

MEMS PRESSURE SENSORS



Unique MEMS technology combining high-precision with low power



Robust solutions to enable various applications, from water-flow detection to depth monitoring, thanks to water-resistant sensors

ST's family of MEMS pressure sensors achieves high performance with low-power consumption (less than 4 μ A). Providing enhanced temperature compensation and an absolute pressure range from 260 to 1260 hPa (or 4060hPa), ST's pressure sensors can be used in the deepest and highest altitudes.

With its demonstrated expertise in MEMS sensors, ST offers a product portfolio that guarantees maximum reliability, thanks to a unique, full-molded package and robustness to degradation.

KEY FEATURES & BENEFITS

- High accuracy and low-power consumption
- Ultra-compact, thin fully-molded packages
- Robust packages with cylindrical metal LID & potting GEL, which can resist harsh conditions
- Embedded temperature compensation
- Absolute pressure range from 260 to 1260 hPa / 4060hPa
- Low-pressure noise
- Stability and performance in vertical positioning

KEY APPLICATIONS

- Mobile phones
- Wearables (smart watches and fitness bands)
- Hard disk drives
- Drones
- Equipment for weather stations and gas metering
- E-cigarettes and vacuum cleaners
- Asset tracking in airplane mode
- Under-water watches for water depth monitoring

Barometers

Part number	General description	Temperature range (°C)	Pressure range (hPa)		Pressure accuracy (hPa)	Operating current (µA)	Package size (mm)
			Min.	Max.			
LPS22DF	Low-power and high-precision MEMS nano pressure sensor: 260-1260 hPa absolute digital output barometer	-40 to +85	260	1260	± 0.5	1.7 (LP) ⁽¹⁾ 9.1 (HP) ⁽¹⁾	2 x 2 x 0.73
LPS22HH	High-performance MEMS nano pressure sensor: 260 -1260 hPa absolute digital output barometer	-40 to +85	260	1260	± 0.5	4 (LP) 12 (HP)	2 x 2 x 0.73
LPS22HB	Piezoresistive absolute pressure sensor, 260-1260 hPa, digital output barometer, I ² C, SPI	-40 to +85	260	1260	± 1	3 (LP) 12 (HP)	2 x 2 x 0.76
ILPS22QS	Dual full-scale with absolute digital output barometer with embedded Qvar electrostatic sensor for industrial applications	-40 to +105	260 260	1260 4060	± 0.5 ± 0.28% ⁽²⁾	1.8 (LP) 9.2 (HP)	2 x 2 x 0.73

Note: (1) LP: low-power mode / HP: high-performance mode

(2) 0.28% of input pressure






Waterproof pressure sensors

Part number	General description	Temperature range (°C)	Pressure range (hPa)		Pressure accuracy (hPa)	Operating current (µA)	Package size (mm)
			Min.	Max.			
LPS28DFW	Dual full-scale with absolute digital output barometer with water-resistant package	-40 to +85	260 260	1260 4060	± 0.5 ± 0.36% ⁽²⁾	1.7 (LP) ⁽¹⁾ 9.4 (HP) ⁽¹⁾	2.8 x 2.8 x 1.95
LPS27HHW	Absolute digital output barometer with water-resistant package	-40 to +85	260	1260	± 0.5	4 (LP) 12 (HP)	2.7 x 2.7 x 1.7
LPS27HHTW	Absolute digital output barometer with embedded temperature sensor in water-resistant package	-40 to +85	260	1260	± 0.5	4 (LP) 12 (HP)	2.7 x 2.7 x 1.7
LPS33HW	Absolute digital output barometer with water-resistant package	-40 to +85	260	1260	± 2.5	3 (LP) 15 (HP)	3.3 x 3.3 x 2.9

Note: (1) LP: low-power mode / HP: high-performance mode

(2) 0.36% of input pressure

Pressure Sensor End Customer Use Cases

Activity recognition  Vertical context detection Stair count / Man Fall down Pose & fitness monitoring	Vertical detection  Altitude monitoring 911 indoor vertical position Ambient pressure monitor	Flow detection  Puff detection Air flow metering	Airplane mode detection  Recognize take-off and landing to set the radio / GPS signal	Water depth monitoring  Water depth monitoring
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- Mobile phones
- Wearable watches

- Mobile phones
- Wearable watches
- Hard disk drives
- Drones
- Weather station

- E-cigarettes
- Gas metering
- Vacuum cleaners
- Smart filters

- Asset tracking

- Diver watches
- Water depth meter



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