

# Low-power, low-voltage accelerometer

## LPA100T



The heart of the LPA100T accelerometer incorporates new technology and innovative designs. Breaking from conventional sensor power, the LPA100T operates from low voltage (3-5 volts) and consumes less than 300  $\mu$ Watts. Traditional sensors typically operate at 48 mWatts; the LPA100T offers 100x energy savings. In addition to low-power consumption, new patented circuitry minimizes settling time to less than ten milliseconds while still preserving 0.3 Hz low end frequency (traditional IEPE sensors require up to ten seconds).

The key advantage of a fast settling time when using multiplexed applications (online monitoring systems) is that the entire sensor field can be scanned faster. Since each data point is refreshed more frequently, machinery health can be monitored in real-time. This results in improved asset protection and reliability. The LPA100T is an ideal solution for wireless, battery-operated or energy harvesting applications due to its low power consumption. A built-in electronic temperature sensor provides additional machinery health data from the mounting location.

The LPA100T is also available certified for use in hazardous areas (Class I, Div 2/Zone 2).

### Key features

- Ultra low power consumption (300  $\mu$ W)
- Operates down to 3V
- Fast BOV settling time of <10 ms
- Comes with the industry popular M12 connector
- Hermetically sealed
- ESD-protected
- Reverse wiring protection
- Manufactured in an approved ISO 9001 facility
- U.S. Pat. No. 9,269,886 B1

### Certifications



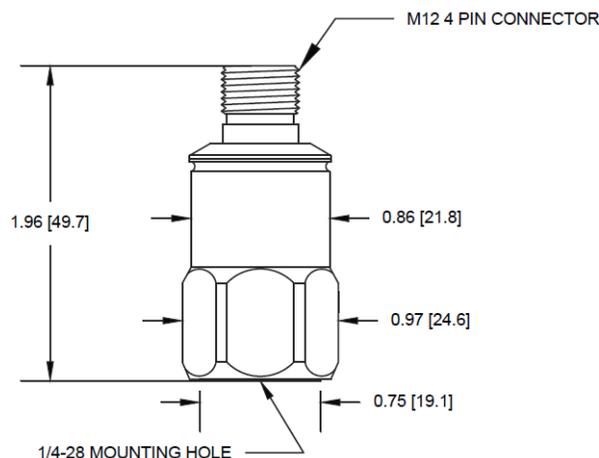
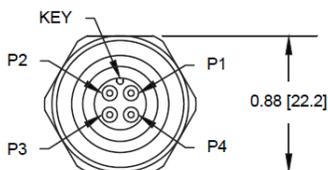
Hazardous area certifications available



Class I, Div 2  
Groups A, B, C, D



Ex nA II T4 Gc



Connections	
Function	Connector pin
power	1
common	2
accel signal	3
temp signal	4
shield*	shell

\* See note 1 on page 2

Note: Due to continuous process improvement, specifications are subject to change without notice. This document is cleared for public release.

Wilcoxon Sensing Technologies  
20511 Seneca Meadows Parkway  
Germantown, MD 20876  
info@wilcoxon.com

Tel: (301) 330 8811  
Fax: (301) 330 8873  
www.wilcoxon.com

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An Amphenol Company

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### SPECIFICATIONS

	English	Metric
Sensitivity, $\pm 5\%$ , 25° C	50 mV/g	5.1 mV/m/sec <sup>2</sup>
Acceleration range	25 g peak	245 m/sec <sup>2</sup> peak
Amplitude nonlinearity	1%	1%
Frequency response:		
$\pm 5\%$	180 - 300,000 CPM	3 - 5,000 Hz
$\pm 10\%$	60 - 540,000 CPM	1 - 9,000 Hz
$\pm 3$ dB	18 - 900,000 CPM	0.3 - 15,000 Hz
Resonance frequency	1.8 kCPM	30 kHz
Transverse sensitivity, max	5% of axial	5% of axial
Sensitivity variation with temp:		
-25° C	-10%	-10%
+120° C	+10%	+10%
Temperature sensor		
Temperature range	-40 to +248° F	-40 to +120° C
Voltage range	+2.52 to +0.77 V	+2.52 to +0.77 V
Temperature signal sensitivity	-10.9 mV/°C	-10.9 mV/°C
Voltage at 0° C	+2.1 V	+2.1 V
Voltage source	3.0 - 5.5 VDC	3.0 - 5.5 VDC
Current (no cable)	100 $\mu$ A max	100 $\mu$ A max
Electrical noise, equiv. g:		
Broadband 2.5 Hz to 25 kHz	660 $\mu$ g	6.47 mm/sec <sup>2</sup>
Spectral 10 Hz	60 $\mu$ g/ $\sqrt$ Hz	0.588 mm/sec <sup>2</sup> / $\sqrt$ Hz
100 Hz	16 $\mu$ g/ $\sqrt$ Hz	0.156 mm/sec <sup>2</sup> / $\sqrt$ Hz
1,000 Hz	5 $\mu$ g/ $\sqrt$ Hz	0.049 mm/sec <sup>2</sup> / $\sqrt$ Hz
Output impedance, max	1000 $\Omega$	1000 $\Omega$
Bias output voltage, settling time, 25° C	<10 ms	<10 ms
Including temp effects	1.5 VDC $\pm 5\%$	1.5 VDC $\pm 5\%$
Grounding	case isolated, internally shielded	
Vibration limit	500 g peak	4,900 m/sec <sup>2</sup> peak
Shock limit	5,000 g peak	49,000 m/sec <sup>2</sup> peak
Electromagnetic sensitivity, equiv. g, max	150 $\mu$ g/gauss	1.47 mm/sec <sup>2</sup> /gauss
Sealing	hermetic	
Base strain sensitivity, max	0.0002 g/ $\mu$ strain	1.9 mm/sec <sup>2</sup> / $\mu$ strain
Sensing element design	PZT, shear	
Weight	3.17 oz	90 grams
Case material	316L stainless steel	
Mounting	1/4-28 UNF tapped hole	
Mating connector <sup>1</sup>	M12 style, socket	
Recommended cabling	J12 / J9T4A	

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### Contact

Wilcoxon Sensing  
Technologies

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Germantown MD 20876, USA

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Fax: +1 301 330 8873

info@wilcoxon.com

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### Accessories supplied:

- SF6 mounting stud
- Calibration data (level 2)

**Note:** <sup>1</sup> For installations requiring CE conformance, cable shield must be tied to sensor case.