Acceleration loop powered sensors with dynamic vibration output

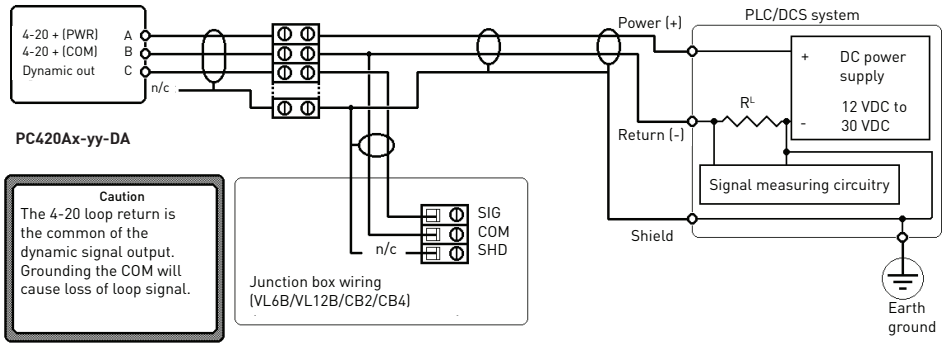
PC420A-DA dual output series

Wilcoxon's 4-20 mA vibration sensors integrate easily with an existing PLC, DCS or SCADA system. The PC420A-DA 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. The sensor's 4-20 mA output is proportional to acceleration vibration. The dynamic output signal is derived from an internal buffered amplifier and requires that the 4-20 mA loop be powered.

Table 1: PC420Ax-yy-DA dual output model selection guide

x (4-20 mA output type)	yy (4-20 mA full scale)	DA (dynamic output)
R = RMS output P = calculated peak output TP = true peak output	05 = 5 g (49 m/sec^2) 10 = 10 g (98 m/sec^2) 20 = 20 g (196 m/sec^2)	DA = acceleration, 100 mV/g

Wiring diagram



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

Certifications

CE

Key features

- Choice of peak equivalent, true RMS or true peak output
- Dynamic signal output allows for in-depth analysis
- Easily integrated into existing process control systems
- Manufactured in an approved ISO 9001 facility

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

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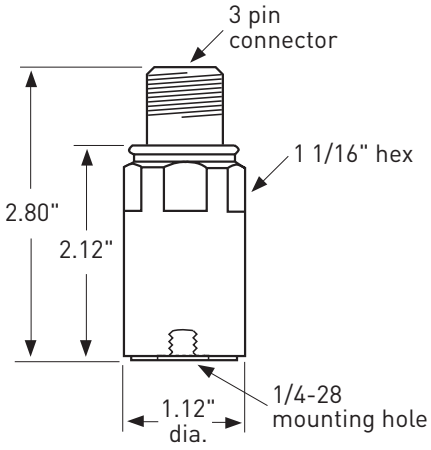
SPECIFICATIONS

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%
Dynamic output:		
Sensitivity, ±10%		100 mV/g
Full scale		20 g
Frequency response, ±3 dB		2.5 Hz - 10 kHz
Amplitude nonlinearity, max		1%
Resonant frequency, mounted, nominal		25 kHz
Transverse sensitivity, max		5%
Power requirements (2-wire loop power): **Voltage at sensor terminals**		12 - 30 VDC
Loop resistance[1] at 24 VDC, max		700 Ω
Turn on time, 4-20 mA loop		<30 sec
Dynamic output, bias output voltage		+3.3 VDC, re: connector pin B
Dynamic output noise, equiv. g: **2.5 Hz - 10 kHz**		2 mg
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 (3-conductor shielded, yellow Teflon jacket)

Accessories supplied: SF6 mounting stud; calibration data (level 2)

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



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

$$R_L = \frac{V_{DC\ power} - 10\ V}{20\ mA}$$

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

[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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