Acceleration loop powered sensors with dynamic vibration output

PC420A dual output series

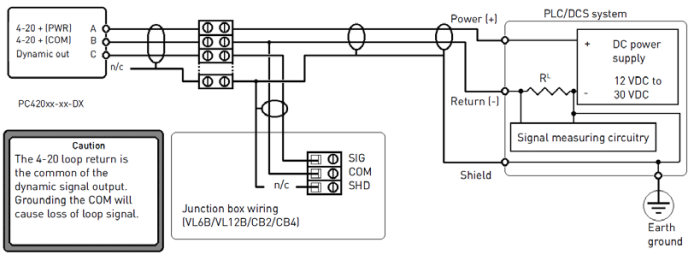
Wilcoxon's 4-20 mA vibration sensors integrate easily with an existing PLC, DCS or SCADA system. The PC420A series dual output sensors provide 24/7 monitoring of overall machine vibration for continuous trending, alerting users to changing machine conditions and helping to guide maintenance in prioritizing the need for service. The choice of true RMS, true peak or peak output allows you to choose the sensor that best fits your industrial requirements. True peak is useful for detecting loose parts such as valves on reciprocating machinery.

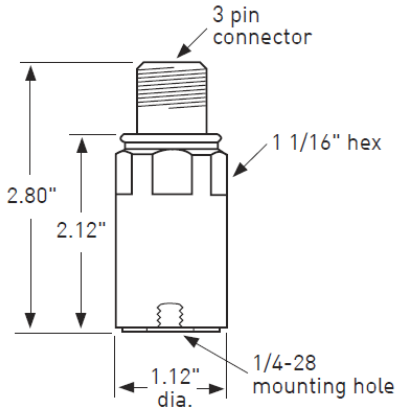
The 4-20 mA output of the PC420A series is proportional to acceleration vibration. An output of 4 mA indicates a level of 0 g or no vibration present. A full-scale reading of 20 mA indicates that the maximum range (RMS or peak) of vibration is present. The dynamic output signal is derived from an internal buffered amplifier. The dynamic output requires the 4-20 mA loop be powered. No constant-current supply diode is necessary, the BOV at the dynamic output is developed by the internal amplifier.

Table 1: PC420Ax-yy-Dz dual output model selection

x (4-20 mA output type)	yy (4-20 mA full scale)	z (dynamic scale)
R = RMS output, acceleration P = Calculated peak output, acceleration TP = true peak output, acceleration	05 = 5 g 10 = 10 g 20 = 20 g	A = acceleration 100 mV/g V = velocity 100 mV/ips

Connections	
Function	Connector pin
ground	shell
loop positive (+)	A
loop negative (–), dynamic common	B
dynamic output	C





Note: Dynamic ouput must be galvanically isolated when connected to an on time system

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

Key features

- Peak equivalent, true RMS or true peak output
- Corrosion resistant
- Hermetically sealed
- ESD protection
- Overload protection
- Reverse wiring protection
- Dynamic signal output

Certifications

CE

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An Amphenol Company

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SPECIFICATIONS

OUTPUT, 4-20 mA			
Full scale 20 mA, ±5%		see table 1 on page 1	
Frequency response	**± 10%** **± 3 dB**	10 Hz - 1.0 kHz 4.0 Hz - 2.0 kHz	
Repeatability		± 2%	
Transverse sensitivity, max		5%	
OUTPUT, DYNAMIC		**PC420Ax-yy-DA**	**PC420Ax-yy-DV**
Sensitivity, ±10%		100 mV/g	100 mV/in/sec
Full scale		20 g	1.5 ips at 1 kHz
Frequency response:	**±3 dB**	2.5 Hz - 10 kHz	2.5 Hz - 2.5 kHz
Amplitude nonlinearity, max		1%	
Resonant frequency, mounted, nominal		25 kHz	
Transverse sensitivity, max		5%	
Power requirements (two-wire loop power): **Voltage at sensor terminal**		10 - 30 VDC	
Loop resistance[1] at 24 VDC, max		700 Ω	
Turn on time, 4-20 mA loop		< 30 seconds	
Dynamic output, bias output voltage		+3.3 VDC, re: connector pin B	
		PC420Ax-yy-DA	**PC420Ax-yy-DV**
Dynamic output noise, equiv. g, 2.5 Hz - 10 kHz		2 mg	0.002 ips
Grounding		case isolated, internally shielded	
Temperature range		–40 to +85° C	
Vibration limit		250 g peak	
Shock limit		2,500 g peak	
Sealing		hermetic	
Sensing element design		PZT ceramic / shear	
Weight		162 grams	
Case material		316L stainless steel	
Mounting		1/4-28 tapped hole	
Output connector		3-pin, MIL-C-5015 style	
Mating connector		R6G type	
Recommended cabling		J9T3A	

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Contact

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Accessories supplied:

- SF6 mounting stud (metric mounting available)
- Calibration data (level 2)

DC supply voltage	R_L (max resistance)[2]	R_L (minimum wattage capability)[3]
12 VDC	100 Ω	1/8 watt
20 VDC	500 Ω	1/4 watt
24 VDC	700 Ω	1/2 watt
26 VDC	800 Ω	1/2 watt
30 VDC	1,000 Ω	1/2 watt

Notes: [1] Maximum loop resistance (R_L) can be calculated by:

$$R_L = \frac{\text{VDC} - 10\ \text{V}}{20\ \text{mA}}$$

[2] Lower resistance is allowed, greater than 10 Ω recommended.

[3] Minimum R_L wattage determined by: (0.0004 x R_L).

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