Robertshaw

Industrial Products Division

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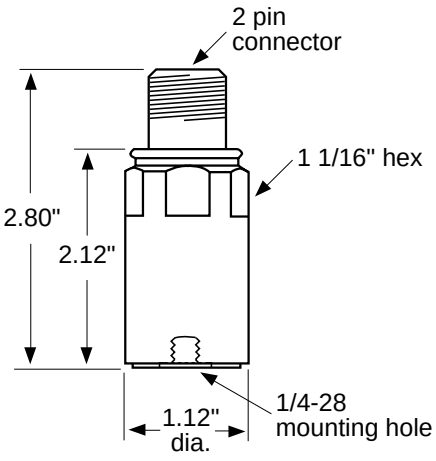
Model 571A Series
Intrinsically Safe, Two-wire Vibration Sensor

FEATURES:

- Intrinsically Safe Certification
- Corrosion resistant
- ESD protection
- Reverse wiring protection
- Overload protection
- Hermetic
- No trim pots



SPECIFICATIONS

DYNAMIC

Output (±5%of Full Scale)	4-20 mA DC
Vibration Range	see table below
Frequency Response:	
–3 dB	see table below
Repeatability	±2 %
Resonant Frequency, mounted, nominal	see table below
Transverse Sensitivity, max.	5%

ELECTRICAL

Power Requirements (Two wire loop power):	
voltage source	14 VDC - 30 VDC
Loop Resistance[1] at 24 VDC, maximum	500Ω
Turn on Time	30 seconds
Grounding	Case isolated, internally shielded

ENVIRONMENTAL

Temperature Range	–40 to 85°C
Vibration Limit	250 g peak
Shock Limit	2,500 g peak
Electromagnetic Sensitivity, equiv. g	10 µg/gauss
Sealing	hermetic, NEMA 4X, IP68

PHYSICAL

Weight	162 grams
Sensing Element Design	PZT ceramic / shear
Case Material	316L stainless steel
Mounting	1/4 - 28 UNF tapped hole
Output Connector	2-pin, MIL-C-5015 style
Pin A	plus (+)
Pin B	minus (–)
Cabling	Two conductor shielded (See Table 1 on back)
Torque Limit	30 in lbs. max
Warranty	1 year

NOTES: [1] Maximum loop resistance can be calculated by:

$$R_L \text{ (max)} = \frac{\text{Vpower} - 14\ \text{V}}{20\ \text{mA}}$$

Loop Resistance is the sum of wiring resistance and the load resistor. Wiring Resistance is Approximately 40Ω/1000ft.

Typical

Power Source Voltage	R_L max
20	300 Ω
24	500 Ω
26	600 Ω

[2] The following are recommended barrier strips: MTL 706+ or STAHL Type 9001/51-280-091-14 for Class I Division I locations.

[3] To meet intrinsically safe installation requirements, 571A must be installed according to drawing number 12641.

ACCESSORIES SUPPLIED: 1/4-28 mounting stud.

Model	Mode	Range	Frequency Response	Resonant Frequency
571A-A	acceleration	0 - 5 g peak	2 Hz - 2 kHz	28 kHz
571A-B	acceleration	0 - 10 g peak	2 Hz - 2 kHz	28 kHz
571A-C	acceleration	0 - 20 g peak	2 Hz - 2 kHz	28 kHz
571A-D	velocity	0 - 0.5 IPS peak	2 Hz - 2 kHz	28 kHz
571A-E	velocity	0 - 1 IPS peak	2 Hz - 2 kHz	28 kHz
571A-F	velocity	0 - 2 IPS peak	2 Hz - 2 kHz	28 kHz

TABLE

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Due to continued research and development, the Manufacturer reserves the right to amend these specifications without notice.

98836 Rev.B 01/04

Mounting Instructions

The mounting point on the structure should be faced to a diameter of 1.25 inches. For measurements involving frequencies above 1 kHz, the surface should be flat within 1 mil and have surface texture no greater than 32 microinches.

