) surveying is a geodesy method for measuring points with the aid of satellite-based navigation systems. Accuracies of 1 to 2 cm can be achieved.

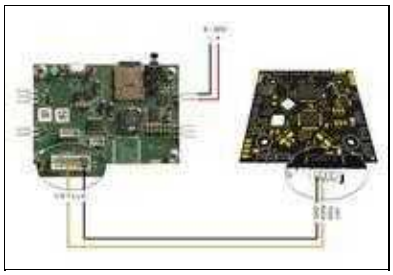
On your MikroKopter you need an additional RTK-GPS-receiver. You can connect this receiver on the "UART2" of your FlightCtrl V3.

The MikroKopter processes the standart NMEA protocol, that is common for all GPS (GNSS) receivers.

This feature is integrated since Firmware 2.21Beta.

Latest Betaversionen are always here: http://files.mikrokopter.de/PublicBeta/

2 Connection FlightCtrl



The "RTK-GPS-receiver" (in this example a *Septentrio* AsteRx-m2 UAS receiver) is connected with **RxD2** and **GND** at the **UART2**-port.

3 Setting RTK-GPS-receiver

(Beispiel: Einstellungen am Septentrio)

So that the RTK-GPS-receiver can communicate with the MikroKopter, it must be adjusted accordingly.

The data format of the RTK-GPS-receiver must be set to:

- NMEA GGA ($GPGGA)
- Baudrate: 57600Bd
- Updaterate: 5-10Hz -> 100-200ms

4 Setting KopterTool

The RTK-GPS (if set correctly) is automatically detected by the MikroKopter.

Via the Telemetry the state of the RTK-GPS is displayed next to the GPS display:

- 0 => No Fix
- 1 => Sat-Fix RTK
- 2 => SBAS
- 5 => PPP (PPP positioning: cm-level without a base station)

(The state is taken from the NEMA dataset $GPGGA and can be different depending on the GNSS receiver)

5 LOG-Daten

In the LOG files (GPX- und txt-Files) in the MikroKopter the position data of the RTK-GPS are logged.

These data can then be further processed and assigned (to the photos taken during the flight) with our CamTrigger-Tool.

6 RTK-Navigation

If the RTK-GPS is connected to the FlightCtrl V3, the copter still use the internal GPS-system for the flight. If you will also use the RTK-GPS for the flight you can set this in the settings of the KopterTool (*>Navi-Ctrl >Use external GPS (NMEAinput) for flight*).

Here you have different options:

- Ch1 - Ch16
  - ~-On the remote control, a free channel can be placed on a 2-way switch.
    Set this channel under *>Navi-Ctrl >Use external GPS (NMEAinput) for flight*.
    Then you can (also during flight) change between internal GPS-System and external RTK-GPS-system.

    - **Function:**
    - Switch OFF => copter navigation via internal GPS-System
    - Switch ON => copter navigation via external RTK-System
- Ch6
  - If you set here the same channel you use for the GPS-switch (OFF-PH-CH) you can:

    - **OFF**
      => fly without GPS (manueller Flug)
    - **PH** (center)
      => use the internal GPS-System for your flight
    - **CH**
      => use the RTK-GPS for a waypoint flight, ComingHome-flight and FailSafe
- ON
  - If you set "ON" the copter use only the RTK-GPS for navigation/flight