



ASSET MONITORING PRODUCTS



LPH Series Technical Operational Guide

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INTRODUCTION

4-20 mA Vibration Monitoring Process Overview

4-20 mA technology can be used to measure overall vibration of rotating machines with optional temperature outputs. Adding a vibration sensor/transmitter to the machine provides a critical measure of the machine's health. It can be used to identify changes in balance, alignment, gears, bearings, and many other potential faults. The purpose of the 4-20 mA analog current loop is to transmit the signal from an analog vibration sensor over a distance in the form of a 4-20 mA current signal. The current signal generated is proportional to the overall vibration of the equipment or machinery that is being monitored. This output current has a range of 4-20 mA, with 4 representing the minimum and 20 representing maximum amplitudes (within the range of 4-20 mA). The 4-20 mA signal output is proportional to the overall amplitude generated within a defined frequency band. Therefore, the signal does not include data from frequencies outside the frequency band but includes all vibration (critical and non-critical faults) within that band.

LPH800 Series is a line of loop power vibration sensors measuring 4-20 mA proportional to vibration measured in velocity.

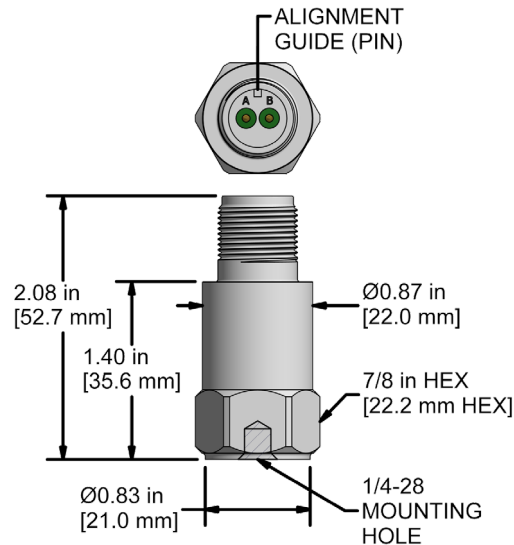
LPH900 Series is a line of loop power vibration sensors measuring 4-20 mA proportional to vibration measured in acceleration.



PRODUCT SPECIFICATIONS

Power Input	15-28 VDC supply voltage required
Band-Pass Filter	The vibration sensor contains a band-pass filter, consisting of a low-pass and a high-pass.
Analog Output	Full-scale output of 4-20 mA
Operation	Filters the signal, and normalizes the output to the specified full-scale output. Performs a true RMS conversion and transmits this data in a 4-20 mA format (if RMS is chosen).

DIMENSION DRAWING



Loop Resistance Calculation

*Intrinsically Safe Loop Powered Sensors

$$R_L(\text{max}) = \frac{V_P - 18 \text{ V}}{20 \text{ mA}} \times 1 \text{ mA}$$

*Note: Typical Loop Powered Circuit will include an Intrinsically Safe Barrier in the Circuit



MEASUREMENT

LPH800 Series

FULL-SCALE MEASUREMENT RANGE	ACTUAL VIBRATION, IPS	EXPECTED OUTPUT (mA)
0 - 0.4 IPS (0 - 10.0 mm/s)	0	4
	0.1 (2.5 mm/s)	8
	0.2 (5.0 mm/s)	12
	0.3 (7.5 mm/s)	16
	0.4 (10.0 mm/s)	20
0 - 0.5 IPS (0-12.7 mm/s)	0	4
	0.1	7.2
	0.2	10.4
	0.3	13.6
	0.4	16.8
	0.5	20
0 - 0.8 IPS (0 - 20.0 mm/s)	0	4
	0.2 (5.0 mm/s)	8
	0.4 (10.0 mm/s)	12
	0.6 (15.0 mm/s)	16
	0.8 (20.0 mm/s)	20
0 - 1.0 IPS (0-25.4 mm/s)	0	4
	0.1	5.6
	0.25	8
	0.5	12
	0.75	16
	1	20
0 - 2.0 IPS (0-50.8 mm/s)	0	4
	0.25	6
	0.5	8
	0.75	10
	1	12
	1.25	14
	1.5	16
	1.75	18
	2	20



FULL-SCALE MEASUREMENT RANGE	ACTUAL VIBRATION, IPS	EXPECTED OUTPUT (mA)
0 - 5.0 IPS (0-127.0 mm/s)	0	4
	1	7.2
	2	10.4
	3	13.6
	4	16.8
	5	20

LPH900 Series

FULL-SCALE MEASUREMENT RANGE	ACTUAL VIBRATION, G	EXPECTED OUTPUT (mA)
0 - 0.25 g (LP600 Series Only)	0	4
	0.0625	8
	0.125	12
	0.1875	16
	0.25	20
0 - 0.5 g (LP600 Series Only)	0	4
	0.125	8
	0.25	12
	0.375	16
	0.5	20
0 - 1 g	0	4
	0.25	8
	0.5	12
	0.75	16
	1	20
0 - 2 g	0	4
	0.5	8
	1	12
	1.5	16
	2	20
0 - 5 g	0	4
	1.25	8
	2.5	12
	3.75	16
	5	20

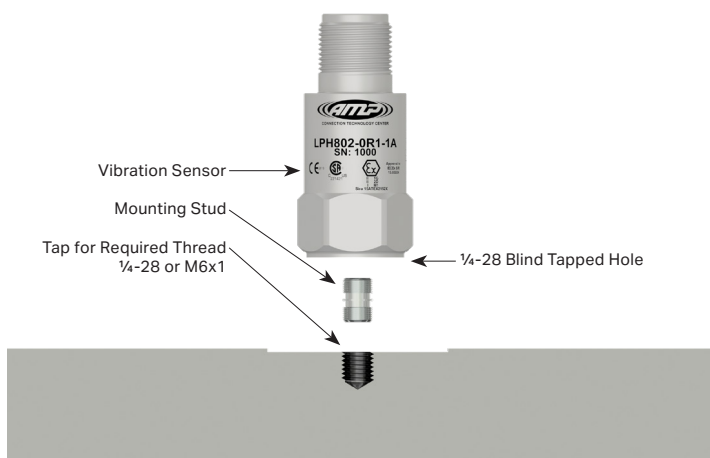


FULL-SCALE MEASUREMENT RANGE	ACTUAL VIBRATION, G	EXPECTED OUTPUT (mA)
0 - 10 g	0	4
	2.5	8
	5	12
	7.5	16
	10	20
0 - 20 g	0	4
	5	8
	10	12
	15	16
	20	20

INSTALLATION

Refer to approved hazardous area manuals for LPH Series wiring instructions.

Tighten using **2 to 5 ft-lbs of mounting force.**



WARRANTY AND REFUND

Please visit www.ctconline.com to view a complete recapitulation of our warranty and refund policies.

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