

Certified low-power, low-voltage accelerometer

LPA100T-D2



The heart of the LPA100T-D2 accelerometer incorporates new technology and innovative designs. Breaking from conventional sensor power, the LPA100T-D2 operates from low voltage (3-5 volts) and consumes less than 300 μ Watts. Traditional sensors typically operate at 48 mWatts; the LPA100T-D2 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 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-D2 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-D2 is certified for use in hazardous areas (Class I, Div 2/Zone 2). These are areas where ignitable gases are used but not normally present during daily operation and can only escape through accidental rupture, breakdown or leaks.

Key features

- Certified for use in hazardous areas
- Ultra low power consumption (300 μ 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

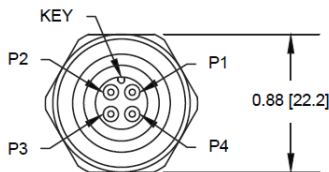


Class I, Div 2
Groups A, B, C, D
Class II, Div 2
Groups E, F, G
Class III
Class I Zone 2
AEx/Ex mL IIC
T5 -50°C ≤ T₀ ≤ 85°C



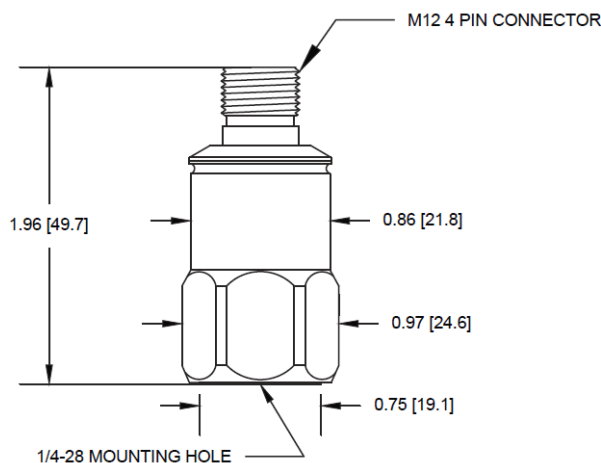
II 3 G
Ex nA nC IIC T5 Gc
Ta = -50°C to + 85°C

For hazardous area locations, sensor must be installed in accordance with installation instructions or local code requirements.



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

Wilcoxon Sensing Technologies
An Amphenol Company

Certified low-power, low-voltage accelerometer

LPA100T-D2

SPECIFICATIONS

	English	Metric
Sensitivity, ±5%, 25° C	50 mV/g	5.1 mV/m/sec ²
Acceleration range	25 g peak	245 m/sec ² peak
Amplitude nonlinearity	1%	1%
Frequency response:		
± 5%	180 - 300,000 CPM	3 - 5,000 Hz
± 10%	60 - 540,000 CPM	1 - 9,000 Hz
± 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 µA max	100 µA max
Electrical noise, equiv. g:		
Broadband 2.5 Hz to 25 kHz	660 µg	6.47 mm/sec ²
Spectral 10 Hz	60 µg/√Hz	0.588 mm/sec ² /√Hz
100 Hz	16 µg/√Hz	0.156 mm/sec ² /√Hz
1,000 Hz	5 µg/√Hz	0.049 mm/sec ² /√Hz
Output impedance, max	1000 Ω	1000 Ω
Bias output voltage, settling time, 25° C	<10 ms	<10 ms
Including temp effects	1.5 VDC ±5%	1.5 VDC ±5%
Grounding	case isolated, internally shielded	
Vibration limit	500 g peak	4,900 m/sec ² peak
Shock limit	5,000 g peak	49,000 m/sec ² peak
Electromagnetic sensitivity, equiv. g, max	150 µg/gauss	1.47 mm/sec ² /gauss
Sealing	hermetic	
Base strain sensitivity, max	0.0002 g/µstrain	1.9 mm/sec ² /µstrain
Sensing element design	PZT, shear	
Weight	3.17 oz	90 grams
Case material	316L stainless steel	
Mounting	1/4-28 UNF tapped hole	
Mating connector¹	M12 style, socket	
Recommended cabling	J99	

Special conditions for safe use:

The mating connection shall be made using an M12 connector in compliance with IEC 61076-2-101. This standard requires that the connectors be kept from separating by the use of a lock nut or threaded sleeve on the mating connection. The M12 connector must have a minimum creepage distance of 1.0 mm between adjacent contacts and a minimum distance of 0.2mm through the solid insulation between contacts. The M12 connector must use a socket designed to maintain a positive compression force on the connector pin with a minimum diameter of 0.889 mm and maintain a degree of ingress protection of at least IP54 when mated with the integral plug arrangement provided for the accelerometer. The equipment does not incorporate an earth bonding facility. It is the responsibility of the user to ensure that earth continuity is maintained, for example, by means of the mounting arrangement.

To limit the supply current to a maximum of 100µA, both the acceleration output and the temperature output must be connected to input circuits with a minimum impedance of 150,000 ohms.

The 5.5V Vdc rated supply shall be protected such that transients are limited to a maximum of 90 Vdc. A degree of ingress protection of at least IP54 shall be maintained even when the cable connector is removed, for example by means of the fitting of a suitable cap.

Contact

Wilcoxon Sensing
Technologies

20511 Seneca Meadows Parkway
Germantown MD 20876, USA

Tel: +1 301 330 8811
Fax: +1 301 330 8873

info@wilcoxon.com

www.wilcoxon.com

Accessories supplied:

- SF6 mounting stud
- Calibration data (level 2)

Note: ¹ For installations requiring CE conformance, cable shield must be tied to sensor case.

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

Wilcoxon Sensing Technologies
An Amphenol Company