Multi-Frequency, Multi-Constellation
Centimeter-Accurate GNSS

The Piksi Multi GNSS Receiver from Swift Navigation. Its dual-frequency operation offers fast RTK convergence times and reliable, centimeter-accurate results at a breakthrough price.

**Centimeter-Level Accuracy**
Autonomous systems require precision navigation—especially those that perform critical functions. Swift Navigation solutions utilize real-time kinematics (RTK) technology, providing location solutions that are 100 times more accurate than traditional GPS.

**Fast Convergence Times**
Multiple signal bands enable fast convergence times to high-precision mode. Single band RTK systems converge in minutes, while Piksi Multi converges to a high-precision solution within seconds. This allows for much faster system start times, as well as faster reacquisition, which is critical to robotic systems.

**Robust Positioning Performance**
Piksi Multi supports GPS L1/L2, GLONASS G1/G2, BeiDou B1/B2, Galileo E1/E5b for RTK measurements and positioning and SBAS for robust sub-meter positioning in non-RTK mode. Additional constellations create more robust positioning performance in a variety of challenging skyview environments. Integrated MEMS oscillator technology enhances robustness under vibration and shock. An onboard 6DOF, MEMS based inertial measurement unit allows customers to develop their own sensor fusion algorithm that enhances the positioning performance of the Piksi Multi.

**Open Platform**
Piksi Multi features a powerful Xilinx Zynq® processor with an FPGA and dual-core ARM® Cortex®-A9 processors. Plenty of computational headroom and on-board Linux enable seamless integration of customer applications.

**Rapid Prototyping**
Piksi Multi is designed to be easy to use. The Piksi Multi Evaluation Kit includes: 2 Piksi Multi GNSS Receivers; 2 integrator-friendly Evaluation Boards; 2 GNSS survey grade antennas; 2 powerful radios and integration accessories. Piksi Multi features multiple high-density I/O connectors, providing a smooth and simple integration experience.

**Breakthrough Price**
Swift Navigation is built on the notion that highly-precise RTK solutions should be offered at an affordable price. Piksi Multi embraces the foundation of unmatched affordability and is available at a much lower cost than comparable systems.
Piksi Multi

GNSS Characteristics

GNSS Signal Tracking
- GPS L1/L2, GLONASS G1/G2, BeiDou B1/B2, Galileo E1/E5b
- SBAS

GNSS Data Rates
- Measurements (Raw Data): Up to 20 Hz
- Standard Position Outputs: Up to 20 Hz
- RTK Position Outputs: Up to 10 Hz

Maximum Operating Limits
- Velocity: 515 m/s

Electrical & I/O

Power
- Input Voltage: 5 - 15 V DC
- Typical Power Consumption: 2.9 W

Antenna LNA Power Specifications
- Output Voltage: 4.85 V DC
- Max Output Current: 100 mA

Connectors
- 1 x 20 Pin SAMTEC Connector (PN: TMM-110-03-F-D)
- 2 x 60 Pin High Density Connectors (PN: 61082-06140LF)
- 1 x MMCX Female Antenna Port

Communication Interfaces
- 2 x UART-LVTTL Ports (1 Mbps)
- 2 x CAN Bus (1 Mbps)
- Ethernet support up to 100Mbps
- 2 x USB 2.0 (1 Device, 1 Host)

Position Performance Specifications

Position, Velocity & Time Accuracy
- Horizontal Position Accuracy (CEP 50 in SBAS Mode): 0.75 m
- Velocity Accuracy: 0.03 m/s RMS
- Time Accuracy: 60 ns RMS
- Real Time Kinematic (RTK Accuracy 1σ):<
  - Horizontal: 0.010 m + 1 ppm
  - Vertical: 0.015 m + 1 ppm
- RTK Initialization Parameters:
  - Initialization Time: < 10 s
  - Initialization Reliability: > 99%
  - Solution Latency: < 30 ms

Time to First Fix (TTFF) Specifications

<table>
<thead>
<tr>
<th></th>
<th>Hot Start</th>
<th>Cold Start</th>
<th>Re-acquisition</th>
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<tbody>
<tr>
<td></td>
<td>&lt; 5 s</td>
<td>&lt; 60 s</td>
<td>&lt; 2 s</td>
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</table>

Physical & Environmental

Dimensions: 48 mm x 71 mm x 12.4 mm
- Form factor compatible with common GNSS modules

Weight: 26 g

Temperature
- Operating: -40° C to +85° C
- Storage: -40° C to +85° C

Humidity: 95% non-condensing as measured by MIL-STD-810G, Method 507.5 Procedure II

Vibration (Operating and Survival)
- Random: MIL-STD-810G, Method 514.6 (Category 2, 7.7 g RMS)
- Sinusoidal: IEC 60068-2-6 (Test Fc-5g)

Mechanical Shock
- Operating: MIL-STD-810G, Method 516.6, Procedure I (40 g)

Survival: MIL-STD-810G, Method 516.6, Procedure V (75 g)

Packaging & Accessories

Visit the Swift online store at www.swiftnav.com

Piksi Multi Evaluation Kit
- Designed to provide a seamless easy-to-use RTK positioning experience through a single kit consisting of 2 Piksi Multi GNSS Receivers;
- 2 Evaluation Boards; 2 GNSS survey grade antennas; 2 powerful radios and all other required integration accessories.

Piksi Multi GNSS Receiver Pack
- Quick integration packs designed both for customers seeking to create custom RTK solutions for unique projects or for seasoned RTK systems integrators.

Piksi Multi GNSS Receiver
- Designed for the experienced systems integrator and the large volume enterprise customer.

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3. As required by the U.S. Department of Commerce to comply with export licensing restrictions.

4. Typical power consumption by module in RTK positioning mode.

5. The use of an on-board heat sink may be required only in some rare cases. The module ships with a provided heat sink attachment.

6. In open sky and strong signals conditions.

7. The use of on-board heat sink may be required only in some rare cases. The module ships with a provided heat sink attachment.

8. Actual Size: 48 mm x 71 mm x 12.4 mm

9. Weight: 26 g

10. Temperature: -40° C to +85° C

11. Humidity: 95% non-condensing as measured by MIL-STD-810G, Method 507.5 Procedure II

12. Vibration (Operating and Survival): MIL-STD-810G, Method 514.6 (Category 2, 7.7 g RMS)

13. Mechanical Shock: MIL-STD-810G, Method 516.6, Procedure I (40 g)

14. Survival: MIL-STD-810G, Method 516.6, Procedure V (75 g)

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