

# Intrinsically safe 4-20 mA loop powered sensors

## PC420V-IS series



**Table 1: PC420Vx-yy-IS model selection guide**

| x (4-20 mA output type)                            | yy (4-20 mA full scale)    |
|----------------------------------------------------|----------------------------|
| R = velocity, RMS<br>P = velocity, equivalent peak | 05 = 0.5 ips (12.8 mm/sec) |
|                                                    | 10 = 1.0 ips (25.4 mm/sec) |
|                                                    | 20 = 2.0 ips (50.8 mm/sec) |
|                                                    | 30 = 3.0 ips (76.2 mm/sec) |
|                                                    | 50 = 5.0 ips (127 mm/sec)  |

### Key features

- True RMS or peak output
- Certified intrinsically safe for use in hazardous areas
- Easily integrated into existing process control systems
- Manufactured in an approved ISO 9001 facility

### Certifications



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



II 1 G  
Ex ia IIC T4 Ga  
-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 < U<sub>o</sub> < 30V, 20 mA < I<sub>o</sub> < 106 mA (linear supply only), P<sub>o</sub> < 0.75 W

Furthermore, the following conditions must be satisfied:

C<sub>o</sub> < C<sub>i</sub> + C<sub>cable</sub> and L<sub>o</sub> < L<sub>i</sub> + L<sub>cable</sub>

Maximum cable length: 100 ft (31 m)

C<sub>cable</sub>: 6 nF for 100 ft.



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

|                                               |               |                                     |
|-----------------------------------------------|---------------|-------------------------------------|
| <b>Output, 4-20 mA:</b>                       |               |                                     |
| Full scale, 20 mA, ±5%                        |               | see Table 1 on page 1               |
| Frequency response:                           | ±10%<br>±3 dB | 10 Hz - 1.0 kHz<br>4.0 Hz - 2.0 kHz |
| Repeatability                                 |               | ±2%                                 |
| Transverse sensitivity, max                   |               | 5%                                  |
| <b>Power requirements, 2-wire loop power:</b> |               |                                     |
| Voltage at sensor terminals                   |               | 12 - 30 VDC                         |
| Loop resistance <sup>1</sup> at 24 VDC, max   |               | 600 Ω                               |
| Turn on time, 4-20 mA loop                    |               | 30 sec                              |
| Grounding                                     |               | case isolated, internally shielded  |
| Operating temperature range                   |               | -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                               |

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

Notes: <sup>1</sup> 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) <sup>2</sup> | $R_L$ (minimum wattage capability) <sup>3</sup> |
|-------------------|-------------------------------------|-------------------------------------------------|
| 20 VDC            | 400 Ω                               | 1/4 watt                                        |
| 24 VDC            | 600 Ω                               | 1/2 watt                                        |
| 26 VDC            | 700 Ω                               | 1/2 watt                                        |

<sup>2</sup> Lower resistance is allowed, greater than 10 Ω recommended.

<sup>3</sup> Minimum  $R_L$  wattage determined by:  $(0.0004 \times R_L)$ .

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

