LPMS-IG1P

9-Zxis Inertial Measurement Unit (IMU) / AHRS and GPS Receiver with USB / CAN / RS232 Connectivity

LPMS-IG1P is a compact 9-axis IMU with integrated GPS, designed for high-precision orientation and acceleration measurements in harsh industrial environments. Housed in an IP67-rated enclosure, it fuses data from the gyroscope, accelerometer, and magnetometer in real-time with low drift and high accuracy.

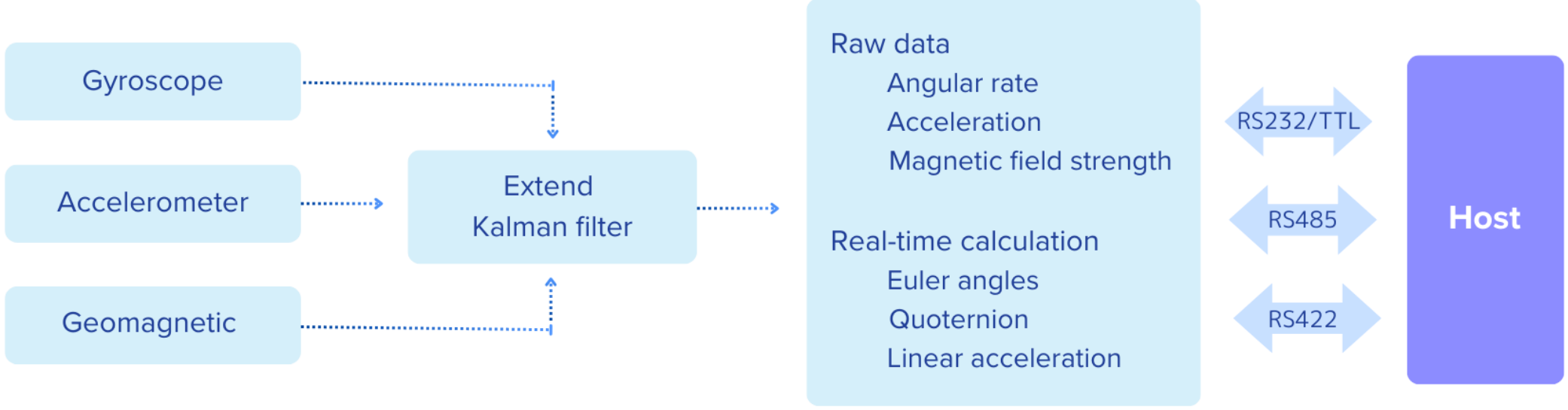
It also supports an automotive-grade GNSS extension compatible with BeiDou, Galileo, GLONASS, GPS, and QZSS. An optional sensor fusion library enables the integration of IMU, GNSS, and odometry data for vehicle navigation systems.

Key features

- MEMS-based 9-axis inertial measurement unit (IMU) with on-board sensor fusion
- Very low-noise gyroscope for low-drift measurements with a bias stability of 4°/hour
- Dual gyroscope mode with additional high-range gyroscope for measurements above 400°/s up to 2000°/s
- Multi-channel GNSS extension supporting BeiDou, Galileo, GLONASS, GPS / QZSS satellite systems
- Real-time, on-device calculation of sensor orientation and linear acceleration
- CAN bus (partial CANopen support) or RS232 communication interface options. All models include a USB connection.
- IP67 rated housing (dustproof and waterproof)

Applications

- Robotic arm control (forward kinematics)
- Vehicle dead reckoning
- VR/AR object orientation tracking
- AGV (Automated Guided Vehicle) navigation



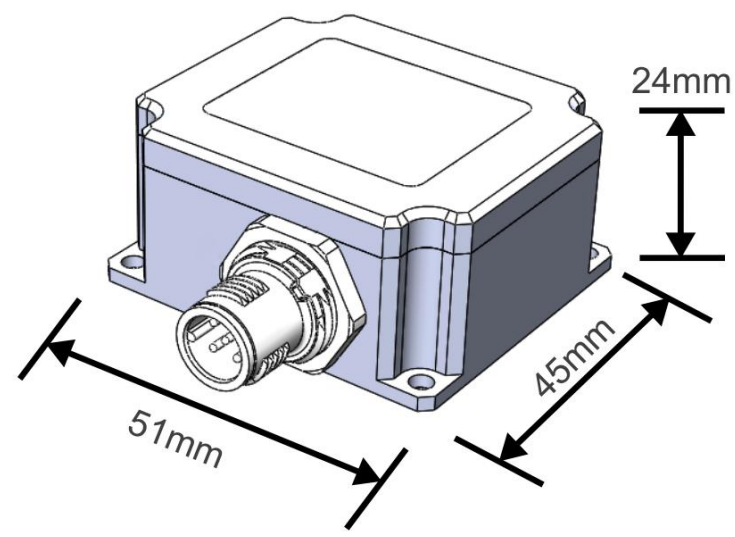
LP-RESEARCH Inc.#201 Re-Flat, 3-10-4, Motoazabu, Minato-ku, Tokyo, 106-0046
Email: sales@lp-research.com Web: https://www.lp-research.com

