

# LPMS-UTTL2

## 9-Axis Inertial Measurement Unit (IMU) / AHRS with USB and UART TTL Connectivity

The LP-Research Motion Sensor with USB and UART TTL connectivity version 2 (LPMS-UTTL2) is a miniature inertial measurement unit (IMU) / attitude and heading reference system (AHRS). The unit is very versatile, performing accurate, low-latency orientation measurements. By the use of three different MEMS sensors (3-axis gyroscope, 3-axis accelerometer and 3-axis magnetometer) low-drift, high-speed 3D orientation data is achieved.

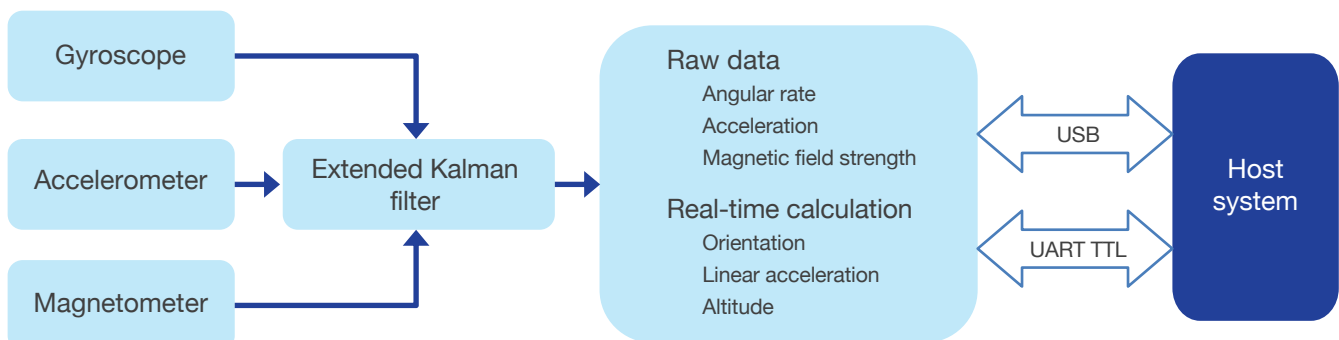


### Key Features

- MEMS-based miniature inertial measurement unit (IMU)
- Integration of 3-axis gyroscope, accelerometer, magnetometer, temperature and barometric pressure sensor in one unit
- Robust and light plastic enclosure
- Real-time, on-device calculation of sensor orientation, linear acceleration and altitude
- Data output rates of up to 400Hz
- USB interface and TTL serial (UART) communication
- Selectable binary and plain ASCII format output
- Control application and SDK for Windows, Linux

### Applications

- Human motion capture
- Internet of Things (IoT) devices
- Sports performance evaluation
- Drone flight control



NOTE: Diagram is simplified. Please ask us, if you need more detailed information.

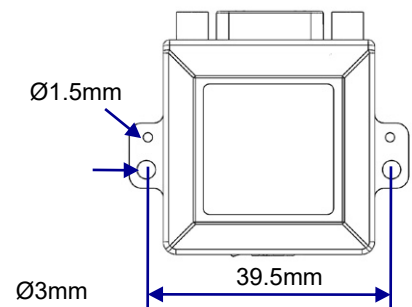
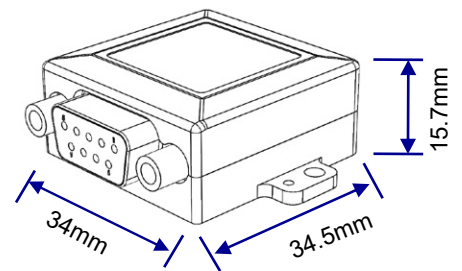


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## Sensor Specifications

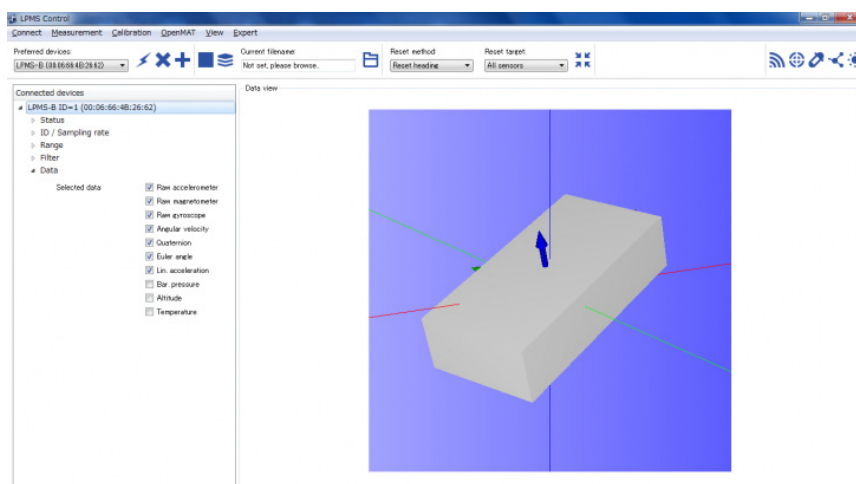
|                              |   |             |
|------------------------------|---|-------------|
| Wired interface              | TTL   | USB         |
| Max. baudrate                | 921.6Kbit/s   | 921.6Kbit/s |
| Communication protocol       | LP-BUS  | LP-BUS      |
| Size                         | 34 x 34.5 x 15.7 mm   |             |
| Weight                       | 17.6 g  |             |
| Orientation range            | Roll: $\pm 180^\circ$ ; Pitch: $\pm 90^\circ$ ; Yaw: $\pm 180^\circ$                                  |             |
| Resolution                   | $< 0.01^\circ$  |             |
| Accuracy                     | $< 0.5^\circ$ (static), $< 2^\circ$ RMS (dynamic)   |             |
| Accelerometer                | 3-axis, $\pm 2 / \pm 4 / \pm 8 / \pm 16$ g, 16 bits   |             |
| Gyroscope                    | 3-axis, $\pm 125 / \pm 245 / \pm 500 / \pm 1000 / \pm 2000$ dps, 16 bits                              |             |
| Static orientation stability | $9^\circ$ /hour   |             |
| Gyroscope noise density      | 0.007 dps/ $\sqrt{\text{Hz}}$   |             |
| Magnetometer                 | 3-axis, $\pm 4 / \pm 8 / \pm 12 / \pm 16$ gauss, 16 bits  |             |
| Pressure sensor              | 300-1100 hPa  |             |
| Data output format           | Raw data / Euler angle / Quaternion   |             |
| Data output rate             | up to 400Hz   |             |
| Power consumption            | $< 175$ mW@3.3V   |             |
| Power supply                 | 5 V ~18 V DC  | 5 V DC      |
| Connector                    | DB9 female  | Micro USB-B |
| Case material                | ABS Plastic shell   |             |
| Temperature range            | $-40 \sim +80^\circ\text{C}$  |             |
| Software                     | C++ library for Windows, LpmsControl software and Open Motion Analysis Toolkit (OpenMAT) for Windows. |             |

## Mechanical Drawing



NOTE: For detailed specifications, please refer to our product manuals.

## LpmsControl Utility Software



## Package

- LPMS-CU2 sensor x 1
- User guide card x 1
- Cable x 1
- Box x 1
- Warranty (1 year)