LPMS-IG1W

9-AxisIMU(Inertial Measurement Unit)/AHRS(Pose Measurement)、

Wi-Fi communication support

The 9-axis IMU sensor LPMS-IG1W detects orientations and acceleration and measures them with high precision. It is possible to communicate with host systems such as PCs and smartphones via Wi-Fi connection.

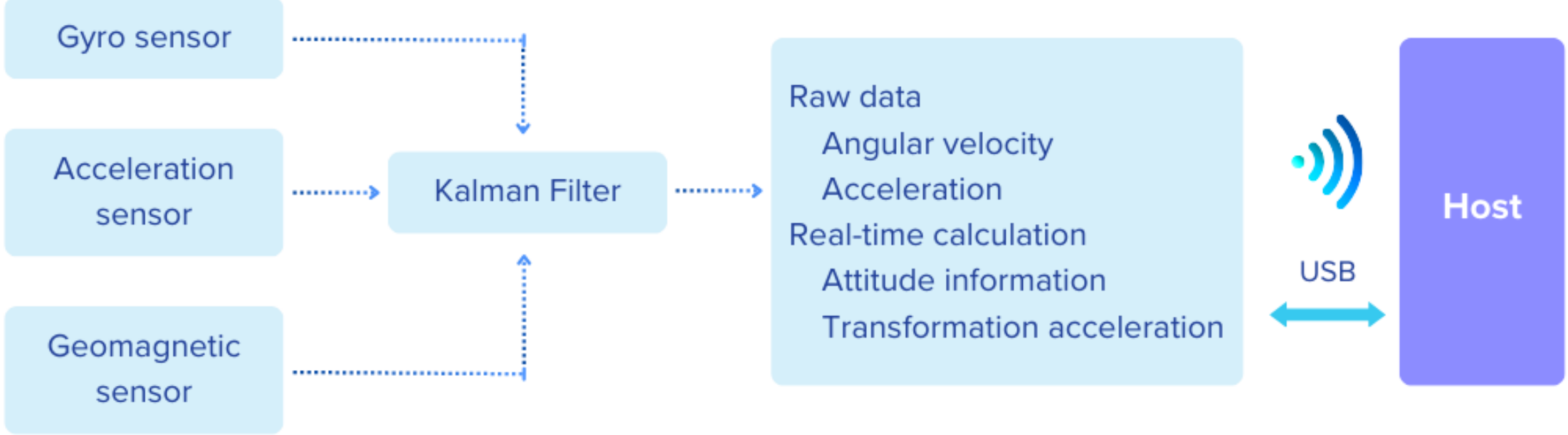
The compact size, high accuracy, waterproof case (IP67), and powerful CPU inside the sensor process data from the gyroscope, accelerometer, and magnetometer,
and provide low-drift, high-precision results in real time. It is suitable for industrial environments where highly accurate, low-latency measurements are required.

Key Features

- MEMS 9-axis IMU with sensor fusion function ・ Equipped with low-noise/low-drift (4°/h) accelerometer
- Equipped with two types of gyro, enabling measurement over a wide range (400 to 2000°/s)
- Pose/linear acceleration calculated in real time inside sensor
- Wi-Fi connection supported ・Waterproof (IP67) and shock-resistant up to 10,000G. Suitable for industrial environments.

Application

- ・Remote-controlled robots, robot arms, etc.
- ・IoT applications such as abnormal vibration detection
- ・VR/AR tracking systems
- ・AGV navigation systems



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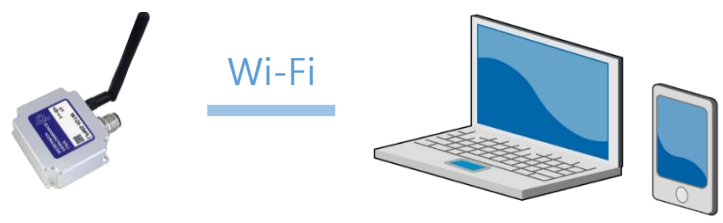
Two types of connection methods

