Intrinsically Safe
Loop Powered Stud Mount
Vibration Transmitter

Cable Sold Separately

Avoid Catastrophic Failure

Protect your rotating or reciprocating machinery, including pumps, motors, fans, blowers, gear boxes, compressors, turbines and other machinery from excessive vibration. Vibration monitoring will alert you of increasing machine vibration levels so preventative maintenance can be scheduled before catastrophic failures occur.

General Description

Robertshaw's model 571A is a loop powered (14 – 30 VDC) vibration transmitter that provides a 4-20 mADC output proportionate to vibration. The transmitter is available with a variety of acceleration and velocity ranges. This rugged (316L Stainless Steel, NEMA 4X, IP68) compact unit provides continuous monitoring of machine vibration for trending, alarm and/or shutdown when used with a PLC, computer, DCS, data logger or current relays. When used with an approved barrier the transmitter is intrinsically safe for use in hazardous locations. Without a barrier the transmitter is rated non-incendive.

Installation is simple and no calibration is required. A 1/4-28 stud is provided for mounting in a 1/4-28 tapped hole. The unit has a 2 pin connector and mates with a standard MIL-C-5015 2 socket connector with splash-proof boot for a weatherproof, splash-proof connection. Optional cable assemblies are available in lengths of 16, 32, 64 and 112 feet.

Features and Benefits:

- **Two wire loop powered (14 – 30 VDC)**
- **4 – 20 mADC output (isolated)**
- **Compact design, 1.12" diameter, 2.80" height**
- **Corrosion resistant (316L Stainless Steel)**
- **Certified Intrinsically Safe (with barrier)**
- **NEMA 4X, IP68, hermetically sealed enclosure**
- **ESD and EMI protection**
- **Overload protection**
- **Reverse wiring protection**
- **Available for either acceleration or velocity measurement**
- **CE & ATEX Certified**
- **No Trim Pots required**

ORDERING INFORMATION AND MODEL NUMBERS

Order by model number in Table 1.

Table 1 - Measurement

MODEL NO.	DESCRIPTION
571A-A	Acceleration, 0 - 5 G peak
571A-B	Acceleration, 0 - 10 G peak
571A-C	Acceleration, 0 - 20 G peak
571A-D	Velocity, 0 - 0.5 IPS peak
571A-E	Velocity, 0 - 1 IPS peak
571A-F	Velocity, 0 - 2 IPS peak

Accessory Items
(Must be ordered separately)

PART NO.	DESCRIPTION
086568A0016*	Standard IP66 Cable - 16 foot, 2 conductor shielded cable, MIL-C-5015 2 socket connector with splash-proof boot.
086568A0032	Standard IP66 Cable - same as above except 32 foot
086568A0064	Standard IP66 Cable - same as above except 64 foot
086568A0112	Standard IP66 Cable - same as above except 112 foot
086568B0016	IP68 Cable - 16 foot, 2 conductor shielded cable, MIL-C-5015 2 socket connector with boot for submersible applications. Cable is rated for continuous submersion at 650 psi.
086568B0032	IP68 Cable - same as above except 32 foot
086568B0064	IP68 Cable - same as above except 64 foot
086568B0112	IP68 Cable - same as above except 112 foot
435KB311	Mounting stud for 1/4-28 tapped hole (supplied with transmitter)
435KB311-01	Mounting stud for 3/8-24 tapped hole
435KB311-02	Mounting stud for M8 X 1.25-6G tapped hole
435KB311-03	Mounting stud for M6 X 1.00-6G tapped hole
435KB311-06	Spot face tool, $\varnothing1.25$, with pilot drill for 1/4-28 tapped hole. Drill depth is adjustable.

* 16 foot standard cable is a stock item.
Other cables may have extended delivery time.

