Inertial, Wireless & Displacement Sensing Systems

MicroStrain® Sensing Catalog

Logicbus®
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ENGINEERING **YOUR** SUCCESS.

Inertial Measurement

MicroStrain® inertial sensors provide orientation reference information for navigation and positioning applications. Our sensors use MEMS and can measure angular velocity and linear acceleration, outputting valuable information such as acceleration, tilt and roll, heading, position, velocity and attitude.

Features & Benefits

- Unrivaled Dynamic and Thermal Stability Provides Best-in-Class Performance
- Smallest, Light Weight Package Enables Larger Payload and Range
- Auto-Adaptive Extended Kalman Filter (EKF) and Auto-Magnetometer Calibration Increases Performance in Challenging Environments
- Standard Communication Protocol for Forward and Backward Compatibility and Interchangeability

Typical Applications

- Antenna-Pointing & Platform Stabilization
- Auto-Steering & Terrain Compensation
- Vehicle Stability & Leveling
- Dynamic Incline Detection
- Autonomous Digging & Payload Measurement

DUAL ANTENNA GNSS/INS WITH RTK
3DMGQ7-GNSS/INS Tactical Grade, 1.4°/h in-run bias, 2 cm Accuracy with RTK, 300°/sec Gyro, 8g Accel
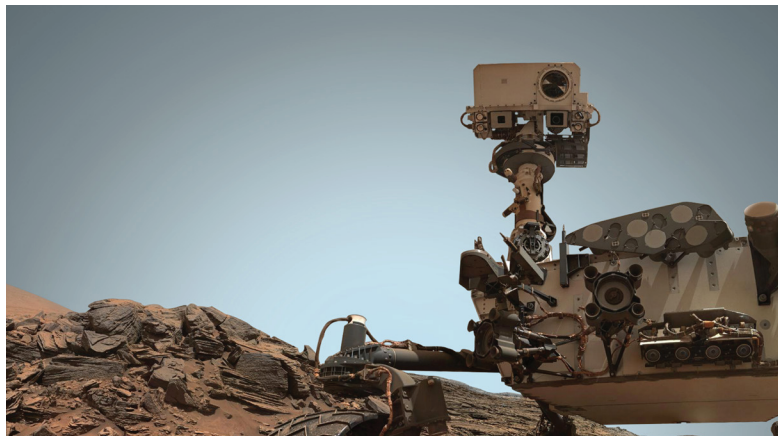
RUGGEDIZED INCLINOMETER
MV5-AR & ML5-AR Gyro-Stabilized, Full 360° 6-DOF Range, IP68 / IP69K, CANopen or J1939

PREMIUM INDUSTRIAL INERTIAL SENSORS
3DM-GX5 SERIES 8°/h in-run bias, 75-900°/sec Gyro, 2-40g Accel, Industrial Grade Package

GNSS-Aided Navigation	AHRS with GNSS	AHRS	Attitude Reference	IMU
✓Magnetometer	✓Magnetometer	✓Magnetometer	✗Magnetometer	✗Magnetometer
✓Ext. Kalman Filter	✗Ext. Kalman Filter	✓Ext. Kalman Filter	✓Ext. Kalman Filter	✗Ext. Kalman Filter
✓GNSS	✓GNSS	✗GNSS	✗GNSS	✗GNSS

PREMIUM OEM GNSS/INS
3DM-CX5 8°/h in-run bias, 2-40g Accel, 75-900°/sec Gyro, OEM Package

LOW-COST OEM AHRS & IMU
3DM-CV5 10°/h in-run bias, 2-40g Accel, 125-1000°/sec Gyro, OEM Package

Wireless Measurement

MicroStrain wireless sensors combine the simplicity of wireless data acquisition with the reliability of hardwired instrumentation. Our line of instrumentation grade sensors enable simultaneous, high-speed data acquisition of voltage, acceleration, strain, temperature and more.

Features & Benefits

- Lossless, Time-Synchronized, and Scalable Communication Protocol Enables Hardwired Performance
- Open Communication Library Allows Wireless Data Acquisition to be Easily Added to Your Application
- SensorConnect & SensorCloud Software Provide Unrivaled Data Visualization
- Low Power Consumption Eliminates the Hassle of Frequent Battery Replacement
- High-Fidelity Measurement Enables High Levels of Analysis When Upgrading to Wireless Data Acquisition

Typical Applications

- On-Board Vehicle Condition Monitoring
- Condition Monitoring of Rotating Equipment
- Amusement Park Safety Testing
- Production Testing and Validation
- Structural Health Monitoring

VOLTAGE MEASUREMENT
V-Link-200 Wireless 8-channel analog input node for precise measurement of voltage, strain gages, load cells and pressure transducers.

TEMPERATURE MEASUREMENT
TC-Link-200 Wireless 12-channel sensor for precise measurement of thermocouples.

RTD-Link-200 Wireless 6-channel sensor for precise measurement of RTDs and thermistors.

VIBRATION & INERTIAL MEASUREMENT
G-Link-200 Wireless 3-axis accelerometer with rugged, weatherproof enclosure. Fully calibrated and low noise. Ideal for vibration, impact and tilt.

