

# Fixposition Vision-RTK

Deep fusion of camera, satellite navigation and inertial sensors

Increasing reliability and availability for precise positioning



## INDUSTRY CHALLENGES

The market of autonomous things requires a navigation system that is cost-effective, cm-accurate and extremely reliable. Standard satellite navigation sensors can meet the first two criteria but have serious limitations in terms of reliability. In cities, under bridges and trees or around hillsides, where satellite signals are denied, their accuracy degrades dramatically down to a few meters or even hundreds of meters.

## OUR UNIQUE SOLUTION

Fixposition's proprietary sensor fusion engine combines computer vision, global navigation satellite system (GNSS) and inertial measurement unit (IMU) data to achieve high-accuracy positioning in any environment, even in GNSS-denied areas or vision-challenging situations. This significantly increases reliability and availability of precise positioning.



Computer vision, enhanced with additional sensor inputs, enables unprecedented positioning reliability



Real-time data fusion with GNSS allows our sensor to maintain cm-accuracy of absolute positioning at any time, in any environment



Accurate and robust state estimation with up to 200 Hz update rate



Plug and Play integration in PX4 and other autopilot control systems for drones and robots



Compact form factor and lightweight build for size-sensitive applications



Standard interfaces and connectors for hassle-free communication

# Technical Specifications

## Sensor Fusion Engine

<b>Solution Latency</b>	10 ms
<b>Position Accuracy (in RTK fix status)</b>	
Horizontal	1.0 cm + 1 ppm
Vertical	1.5 cm + 1 ppm
<b>Velocity Accuracy</b>	±0.03 m/s
<b>Max. Velocity</b>	20 m/s
<b>Acquisition (time to first position)</b>	
Cold start	25 s
Hot start/reacquisition	2 s
Aided start	2 s

## Camera

<b>Sensor Type</b>	CMOS with Global Shutter
<b>Field of View</b>	60°
<b>Output Rate</b>	up to 20 Hz

## RTK

<b>GNSS Constellations &amp; Band</b>	
GPS/QZSS	L1C/A, L2C
Galileo	E1B/C, E5b
Beidou	B1I, B2I
GLONASS	L1OF, L2OF
<b>Max. GNSS Velocity</b>	500 m/s
<b>Output Rate</b>	up to 20 Hz

## IMU

<b>Degrees of Freedom</b>	9
<b>Output Rate</b>	up to 200 Hz

## Communication

<b>Output Format</b>	UBX, NMEA
<b>Reference Data Format</b>	RTCM 3.x
<b>Network RTK Support</b>	NTRIP, TCP/IP
<b>Connectivity</b>	JST GH 6-pin (Vcc/UART/TimePulse/TimeTrigger), 2x SMA, microUSB, Wi-Fi (802.11a/b/g/n)

## Electrical and Mechanical

<b>Power Supply (V<sub>cc</sub>)</b>	5 V to 20 V
<b>Power Consumption</b>	4 W
<b>Dimensions (L x W x H, preliminary)</b>	7.4 x 4.1 x 2.6 cm
<b>Weight (without case and antenna)</b>	39 g
<b>Operating Temperature</b>	-40 °C to 85 °C