SPECIFICATIONS

DYNAMIC

Output ($\pm$ 5% of span) …………….……....… 4 – 20 mADC
Vibration Range ………………………..…..……… See Table 1
Frequency Response:
    - 3 dB …..………………………... 2 Hz – 2 kHz
Repeatability …………………………….…..……..... $\pm$ 2%
Resonant Frequency, mounted, nominal …………..…… 28 kHz
Transverse Sensitivity, max. ………….……….…..……... 5%

ELECTRICAL

Power Requirements (Two wire loop power):
    Voltage Source ……………….....…14 VDC – 30 VDC
Loop Resistance …………………………………. see page 4
Grounding …………………………………….. case isolated, internally shielded
Protection …………………..……… reverse wiring, overload, ESD & EMI

ENVIRONMENTAL

Temperature Range …………..…- -40° to 85° C (-40° to 185° F)
Vibration Limit ……………………………………250 g peak
Shock Limit ……………………………………2,500 g peak
Electromagnetic Sensitivity, equiv. g …………..... 10 μg/gauss
Sealing ……………………………. hermetic, NEMA 4X, IP68

PHYSICAL

Sensing Element Design ……………………PZT ceramic/shear
Weight …………………………………………..162 grams
Case Material …………………………….. 316L stainless steel
Case Rating ………………………………….... IP68, NEMA 4X
Mounting ……………………………….. 1/4 – 28 tapped hole
Supplied Accessories …………………….1/4-28 mounting stud
Output Connector ……………………..... MIL-C-5015, 2-pin
    Pin A (white lead) ……………………….. plus (+)
    Pin B (black lead) ……………………….minus (-)
Cabling …………………………….… two conductor shielded (see Accessory Items Table)
Torque Limit ………………………………... 30 in. lbs. Max.
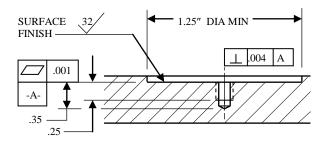Warranty ……………………………………………… 1 year

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 a surface texture no greater than 32 micro-inches.

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 transmitter and the mounting surface producing optimum frequency response.

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

Before stud mounting the transmitter, 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.

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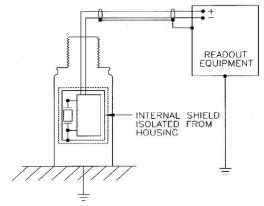
Proper cable routing is imperative. Never run transmitter cable alongside AC power lines; cables must cross AC power lines at right angles. Where possible, provide a separate grounded conduit to enclose the transmitter cable. In addition, route the cable away from radio transmission equipment, motors/generators,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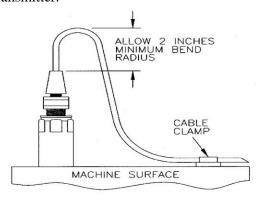
Cable Grounding and Ground Loops

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

For transmitters 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.
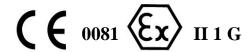

Cable Anchoring

After mounting the transmitter, 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 transmitter.

CERTIFICATIONS

CSA Certified for the USA and Canada

Intrinsically Safe .... Class I, Division 1,
Groups A, B, C & D; T3C
when connected as shown on
drawing 12641 (barrier required).

$C \hspace{-0.2em} E$ **0081** ⟨Ex⟩ **II 1 G**

LCIE 03 ATEX 6113X Certified for Europe

Intrinsically Safe .... EEx ia IIC T3
when connected as shown on
drawing 12641 (barrier required).

Safety Barriers

Entity parameters
  Groups ....A, B, C & D
  Vmax or Ui .... 30 Vdc
  Imax or Ii .... 106 mA

Recommended Barriers .... MTL 706+,
MTL 787S+,
MTL 7087+,
MTL 7187+,
MTL 7787+,
STAHL 9001/51-280-091-14

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

LOOP RESISTANCE

Maximum loop resistance can be calculated by:

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

Loop resistance is the sum of the wiring resistance and the load resistance.

Typical

POWER SOURCE VOLTAGE	R_L (max)
16	100 Ω
20	300 Ω
24	500 Ω
26	600 Ω
30	800 Ω

Reference: Robertshaw cable resistance is 40 Ω per thousand feet.

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