

Intrinsically safe 4-20 mA loop powered sensors (LPS®)

PC420A series

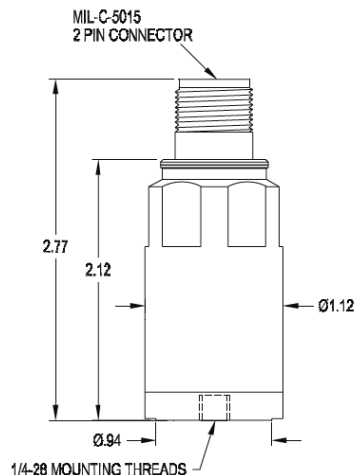


Wilcoxon's 4-20 mA vibration sensors incorporate an accelerometer, data acquisition circuitry, and vibration transmitter in a rugged industrial housing. They provide 4-20 mA output signal proportional to the overall vibration level. The 4-20 mA output is commonly accepted by process control systems such as a PLC, DCS or SCADA system, for cost-effective continuous vibration monitoring. If you already have a process control system that accepts 4-20 mA inputs - like a PLC or DCS network - you are already taking data points on pressure, temperature, or maybe flow. You can send vibration data to your PLC or DCS as well. By connecting into process control systems, you are able to perform simplified condition based maintenance on machinery without the investment and learning curve associated with traditional vibration monitoring systems.

The PC420A sensors are classified for usage in Class I Division 1/Zone 0/1 locations where ignitable concentrations of flammable gases, vapors or liquids are present continuously under normal operating conditions. Class I areas are defined into groups by the presence of the following flammable materials:

- Group A - Acetylene
- Group B - Hydrogen
- Group C - Ethylene
- Group D - Propane

Connections	
Function	Connector pin
ground	shell
loop positive (+)	A
loop negative (-)	B



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

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Key features

- True RMS or peak output
- Case isolated
- Hermetically sealed
- ESD-protected
- EMI/RFI shielded
- Reverse wiring protection
- Certified intrinsically safe for use in hazardous areas
- Manufactured in an approved ISO 9001 facility

Certifications

Class I Div 1
 Groups A, B, C, D
 T3C Ta = 85°C max

II G
 EEx ia II C T3
 -40°C ≤ Ta ≤ +85°C

For hazardous area locations, sensor must be installed in accordance with installation diagram 12779. Refer to installation diagram 12779 for correct method of grounding the safety barrier. The apparatus must be connected to certified intrinsically safe equipment with electrical parameters as specified below: $14 V \leq U_o \leq 30V$, $20 mA \leq I_o \leq 106 mA$ (linear supply only), $P_o \leq 0.75 W$. Furthermore, the following conditions must be satisfied:
 $C_o \leq C_i + C_{cable}$ and $L_o \leq L_i + L_{cable}$



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SPECIFICATIONS

OUTPUT, 4-20 mA	
Full scale, 20 mA, ±5%	see table 1
Frequency response:	
± 10%	10 Hz - 1.0 kHz
± 3 dB	4.0 Hz - 2.0 kHz
Repeatability	± 2%
Transverse sensitivity, max	5%
Power requirements, 2-wire loop power:	
Voltage, between pins A and B	12 - 30 VDC
Loop resistance ¹ at 24 VDC, max	600 Ω
Turn on time, 4-20 mA loop	< 30 seconds
Grounding	case isolated, internally shielded
Operating temperature range ¹	-40 to +85° C
Vibration limit	250 g peak
Shock limit	2,500 g peak
Sealing	hermetic
Sensing element design	PZT, shear
Weight	162 grams
Case material	316L stainless steel
Mounting	1/4-28 tapped hole
Output connector	2-pin, MIL-C-5015 style
Mating connector	R6 type
Recommended cabling	J9T2A

Table 1: PC420Ax-yy-IS model selection guide

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

DC supply voltage	R _L (max resistance) ²	R _L (minimum wattage capability) ³
20 VDC	400 Ω	1/4 watt
24 VDC	600 Ω	1/2 watt
26 VDC	700 Ω	1/2 watt

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Accessories supplied:

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

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

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

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

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