STRAIN MEASUREMENT
SG-Link-200 Wireless 3-channel sensor with a rugged, weatherproof enclosure for precise measurement of strain gages, load cells, pressure transducers, and accelerometers.

TORQUE MEASUREMENT
Torque-Link-200 Wireless node transforms standard driveshafts into wireless torque transducers by application of one strain bridge.

EMBEDDED WIRELESS OEM SENSORS

VIBRATION, STRAIN, & TEMPERATURE
G-Link-200-OEM Wireless 3-axis accelerometer for OEM integration. Fully calibrated and low noise. Ideal for vibration, impact and tilt applications.

SG-Link-200-OEM Wireless 2-channel analog input node for OEM integration. Ideal for precise measurement of strain gages, load cells and pressure transducers.

TC-Link-200-OEM Wireless 1-channel temperature node for OEM integration. On-board CJC and calibration for use with a thermocouple, RTD or thermistor.

WIRELESS BASE STATION & SENSOR DATA AGGREGATOR

CLOUD-ENABLED
WSDA-2000 Network gateway, Sensor-Cloud and LXRS/LXRS+ compatible.

COMPACT & SIMPLE
WSDA-200-USB Internal or external antenna. LXRS/LXRS+ compatible.

Displacement Measurement

MicroStrain displacement sensors are ideal for precise micro-position measurements. Our miniature linear variable displacement transducers (LVDTs) provide accurate, repeatable measurement in harsh environments over millions of cycles without degradation in performance.

Features & Benefits

- Unrivaled Stroke to Length Ratio Enables Sensors to Fit Into Challenging Spaces
- Frictionless Design Allows Robust Operation in Harsh Environments with Temperatures up to 175°C
- Full Stroke 100 pt Calibration Results in High Accuracy Up to .05% of Full Scale with Resolution Up to 160,000:1, and Frequency Response Rate of 10 kHz
- Technical Support Experts Available to Assist in Selecting the Proper Displacement System for Specific Applications

Typical Applications

- Industrial Automation
- Production Line Monitoring
- Position Control and Actuator Feedback
- Dimensional Gauging in Quality Control Systems
- Measure Deflection and Strain in Materials and Structures


MICROSTRAIN DISPLACEMENT SENSORS

Combine half-bridge LVDT with a MicroStrain DEMOD signal conditioner for highest performance.

		Long Stroke LS-LVDT	Subminiature S-LVDT	Microminiature M-LVDT	Non-Contact NC-LVDT
Measurement Range		0 –150 mm	0 – 38 mm	0 – 9.0 mm	0 – 2.5 mm
Diameter		12.7 mm	6.0 mm	1.8 mm	10-32 UNF-2A 1/2-20 UNF-2A
Temperature Resistance		-55 – 150°C	-55 – 175°C	-55 – 175°C	-55 – 175°C
OPTIONS	High Resolution		✓	✓	
	Nano Resolution		✓		
	Spring-Loaded Gauging		✓	✓	
	Threaded Body	✓	✓	✓	✓

Signal Conditioners
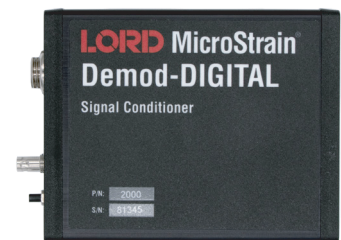
DEMOD-DIGITAL
Highest Performance, Single Channel, Digital RS232 and Analog 0-10V outputs.

DEMOD-DVRT®-2
High-performance, expandable LVDT and DVRT signal conditioner. Optional backplane for up to four channels.

DEMOD-DC™
Miniature, low cost, LVDT signal conditioning module with high dynamic range for difficult measurements

Connectivity

MicroStrain's software systems make it simple to integrate our sensors into your system by supporting multiple open source and widely used data acquisition environments.

SensorConnect

SensorConnect is MicroStrain's PC software for sensor configuration and data collection. Use SensorConnect to configure inertial parameters, configure wireless nodes, and collect and analyze data in real-time from our sensors.

Visualize massive amounts of data instantly without delay using our built-in intelligent data collection and graphing algorithms. View numerous points of interest easily with the available widgets and graphs.
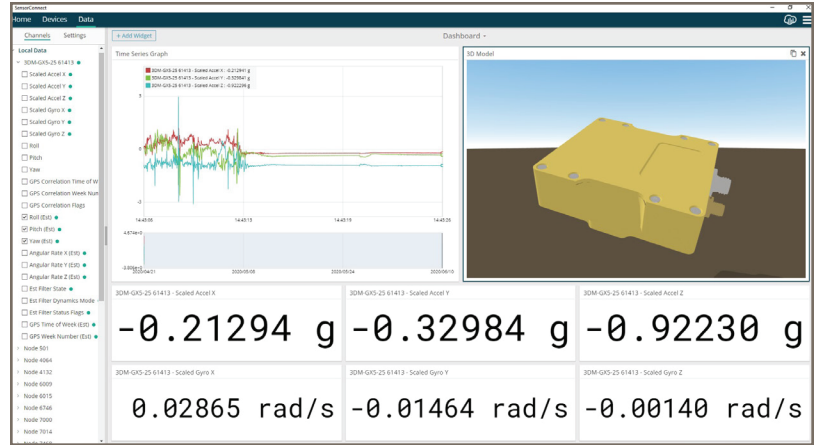
MSCL™ & APIs

The MicroStrain Communication Library (MSCL) makes it simple to write code to interact with our sensors. MSCL is our open-sourced API, readily available and fully-documented on GitHub, featuring valuable tools such as full documentation, example code and a quick start guide.