1 Without Wi-Fi router

Connection example



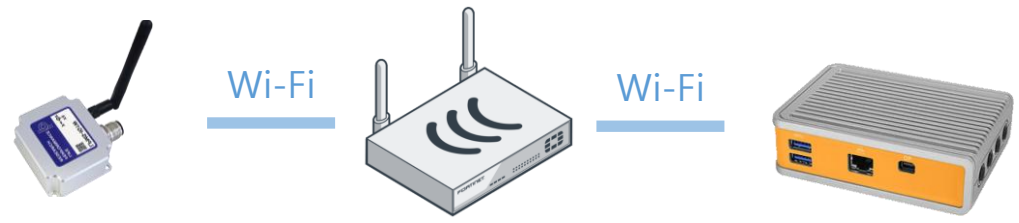
LPMS-IG1W
Host

Client

LPMS-IG1W becomes a Wi-Fi hotspot, and can be directly connected without a Wi-Fi router

2 With Wi-Fi router

Connection example



LPMS-IG1W
Client

Wi-Fi router

Gateway
Host

If there is a Wi-Fi network, data can be sent via MQTT

Data Acquisition method

Data can be acquired via socket communication or MQTT

Check sensor data and change settings remotely.

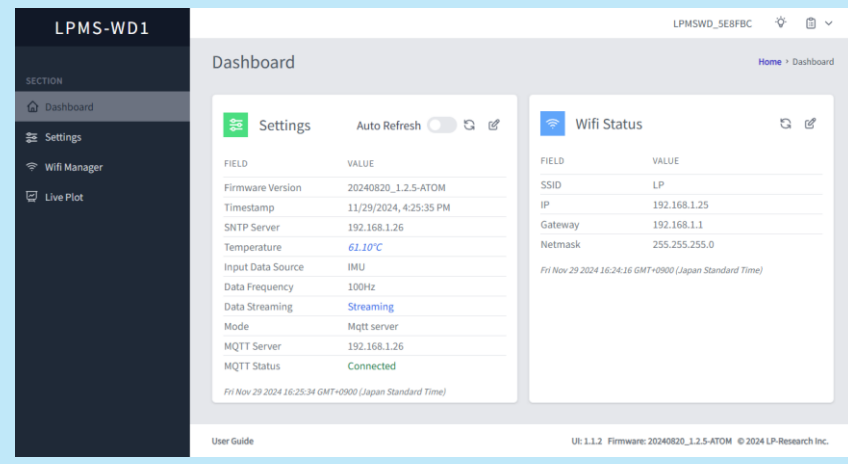
The LPMS-IG1W can host web pages

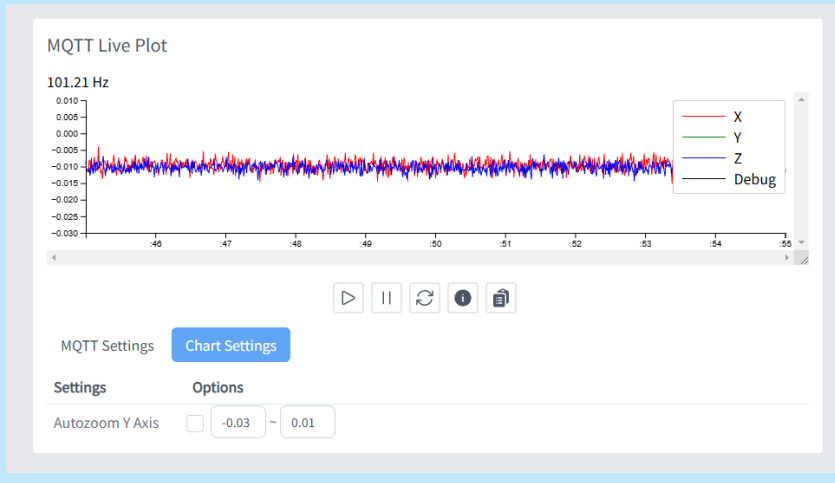
- This product can host web pages on its own
- Devices on the same network as this product or via a web browser can access it

Remote data confirmation, modification, and operation

- Measurement data from this product can be confirmed in real-time graphs from the hosted web page
- The connection status and temperature of this product can also be confirmed
- Various settings such as the type of data to be acquired and measurement frequency can be changed remotely
- Sensor commands such as the calibration initialization command can also be executed

