Acceleration loop powered sensors with dynamic vibration output
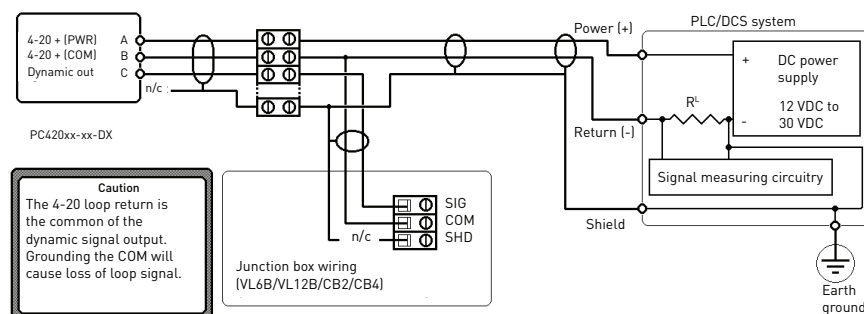
PC420A-Dz dual output series

Wilcoxon's 4-20 mA vibration sensors integrate easily with an existing PLC, DCS or SCADA system. The PC420A-Dz 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 4-20 mA output of the PC420A series 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-Dz dual output model selection guide

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

Key features

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

Wiring diagram

Caution
The 4-20 loop return is the common of the dynamic signal output. Grounding the COM will cause loss of loop signal.

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

Certifications

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

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Wilcoxon
SENSING TECHNOLOGIES

SPECIFICATIONS

Output, 4-20 mA:			
Full scale 20 mA, ±5%		see Table 1 on page 1	
Frequency response:	**±10%**	10 Hz - 1.0 kHz	
	±3 dB	4.0 Hz - 2.0 kHz	
Repeatability		±2%	
Transverse sensitivity, max		5%	
Dynamic output:		**PC420A-DA**	**PC420A-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 (2-wire loop power): Voltage at sensor terminal		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**		**PC420A-DA** 2 mg	**PC420A-DV** 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	

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

3 pin connector

1 1/16" hex

2.80"

2.12"

1/4-28 mounting hole

1.12" dia.
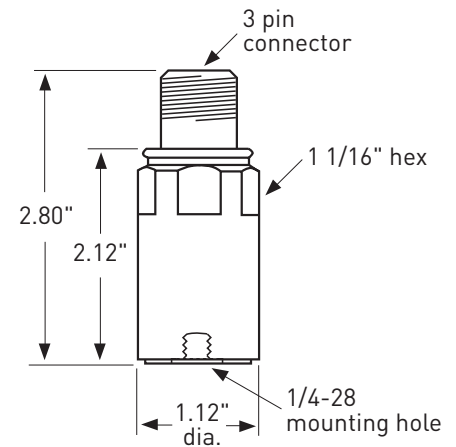
Notes: [1] Maximum loop resistance (R_L) can be calculated by:

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

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: $(0.0004 \times R_L)$.

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