If MSCL does not meet your needs, Data Communication Protocols are available in the Protocols section of our GitHub page. If cloud data storage is required, SensorCloud provides a REST API allowing data to be uploaded as necessary. For more information, see the SensorCloud section of our GitHub page.
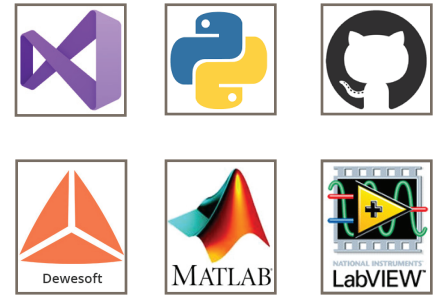
ROS

Robot Operating System (ROS) is an open-source, meta-operating system for robots. It provides operating system services, including hardware abstraction, low-level device control, implementation of commonly-used functionality, message-passing between processes, and package management.

Utilize ROS for building and simulating robotics applications, unmanned ground vehicles(UGV's) and simultaneous localization and mapping (SLAM). To facilitate better integration within the ROS ecosystem, MicroStrain offers an open source, License free (MIT License) series of drivers specifically designed and tested for ROS.
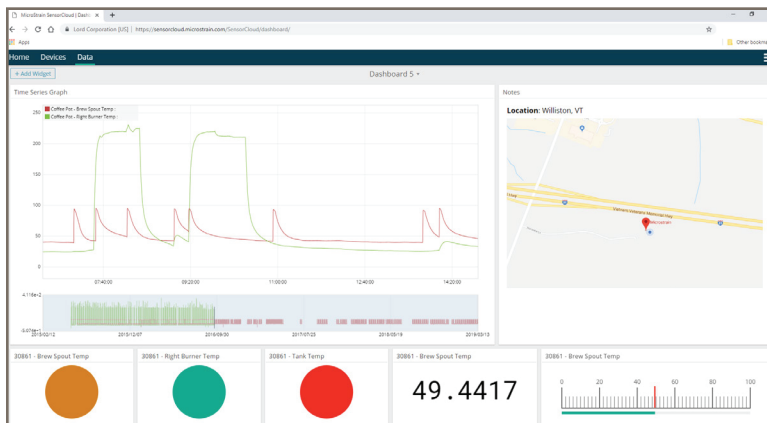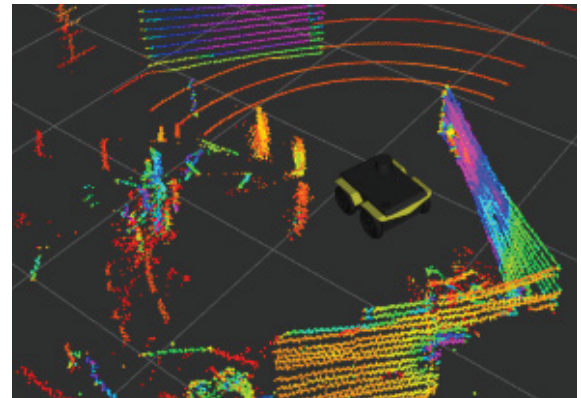
SensorCloud

Use SensorCloud to upload unlimited amounts of Wireless data from anywhere in the world and share with all stakeholders. Analyze the data using MathEngine, which offers the ability to run algorithms and write original and application-specific Python scripts. Take advantage of the plug and play support built into our wireless system Ethernet gateways. Wireless data is automatically uploaded directly to your SensorCloud account. Set email and text alerts on your data to be notified when events occur.

3DMGQ7-GNSS/INS

Multi-band, Dual Antenna, GNSS/INS with Real Time Kinematics

MICROSTRAIN SENSING SYSTEM

The 3DM GQ7-GNSS/INS is an all-in-one navigation solution featuring centimeter-level position accuracy. It is our first dual-antenna, RTK enabled INS designed for outstanding performance, even in unpredictable conditions. It is equipped with dual multiband GNSS receivers, low noise and low drift MEMS inertial sensors, and a robust adaptive Kalman filter. When paired with our SensorCloud ™ RTK corrections service, the 3DM GQ7 is the best single-vendor RTK navigation solution available.

Combine the GQ7 with the SensorCloud RTK network service and cell enabled RTK for a complete navigation system.

Unmanned Ground Vehicle (UGV)

Beyond Visual Line of Sight (BVLOS)

Precision Agriculture