Example of how it will look in the browser (the screen is still under development)





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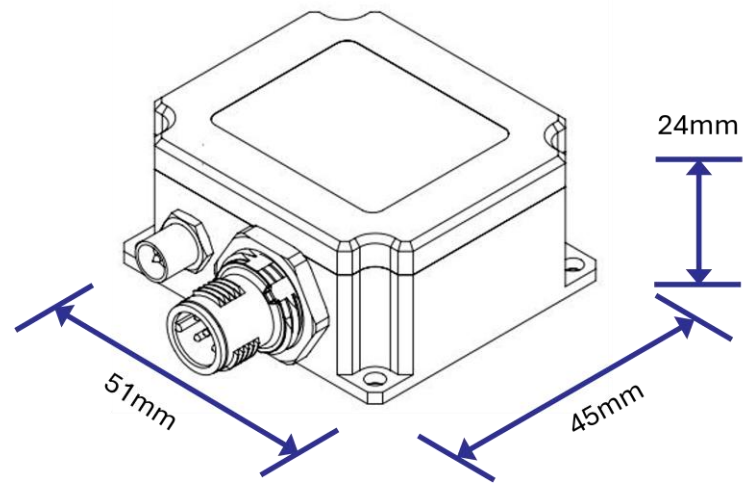
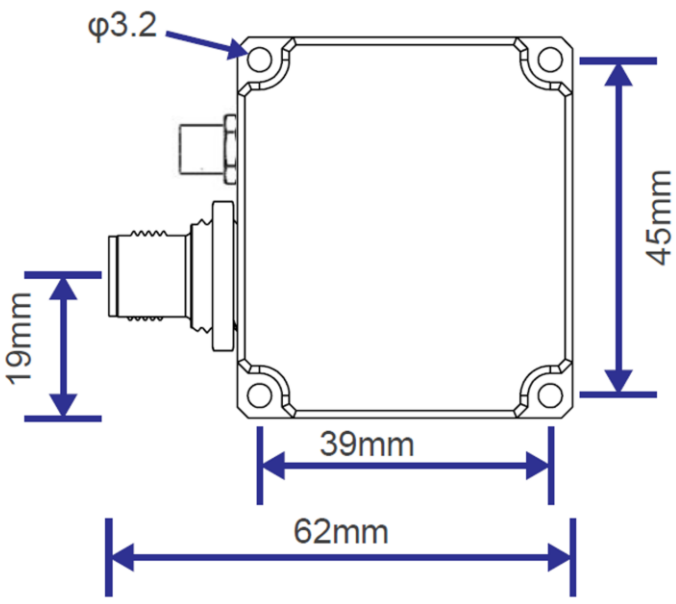
Sensor Specifications

Part number	**LPMS-IG1W**
Interface	Wi-Fi + USB
Weight	115g
Size	51×45×24mm
Static orientation stability	#1: 4 °/hour, #2: 6 °/hour
Orientation range	360° about all axes
Resolution	< 0.01°
Accuracy	< 0. 3° (static), < 1° RMS (dynamic)
Accelerometer	3-axis, ±20 / ±40 / ±80 / ±160 m/s2, 16 bits
Gyroscope (2 types installed)	Gyro #1: 3-axis, ± 400 dps, 24 bit; Gyro #2: 3-axis, ± 1000 / ± 2000 dps, 16 bit
Magnetometer	3-axis, ± 4 / ± 8 / ± 12 / ± 16 gauss, 16 bits
Gyro-noise density	#1: 0.002 dps/√Hz, #2: 0.004 dps/√Hz
Data output format	Raw data / Euler angle /Quaternion
Data output rate	5 ~ 500 Hz
*Power consumption	0.85W (0.07A@12V)
Power supply	5 V ~ 36 V DC
Temperature range	-20 to +80°C (upon request -40 to +80°C)
Connector	M12 8 Pin (SACC-DSI-MS-8CON-PG 9/0,5 SCO equivalent) SMA connector (antenna connector)
Case material	Aluminum, waterproof (IP67)
Wi-Fi information	Maximum transmission distance: 10 ~ 30m (※1), Wi-Fi frequency band: 2.4GHz, Communication protocol: TCP/IP I MQTT, Wi-Fi output frequency: MQTT 5 ~ 200Hz, Socket 5~500Hz
Software	Windows C++ library, Java library for Android, LPMS Control (Data analysis software), Open Motion Analysis Toolkit (OpenMAT) for Windows

