Centimeter-Level Accuracy
Autonomous devices 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, critical to robotic systems.

Robust Positioning Performance
Piksi Multi supports GPS L1/L2 for RTK measurements and positioning and GLONASS L1/L2 measurements for PPK use cases. It is hardware-ready for simultaneous reception of the other two global GNSS constellations: BeiDou and Galileo. Additional constellations create more robust positioning performance, in a variety of challenging skyview environments. Integrated MEMS oscillator technology enhances robustness under vibration and shock. Integrated MEMS IMU technology allows for sensor fusion techniques that enhance positioning performance.

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 Modules; 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 an enhanced and improved 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.

Multi-Band, 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.

Benefits
- Fast RTK Convergence Times
- Highly-Competitive Pricing
- Easy Integration into a Variety of Applications
- Future-Proof Hardware with In-Field Software Upgrades
- Onboard Linux Allows Flexibility

Features
- Dual Frequency
- Up to 20 Hz Solution Rate
- Advanced MEMS Oscillator Technology
- On-Board MEMS IMU
- Flexible Interfaces Including UART, Ethernet, CAN®, and USB
- 32 User-Definable GPIO Pins for Customization

©2017 Swift Navigation, Inc. All rights reserved | Version 1.2 | 10.26.2017
Position Performance Specifications

<table>
<thead>
<tr>
<th>Position, Velocity &amp; Time Accuracy</th>
<th>Power</th>
<th>Antenna LNA Power Specifications</th>
<th>Connectors</th>
<th>Communication Interfaces</th>
<th>Electrical &amp; I/O</th>
<th>Physical &amp; Environmental</th>
</tr>
</thead>
<tbody>
<tr>
<td>Horizontal Position Accuracy (CEP 50 in SPP Mode)</td>
<td>Input Voltage</td>
<td>Output Voltage</td>
<td>1 x 20 Pin SAMTEC Connector</td>
<td>2 x UART-LVTTL Ports (1 Mbps)</td>
<td>5 - 15 V DC</td>
<td>Dimension</td>
</tr>
<tr>
<td>Velocity Accuracy</td>
<td>Typical Power Consumption</td>
<td>Max Output Current</td>
<td>PN: TMM-110-03-F-D</td>
<td>2 x CAN + Bus (1 Mbps)</td>
<td>2.9 W</td>
<td>Weight</td>
</tr>
<tr>
<td>Time Accuracy</td>
<td>Electrical &amp; I/O</td>
<td></td>
<td>1 x MMCX Female Antenna Port</td>
<td>1 x Mbit Ethernet</td>
<td>60 ns RMS</td>
<td>Temperature</td>
</tr>
<tr>
<td>Real Time Kinematic (RTK Accuracy 1σ)</td>
<td></td>
<td>Electrical &amp; I/O</td>
<td>2 x UART-LVTTL Ports (1 Mbps)</td>
<td>2 x CAN</td>
<td>0.03 m/s RMS</td>
<td>Humidity</td>
</tr>
<tr>
<td>Horizontal</td>
<td></td>
<td>Electrical &amp; I/O</td>
<td>2 x UART-LVTTL Ports (1 Mbps)</td>
<td>2 x CAN</td>
<td>0.010 m + 1 ppm</td>
<td>Vibration (Operating and Survival)</td>
</tr>
<tr>
<td>Vertical</td>
<td></td>
<td>Electrical &amp; I/O</td>
<td>2 x UART-LVTTL Ports (1 Mbps)</td>
<td>2 x CAN</td>
<td>0.015 m + 1 ppm</td>
<td>Sinusoidal</td>
</tr>
<tr>
<td>RTK Initialization Parameters</td>
<td>Electrical &amp; I/O</td>
<td></td>
<td>2 x UART-LVTTL Ports (1 Mbps)</td>
<td>2 x CAN</td>
<td>&lt; 10 s</td>
<td>Operating</td>
</tr>
<tr>
<td>Initialization Time</td>
<td>Electrical &amp; I/O</td>
<td></td>
<td>2 x UART-LVTTL Ports (1 Mbps)</td>
<td>2 x CAN</td>
<td>&gt; 99%</td>
<td>Survival</td>
</tr>
<tr>
<td>Initialization Reliability</td>
<td>Electrical &amp; I/O</td>
<td></td>
<td>2 x UART-LVTTL Ports (1 Mbps)</td>
<td>2 x CAN</td>
<td>&lt; 30 ms</td>
<td></td>
</tr>
<tr>
<td>Solution Latency</td>
<td>Electrical &amp; I/O</td>
<td></td>
<td>2 x UART-LVTTL Ports (1 Mbps)</td>
<td>2 x CAN</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Time to First Fix (TTFF) Specifications

- **Hot Start**: Up to 5 seconds
- **Cold Start**: Up to 60 seconds
- **Reacquisition**: Up to 2 seconds

---

1. Hardware-ready for BeiDou B1/B2, Galileo E1/E5b, QZSS L1/L2 and SBAS (Satellite Based Augmentation Systems such as WAAS & EGNOS). Piksi Multi GNSS Module has the RT-Front to receive these signals but there are no precise implementation dates for future satellite systems.

2. Piksi Multi FW 1.2 will support Raw GNSS Data Observations (L1/L2 GPS+GLN) up to 20 Hz or 10 Hz RTK solution output, but not both simultaneously.

3. Current FW supports 10Hz GPS L1/L2C (low latency) or 5 Hz GPS L1/L2C (time matched) or 5Hz GPS/GLN L1/L2 (low latency only).

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

5. Typical power consumption by module in L1/L2 RTK positioning mode.

6. The CAN implementation Bus on Piksi Multi is currently is hardware ready and is electrically verified. We do not support any specific CAN output protocol (eg. J1939) and have no immediate plans to do so. To help customers design specific CAN protocols, we have plans to release open Linux documentation to help integrators implement their own CAN messages.

7. A hardware update on the Piksi Multi to use a higher grade CPU with better thermal characteristics was implemented, resulting in a 4mm height increase of the Piksi Multi. Contact customer support for more information on this.

8. 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.

9. In open sky and strong signals conditions.

10. Hot Start is the time taken by the receiver to achieve a standard position fix after a brief outage. For example, the time taken to fix a position for a car that is exiting a long tunnel.

11. Cold Start is the time taken by the receiver to achieve a standard position fix after a brief outage. For example, the time taken to achieve a position fix for a car that has been parked overnight in a garage and once it sees the sky view for the first time.

12. Reacquisition is defined as the time taken to re-acquire position lock after brief moment of outage. For example, a car traveling under a freeway/highway overpass.

---

**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 Modules; 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 Module**

Designed for the experienced systems integrator and the large volume enterprise customer.

---

www.swiftnav.com  |  @SwiftNav  |  sales@swiftnav.com

©2017 Swift Navigation, Inc. All rights reserved | Version 1.2 | 10.26.2017