Sensor Specifications

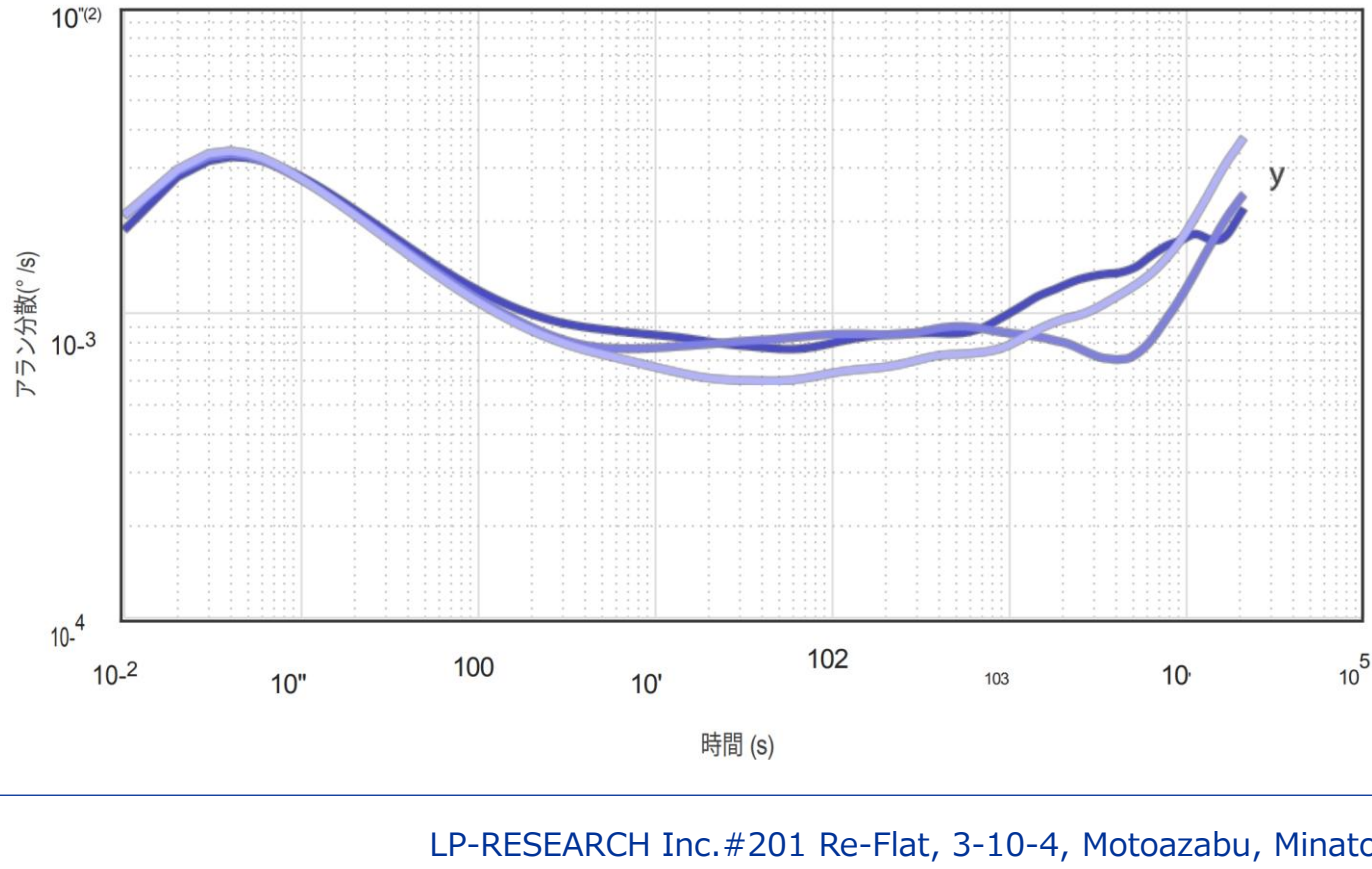
Part number	**LPMS-IG1P CAN**	**LPMS-IG1P RS232**
Wired interface	CAN Bus, USB	RS232 USB
Baudrate	1M bit/s	921600 bit/s
Communication protocol	LP-CAN / CANopen	LP-BUS
Size	51 x 45 x 24 mm	
Weight	117.8 g	
Orientation range	Roll: ±180°; Pitch: ±90°; Yaw: ±180°	
Orientation resolution	0.01°	
Accelerometer	3-axis, ±2 / ±4 / ±8 / ±16 g, 16 bits	
Gyroscope	Dual gyroscope design: #1: 3-axis, ± 400 dps, 24 bit, #2: 3-axis, ± 1000 / ± 2000 dps, 16 bit	
Static orientation stability	#1:4°/hour, #2: 6°/hour	
Gyroscope noise density	#1: 0.002 dps/√Hz, #2: 0.004 dps/√Hz	
Magnetometer	3-axis, ±2 / ±8 gauss, 16 bits	
Data output format	Raw data / Euler angle / Quaternion	
Data output rate	5 ~ 500 Hz	
GNSS support	BeiDou, Galileo, GLONASS, GPS / QZSS	
GNSS Max. update rate	25 Hz	
Power consumption	0.564W (0.047A@12 V)	
Power supply	5 V ~ 24 V DC	
Connector	Signal connector: M12 8 Pin (SACC-DSI-MS-8CON-PG 9/0.5 SCO equivalent) GPS antenna connector: SMA	
Housing	Aluminum, IP67 rated	
Temperature rage	-20 to +80 °C (upon request -40 to +80 °C)	

※ Please refer to the product manual for more detailed specifications.
※ This GPS parameter configuration applies to Version 7.0 and above.
Some features may not be available in versions below 7.0. For specific details, please contact us.

Dimensions



LPMS-IG1P High Precision Gyroscope (#1) Allan Variance Plot



Package details

- LPMS-IG1P sensor × 1
- User guide card × 1
- Cable (Incl. USB connector) × 1
- Box x 1
- Warranty (1 Year) x 1

LP-RESEARCH Inc.#201 Re-Flat, 3-10-4, Motoazabu, Minato-ku, Tokyo, 106-0046
Email: sales@lp-research.com Web: https://www.lp-research.com