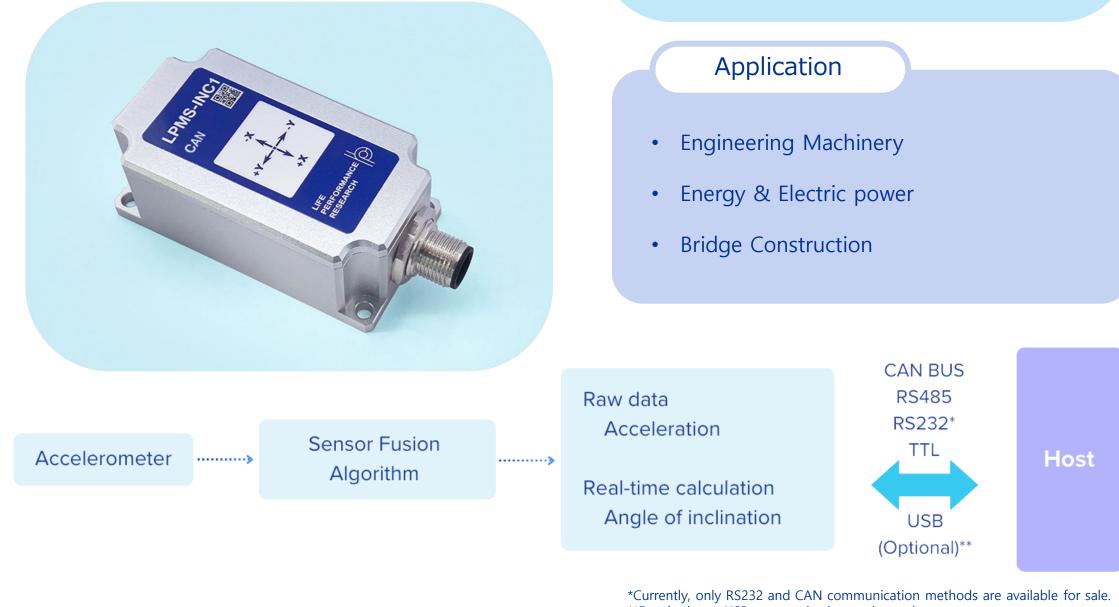
# LPMS-INC1

**Dual-Axis High-Precision Inclinometer Sensor** 

LPMS-INC1 is a high-precision, high-stability dual-axis inclinometer sensor based on MEMS technology.

This product processes the built-in accelerometer sensor data through an integrated processing algorithm, combining filtering and calibration algorithms for correction and calculation. Ultimately, it outputs real-time digital data, including uncalibrated raw acceleration data, calibrated acceleration data, inclination data, and temperature data.

In terms of communication, the LPMS-INC1 offers multiple interface options for different applications, including RS232, CAN, RS485, or TTL. (Currently only RS232 communication model is available for sale)





## Key features

- High-precision, high-stability dual-axis inclinometer sensor based on MEMS technology
- Measurement range: ±90° ٠
- Resolution: <0.001° (IEEE 32-bit single-• precision floating-point format)
- Accuracy: 0.011° •
- Operating temperature range: -20 to 85°C
- Power supply voltage: 5-36V •
- Real-time output: Raw acceleration data, calibrated acceleration data, inclination data, temperature data, etc.
- Multiple communication interface •

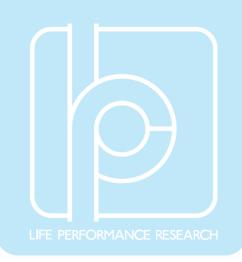
\*\*For the latest USB communication options, please contact us.

