

# RTK Surveying Kit

GPS-17370

## Product Overview

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For the most up-to-date information, visit [www.mouser.com](http://www.mouser.com) or the supplier's website.

## Description

SparkFun RTK Surveying Kit features everything users need to get centimeter-level global positioning measurements using GNSS RTK. This kit lets users quickly attach the L1/L2 antenna and RTK surveyor housing to the pole or tripod of choice. The RTK surveying kit includes L1/L2 antennas, adapters, cables, and chargers that users need to jump into the field.



The RTK surveyor is a Bluetooth® enabled multi-band GNSS receiver based on the ESP32 from Espressif and the ZED-F9P from u-blox. The users can flip the switch to have 300mm approximate accuracy out of the box and 18mm accuracy with RTCM corrections. The RTK surveying kit comes in a handy carrying case to protect the most expensive bits. This kit works with common GIS software, including SW Maps, SurvPC, Field Genius, and any GIS software that supports NMEA over Bluetooth.

## Kit Contents

- RTK surveyor
- GNSS L1/L2 multi-band antenna - TOP106
- Antenna interface cable - SMA to TNC (300mm)
- 1/4" to 5/8" antenna thread adapter
- 5V, 2A USB wall charger
- 0.8m USB A to C cable
- Data cable
- Radio cable



## Features

- GNSS receiver: ZED-F9P:
  - Concurrent reception of GPS, GLONASS, Galileo, and BeiDou
  - Receives both L1C/A and L2C bands
  - 68mA to 130mA current range (varies with constellations and tracking state)
  - 25s (cold) and 2s (hot) time to first fix
  - Maximum navigation rate:
    - PVT (basic location over UBX binary protocol) - 25Hz
    - RTK - 20Hz
    - Raw - 25Hz
  - Horizontal position accuracy:
    - 2.5m without RTK
    - 0.010m with RTK
  - 50km (31 miles) maximum altitude
  - 500m/s (1118mph) maximum velocity
- Bluetooth transceiver: ESP32 WROOM:
  - Xtensa® dual-core 32-bit LX6 microprocessor
  - Up to 240MHz clock frequency
  - 16MB of flash storage
  - 520kB internal SRAM
  - Integrated 802.11 BGN Wi-Fi transceiver
  - Integrated dual-mode Bluetooth (classic and BLE)
  - Hardware accelerated encryption (AES, SHA2, ECC, and RSA-4096)
  - 2.5µA deep sleep current
- Overall device:
  - Internal battery:
    - LiPo 1000mAh with 500mA charging
  - Radio port:
    - 3.3V TTL serial (57600bps RTCM TX/RX, configurable)
  - Data port:
    - 3.3V TTL serial (460800bps NMEA, configurable)
  - Toggle switch controls
  - 162g weight (an entire device including battery)
  - 132mm x 101mm x 32mm dimensions
  - 1x Qwiic connector
  - 1x microSD socket for optional logging
  - Works with common GIS software:
    - SW maps
    - SurvPC
    - Field genius

## Features

- GNSS multi-band L1/L2 surveying antenna:
  - $\geq 5\text{dBi}$  gain
  - 40dB LNA gain
  - Reception frequencies:
    - L1: 1555MHz to 1615MHz
    - L2: 1198MHz to 1278MHz
  - 50 $\Omega$  antenna impedance
  - 335g overall antenna weight
  - 160g bare antenna element weight (including MMCX connector, with RF shield)
  - 148mm x 55mm dimensions
  - Waterproof IP67
  - Female TNC connector

## Schematic

- [RTK surveyor](#)

## Mouser Part Number

[View Part](#)

To learn more, visit <https://www.mouser.com/new/sparkfun/sparkfun-rtk-surveying-kit/>