Features

- Peak equivalent, true RMS or true peak output
- Temperature signal output
- Optional dynamic signal output
- Corrosion resistant
- Hermetic seal
- ESD protection
- Overload protection
- Reverse wiring protection

Benefits

- Choice of output: RMS, equivalent peak, and true peak; permits you to choose the sensor that best fits your industrial requirements
- Provides continuous trending of overall machine vibration
- Can help guide maintenance

The 4-20 mA output of the PC427 Series is proportional to vibration. An output of 4 mA indicates a level of 0 ips or no vibration present for velocity output models and 0 g for acceleration output models. A full-scale reading of 20 mA indicates that the maximum range (RMS, equivalent peak or true peak) of vibration is present.

The dynamic signal output is an optional addition. Any of the base sensor models can also have dynamic signal output. Adding -DA to a model specifies a dynamic acceleration signal output (100 mV/g). Adding -DV to a model specifies a dynamic velocity signal output (100 mV/ips).

The temperature output of the PC427 Series is in terms of degrees Kelvin (°K), where zero °K = -273°C. The voltage output at 0°C = 2.73 volts (273°K). The voltage output at 80°C = 3.53 volts (353°K).

Model PC427 Series
Side exit, 4-20mA, integral cable
Vibration and temperature voltage (LPS™)

Output, 4-20 mA
Full scale, 20 mA (±5%) ....................................................... see table 1 on back
Frequency response:
±10% ................................................................................ 10 Hz - 1.0 kHz
±3 dB ................................................................................ 4 Hz - 2 kHz
Repeatability ........................................................................ 2%
Transverse sensitivity, max. ................................................ 5%

Output temperature
Temperature output sensitivity, ±5° ............................................................................... 10 mV/°K
Temperature measurement range ................................................. 223 to 358°K [-50 to 85°C]

Output, dynamic (optional) PC427xxx-yy-DA PC427xxx-yy-DV
Sensitivity (±10%) 100 mV/g 100 mV/ips
Full scale 20g, peak 1.5 ips @ 1kHz
Frequency response:
±3 dB 2.5 Hz - 10 kHz 2.5 Hz - 2.5 kHz
Amplitude nonlinearity, maximum ......................................... 1%
Resonant frequency, mounted, nominal ............................... 21 kHz
Transverse sensitivity, max. .................................................. 5%

Electrical
Power requirements (two wire loop power):
Voltage (between black and red wire) ..................................... 10 VDC min, 30 VDC max
Loop resistance 1 at 24 VDC, maximum .............................. 7000
Turn on time, 4-20 mA loop .................................................... 30 seconds
Grounding .............................................................................. case isolated, internally shielded
Power requirements (two wire loop power):
Current .................................................................................. 0.4 to 5 mA

Environmental
Temperature range ................................................................. -40 to 85°C
Vibration limit ................................................................. 250 g peak
Shock limit ........................................................................ 2,500 g peak
Sealing .................................................................................. hermetic

Physical
Sensing element design ...................................................... PZT ceramic / shear
Weight .................................................................................. 320 grams
Case material ................................................................. 316L stainless steel
Mounting .............................................................................. 1/4 - 28 captive bolt
Cabling .................................................................................... J98

Cable wire Function
Shield ground
Red loop positive (+)
Black loop negative (-)
White dynamic signal (optional)
Yellow temperature signal
Green temperature common

See back for notes.
Notes:  
1 maximum loop resistance (RL) can be calculated by:

\[
 RL \text{ (max. resistance)} = \frac{V_{DC\text{ power}} - 10V}{20 \text{ mA}}
\]

2 Lower resistance is allowed, greater than 10Ω recommended
3 Minimum \( R_L \) wattage determined by: \((0.0004 \times R_L)\)
4 The temperature sensor must have a current flow to operate. This current can be provided through constant-current diodes (i.e. Vishay J508, etc.)

Table 1: PC427xxx-yy-Dz Model number selection

<table>
<thead>
<tr>
<th>xxx [4-20 mA output type]</th>
<th>-yy (full scale)</th>
<th>-Dz (dynamic output)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AR = acceleration, RMS</td>
<td>-05 = 5 g [49 m/sec^2]</td>
<td>-DA = dynamic acceleration 100 mV/g</td>
</tr>
<tr>
<td>AP = acceleration, equivalent peak ( ^B )</td>
<td>-10 = 10 g [98 m/sec^2]</td>
<td>[-DA = dynamic acceleration [10.2 mV/ m/sec^2]</td>
</tr>
<tr>
<td>ATP = acceleration, true peak ( ^C )</td>
<td>-20 = 20 g [196 m/sec^2]</td>
<td>[-DV = dynamic velocity 100 mV/ips]</td>
</tr>
<tr>
<td>VR = velocity, RMS</td>
<td>-05 = 0.5 i.p.s. [12.8 mm/sec]</td>
<td>[-DA = dynamic acceleration 100 mV/g]</td>
</tr>
<tr>
<td>VP = velocity, equivalent peak ( ^B )</td>
<td>-10 = 1.0 i.p.s. [25.4 mm/sec]</td>
<td>[-DV = dynamic velocity [10.2 mV/ m/sec^2] ]</td>
</tr>
<tr>
<td>VTP = velocity, true peak ( ^C )</td>
<td>-20 = 2.0 i.p.s. [50.8 mm/sec]</td>
<td>-DV = dynamic velocity 100 mV/ips]</td>
</tr>
<tr>
<td></td>
<td>-30 = 3.0 i.p.s. [76.2 mm/sec]</td>
<td>3.94 mV/mm/sec]</td>
</tr>
<tr>
<td></td>
<td>-50 = 5.0 i.p.s. [127 mm/sec]</td>
<td>3.94 mV/mm/sec]</td>
</tr>
</tbody>
</table>

\( ^A \) Dynamic output is an option on all models. If dynamic output option is not desired, do not add -DA or -DV to the model number.  
\( ^B \) Equivalent peak output is developed based on the true RMS value of vibration. For a pure sine wave, the equivalent peak output is 1.414 times the RMS value.  
\( ^C \) True peak output is based on the actual measured peak value using the time waveform and is not based on the RMS calculation.

All wire and cable used for installation of the PC425 Series sensor should be shielded. Generally accepted instrumentation wiring practice considers the best way to ground the shield is to connect it at only one end of the cable. The shield should not be wired to ground at both ends of the cable. The Wilcoxon PC427 Series sensor has the shield connected to the case at the sensor end of the cable.