### LP-RESEARCH Inc.#201 Re-Flat, 3-10-4, Motoazabu, Minato-ku, Tokyo, 106-0046

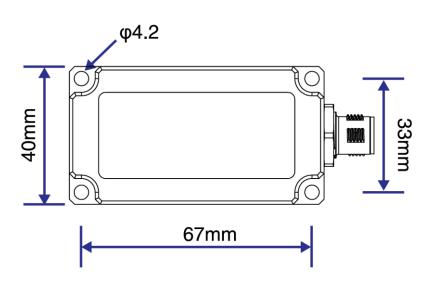
Email: sales@lp-research.com Web: https://www.lp-research.com

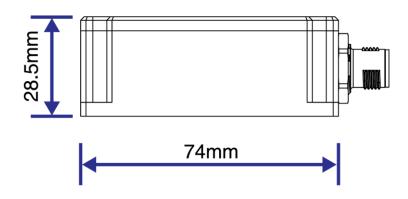
## Sensor specifications

Product name	LPMS-INC1 RS232	LPMS-INC1 CAN			
Size	74 x 40 x 28.5 mm				
Weight	About 184 g				
Cimmunication protocol	LPBUS CANOpen				
通信インターフェイス*	Currently only RS232 is available				
Baudrate	921600 bps	1M bps			
Dip measuring range	X: ±90°、Y: ±90				
Resolution	<0.001° (Flot 32 output)				
	0.011°(RMS)				
Zero bias error of accelerometer	X, Z: ±20 mg Y: -20 ~ +20 mg				
Zero bias temperature dependence of accelerometer**	X, Y : ±10 mg Z : ±15 mg				
Accelerometer noise density	X, Z : ±20 μg/√Hz Y : 15 μg/√Hz				
Data output format	Raw data / Dip angle / Temperature				
Data output rate	5 ~ 500 Hz				
Power consumption	240 mW (0.02A @12V)	300 mW (0.025A @12V)			
Power supply (RS232)***	5-36 V DC				
Connector	M12				
Housing	Aluminum, IP67 rated				
Temperature range	-20 ~ +80℃d				



## **External dimensions**





\*Please contact us if you need USB communication.

\*\* Difference from zero bias value at room temperature.

\*\*\* Performance parameters at room temperature+25 C, and reference values will change at other temperatures.

## Package

GUI of the software

- LPMS-INC1 sensor × 1
- User guide card  $\times 1$
- Cable  $\times 1$
- Box x 1
- Warranty (1 Year)

TO AND	

LpmsCon	trol - 2.1.0 (Build 20221129)					-		×
View Settin	gs Advanced Calibration							
Connection	Ø	Settings Acc Orientation	3D					
Connection		-	30					
COM Port	COM6: 0001-Silicon Labs	Sensor Data		5	Sensor Parameters			_
		1 Timestamp	14513 (29.026s)		Device name: LPMS-INC1-TTL		-	
Mode	VCP USBXPRESS Convert	2 AccRaw	0.0140833		Firmware info: INC1-0.0.3-20221 Filter version: LPFUSIONINC_1.0.			
Baud Rate	921600 *	3	-0.0138333		Serial no.: 203430385942500D IAP check status: Ready			
	Disconnect	4	0.9945000		TAP CIECK Status: Ready		Ŧ	
		5 AccCalibrated	0.0012572		=== General === Transmit Data: 69635 (00000000 00000	(00000000 0000001 00010000 00000011)		
		6	-0.0101521		Sensor ID: Data stream freg:	1 100Hz		
		7	1.0000697		Gyro output unit:	deg		
		8 Euler	0.0720253		Gyro autocalibration: Gyro threshold:	Disable Ødps		
		•			=== Acc === Acc range:	ØG		
		9	-0.5816095		=== Gyro === Gyro range:	Ødps		
		10	0.000000		=== Mag ===			
		11 Temperature	19.5397034	_	Mag range: Mag Calibration timeout:	0Gauss 0 s		
		12			=== Filter === Filter mode:	0		
		13		_	<pre>=== Uart === Uart baudrate:</pre>	921600		
		14			Uart data format:	LPBus		
		15		_	Uart data precision: Uart ascii start:	Floating point 0x24		
		16			Uart ascii stop: RS485 Uart Response Delay(ms):	0xa 0		
		17			=== Offset === Offset Mode: 0	0		
		18						
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				•				
	Senso	Sensor response						
								_
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Connection	Sensor							
Ready	Save data Save buffered data t	to file			Estimated freq 100.02Hz	Data Queue 8	Pause	

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