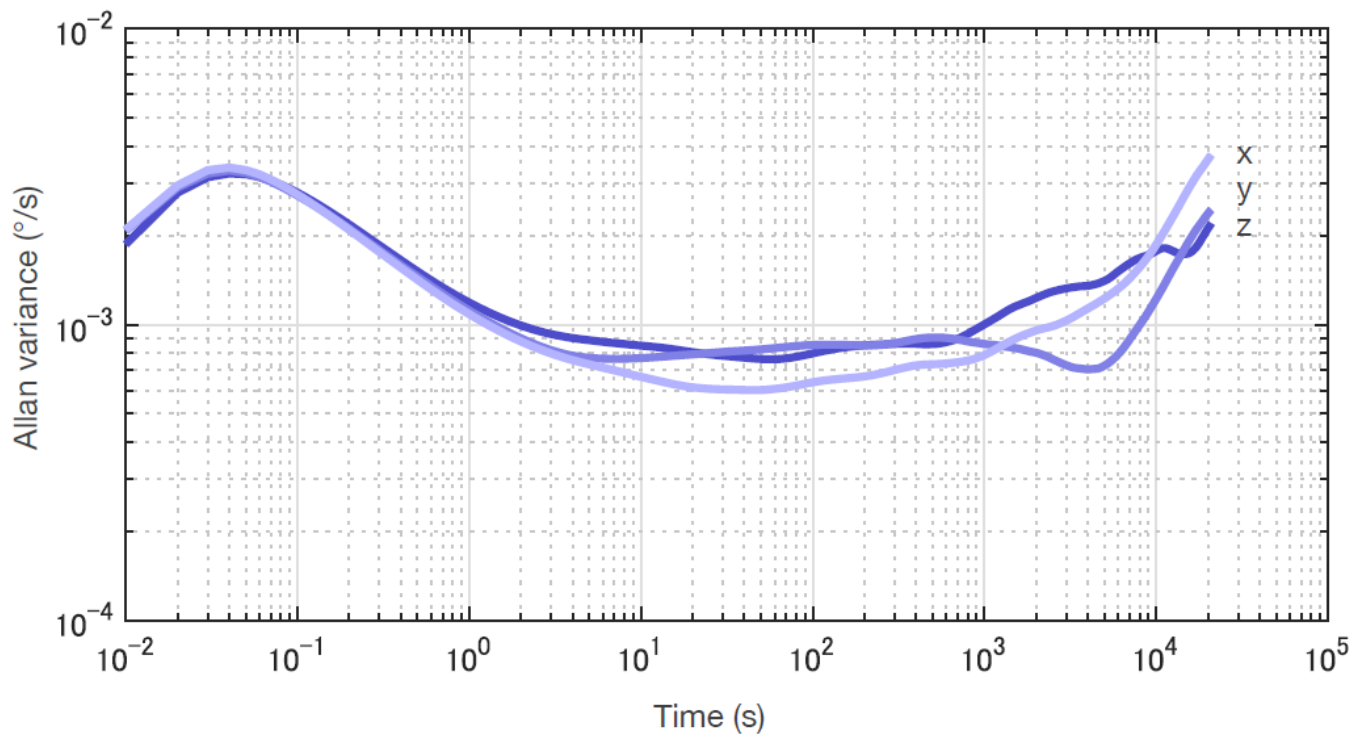
※1: The communication range may change depending on the usage environment.
* Performance parameters are measured at **+25°C**. Other temperatures may result in varying reference values.
※Please refer to the product manual for more detailed specifications.

External Dimensions





LPMS-IG1W High-precision gyroscope (#1) Allan variance graph



Package

- LPMS-IG1W sensor× 1
- Antenna× 1
- Instruction Manual× 1
- Cable (included USB connector) × 1
- Warranty (1 year)

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