



NEXT-GEN SENSOR TECH

Wireless sensing for eVTOLs and drones

Need synchronized measurements across your eVTOL or drone? Skip the slip rings. MicroStrain by HBK's wireless sensors deliver accurate, synchronized data across rotating and stationary components – without the weight and complexity of traditional hardware.



Advantages for eVTOL and Drone Applications

Integrating MicroStrain wireless sensors into your testing framework offers several key benefits:

- **Synchronized Measurements:** LXRS and LXRS+ technologies ensure node-to-node synchronization within $\pm 50 \mu\text{s}$ and provide reliable, lossless data transmission—ideal for high-precision testing.
- **Lightweight and Non-Intrusive:** Wireless sensors add minimal weight and eliminate the mechanical complexities associated with slip rings, preserving the aerodynamic integrity of your aircraft.
- **Rapid Deployment:** The absence of extensive cabling allows for quick installation and reconfiguration, accelerating the testing process and reducing downtime.
- **Portability:** Sensors can be easily removed and redeployed across different platforms or test setups, enhancing versatility and cost-effectiveness.
- **Scalability:** Wireless networks support a higher channel count compared to traditional slip rings, enabling comprehensive data collection from multiple points simultaneously.
- **Integrated Measurements:** Combining wireless sensors with inertial measurement units (IMUs) allows for synchronized capture of strain, temperature, vibration, attitude, position, and velocity data, providing a holistic view of aircraft performance.

Proven Performance in eVTOL Development

MicroStrain's wireless sensing solutions have been successfully employed in the development of cutting-edge eVTOL prototypes. For instance, Beta Technologies utilized MicroStrain sensors to monitor various parameters, including propeller thrust, vibration, strain, and load characterization on test stands. The synchronized data acquisition facilitated by the WSDA-2000 enabled precise analysis of propeller balance characteristics at various speeds and designs.

Comprehensive Data Acquisition

MicroStrain offers a range of sensor nodes tailored to specific measurement needs:

- **G-Link-200:** Rugged wireless accelerometers for vibration monitoring.
- **V-Link-200:** Versatile analog input nodes for strain and load measurements.
- **TC-Link-200:** Wireless thermocouple nodes for temperature monitoring.
- **3DM-GX5:** Advanced GNSS/INS aided AHRS for attitude, position, and velocity data.

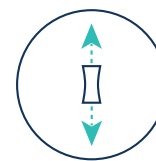


These nodes seamlessly integrate with MicroStrain wireless gateways, creating a robust and synchronized wireless sensor network that delivers high-fidelity data essential for the rigorous testing and validation of eVTOLs and drones.

Extensive Wireless Measurement Capabilities



Temperature



Strain



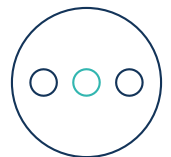
Vibration



Voltage



Acceleration

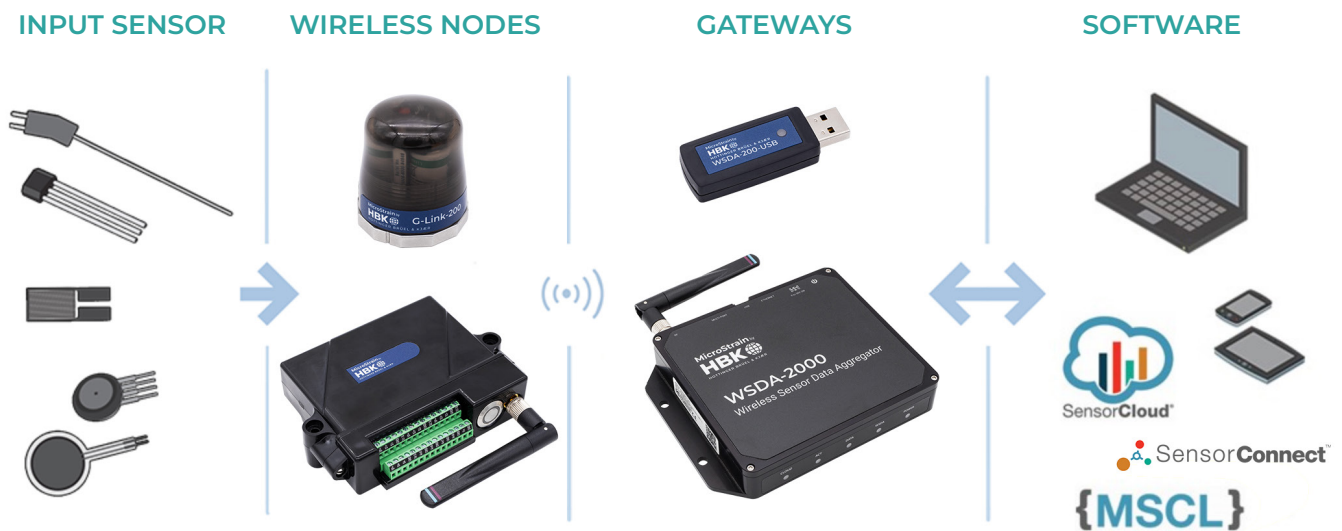


And more

Precision Synchronization with MicroStrain Wireless Gateways

At the heart of MicroStrain's wireless sensor networks is the WSDA-2000 Wireless Sensor Data Aggregator. This gateway ensures all connected sensor nodes are synchronized to within ± 50 microseconds, facilitating accurate correlation of data across various measurement points, including propellers and airframe structures. The WSDA-2000 offers multiple clock source options to suit diverse testing environments:

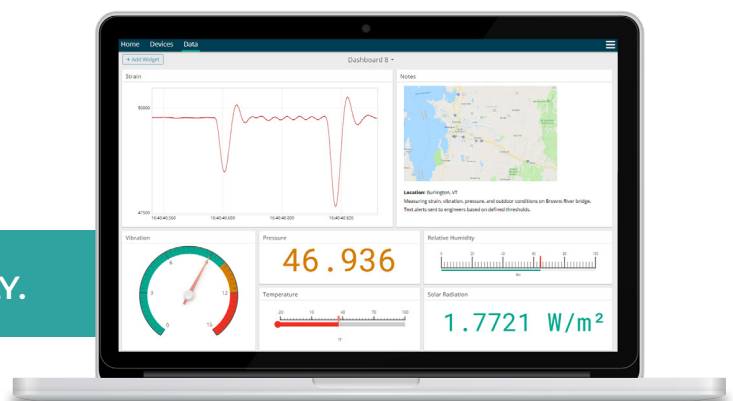
- **Internal Low Drift Oscillator:** Provides reliable timekeeping without external inputs.
- **Network Time Protocol (NTP):** Synchronizes with internet time servers for consistent global time references.
- **Global Navigation Satellite System (GNSS):** Utilizes satellite signals for precise timing, beneficial in mobile testing scenarios.
- **Precision Time Protocol (PTP):** (Coming soon) Offers high-accuracy synchronization over Ethernet networks.



SensorCloud

SensorCloud is a powerful cloud platform for storing, visualizing, and analyzing sensor data at scale. With features like FastGraph for instant visualization, MathEngine for advanced analytics, and customizable dashboards, it empowers users to manage sensor data effortlessly.

YOUR DATA, ANYWHERE. INSTANTLY.



We provide exceptional sensing and insights to create solutions for a cleaner, healthier and more productive world

LEARN MORE



ACCELERATE YOUR PRODUCT INNOVATION

HBK provides integrated solutions and domain expertise across the test and measurement product life cycle, bridging the gap between the physical world of sensors, testing and measurement and the digital world of simulation, modelling software and analysis.

