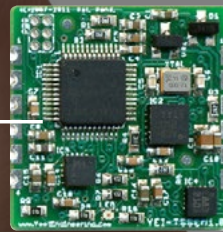
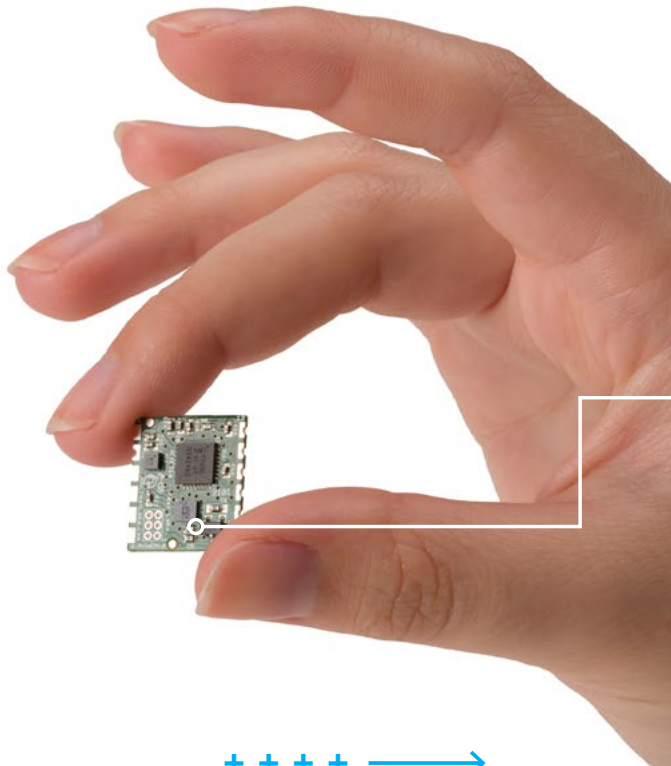




INERTIAL MOTION SENSING SOLUTIONS

sensors for today's and tomorrow's most exciting products

3-Space™ Sensors



- MAKING VR INTERACTIVE
- STABILIZING DRONES
- CONTROLLING ROBOTS
- TRACKING HUMAN MOVEMENT

THESE ULTRA LOW LATENCY SENSORS TELL YOU WHERE YOU ARE HEADING IN REAL TIME

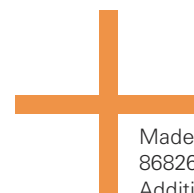


Yost Labs' 3-Space™ sensor products are a family of miniature, high-precision, high reliability, Attitude and Heading Reference System (AHRS) / Inertial Measurement Units (IMU) that are establishing new benchmarks for low latency and high accuracy.

With open source API and flexible output format, engineers and developers can access Yost's ultra low latency motion data in any development environment. Our QGRAD™ fusion firmware enables these sensors to output fully fused orientation at **850Hz** (3x faster than sensors running a Kalman filter). This provides the necessary low latency responsiveness needed for applications such as HMD

tracking, drone stabilization, biomechanics analysis, and real-time robotic control. For calibrated IMU data, 3-Space sensors clock in at **1,350Hz**.

These impressive stats are the result of a decade of sensor fusion R&D. Yost Labs' innovation has been recognized with several patent awards with numerous additional patents pending.



Made in USA. Patents: 8498827, 8682610, 9255799, 9354058. Additional patents pending.

3-SPACE SENSORS

SPECIFICATIONS

3-Space SMT Modules



- USB 2.0, UART serial, SPI, I2C
- 15 x 16.5 x 2 mm, < 1 gram
- Easily integrated
- Power consumption: 31mA

3-Space USB/RS232



- USB 2.0, RS232 serial
- 50x35x15 mm, 17 grams
- USB communications via virtual COM port
- RGB status LED
- Two input buttons
- Case options: hand-held, screw-down, and watertight

3-Space Wireless Direct-Sequence Spread Spectrum (DSSS) or Bluetooth



- USB 2.0, Wireless 2.4GHz DSSS or Bluetooth versions
- a single dsss dongle can support up to 15 ind sensor units
- Rechargeable LiPO Battery
- 76.3x35x15 mm, 28 grams
- USB virtual COM port,
- 2.4Ghz Wireless
- RGB status LED
- Two input buttons

3-Space Data-logging



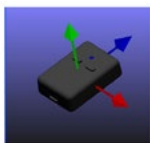
- USB2.0
- Data storage: MicroSD card
- Real-time clock
- Rechargeable LiPO Battery
- 60x35x15 mm, 28 grams
- RGB status LED, two buttons
- Case options: hand-held or screw-down

API



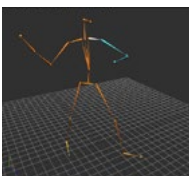
- The 3-Space Application Programming Interface (API) is open source and makes integration quick and easy
- Native support for Python (2.7+ and 3.0+) and C/C++
- Support for any language that can import Microsoft Windows Dynamic Link Libraries (.dll)

3-Space Sensor Suite & Drivers



- Realtime interactive 3D display of orientation
- Realtime display of sensor data in strip-chart format
- Sensor data capture to file
- Access to calibration and performance features
- Access to all sensor configuration parameters
- Data terminal for ASCII communication and debugging

Motion Capture Studio



- Free open source application for configuring 3-Space sensors and recording motion capture sessions
- Real-time 3D display of kinematic model and actor pose
- Supports real-time streaming and threaded orientation data recording
- Records orientation data as keyframes, thus making editing easy
- Supports BVH (Biovision Hierarchy) and FBX (Filmbox) formats
- Open protocol

Data Fusion

850Hz with QGRAD™ filter

Processing

250Hz with Kalman filter

Update Rate

1,350Hz in IMU mode

Orientation Output

Absolute & relative quaternion, Euler angles, axis angle, rotation matrix, two vector

Additional Outputs

Raw sensor data, corrected sensor data, normalized sensor data, temperature, linear acceleration

Orientation resolution

<0.08°

Orientation Accuracy²

±1° for dynamic conditions & all orientations

Acceleration scale

±2g / ±4g / ±8g selectable
±6g / ±12g / ±24g for HH
±100g / ±200g / ±400g for H3

Gyro Bias stability (25°C)

2.5° per hour

Gyro sensitivity

0.00833°/sec/digit for ±250°/sec
0.06667°/sec/digit for ±2000°/sec

Gyro noise density

0.009°/sec/√Hz

Compass Sensitivity

0.73 mGa/digit

Compass Non-Linearity

0.1% full-scale

Temp. Range

-40C ~ 85C (-40F ~ 185F)

Compass Non-Linearity

0.1% full-scale Integration engineering support available

1. Specifications are subject to change
2. Average value when calibrated.



Our team of researchers and engineers are here to support you. Contact us at [740.876.4936](tel:740.876.4936) for custom hardware design and integration services.



About Yost Labs, Inc.: We are a fast growing private company based in historic Portsmouth, Ohio. With over a decade of experience in low-latency inertial sensor innovation, we enable motion tracking in many of today's and tomorrow's most exciting products. We make virtual reality interactive. We stabilize drones and navigate autonomous cars. We measure human motion for athletic performance and rehabilitation. We provide real-time low-latency tracking and reduce power consumption at lower prices than previously available. Yost Labs' innovation has been recognized with numerous patents with additional patents pending. Our customers and value-added resellers include the US Navy, US Air Force, NASA, US Army Corps of Engineers and over 1,000 leading technology firms and academic institutions around the world.