The tapped hole must be perpendicular to the mounting surface and at least two threads deeper than the stud. This will prevent a gap between the sensor and the mounting surface– producing optimum frequency response. (see Figure 1).

Proper screw torque on the mounting stud is also required. Under-torquing the sensor reduces the stiffness of the coupling. Over-torquing can cause permanent damage to the sensor. It is recommended that 1/4-28 stud be torqued to a maximum value of 30 inch-pounds.

Before stud mounting the sensor, a coupling fluid should be applied to the mating surfaces. The coupling fluid protects the mounting surface and optimizes the frequency response by increasing the coupling stiffness. Suggested coupling fluids are machine oil or vacuum grease. It is recommended that a thread adhesive such as Loctite 222 be used.

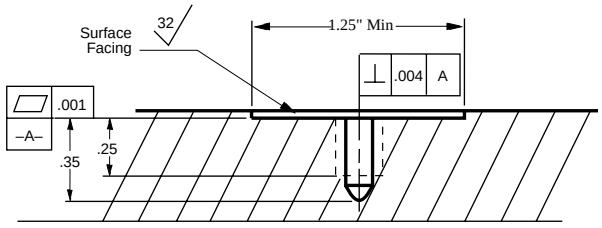

Figure 1: Stud Mounting: Surface Preparation

Cable Routing and Electromagnetic Interference

Walkie-talkies, power lines, or even electrical sparks may cause signal interference. The following guidelines will eliminate many measurement errors due to electromagnetic radiation and electrostatic discharge (ESD).

Assure that high quality, well shielded cables are used. If cable splices are made, complete shielding must be maintained.

Proper cable routing is imperative. Never run sensor cable alongside AC power lines; cables must cross AC power lines at right angles. Where possible, provide a separate grounded conduit to enclose the sensor cable. In addition, route the cable away from radio transmission equipment, motors/generators, and transformers. Finally, avoid routing the cable through areas prone to ESD. Even though Robertshaw sensors are protected against ESD failure, temporary distortion signals may appear at the output.

Table 1: Cable versus Cable Length

Part Number	NEMA 4X Cable Length
086568A0016	16 Ft.
086568A0032	32 Ft.
086568A0064	64 Ft.
086568A0112	112 Ft.

Note: IP68 cable available by special order.

Cable Grounding and Ground Loops

In order to provide proper shielding and prevent ground loops, cable grounding should be carefully considered.

For sensors using *two conductor/shielded cable*, the power is carried on one lead and the return on the other. The cable shield serves to protect the signal from ESD and electromagnetic interference (EMI). The shield should be grounded at only one point. Figure 2 shows a typical cable connection scheme.

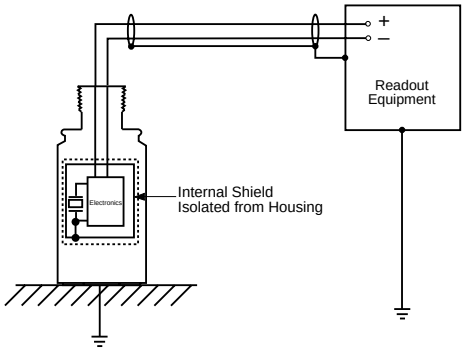

Figure 2: Multiconductor/Shield Configuration

Cable Anchoring

After mounting the sensor, the cable should be anchored to reduce stress at the cable terminations. When securing the cable, leave enough slack to allow free movement of the sensor. Figure 3 shows a recommended cable anchoring technique.

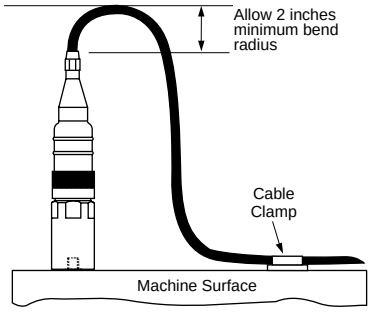

Figure 3: Cable Anchoring