

# HS-420I/M Intrinsically Safe Accelerometer

4-20mA velocity output via PUR Cable

## Key Features

- Intrinsically Safe with European, USA, Australian, South African, and Indian approvals
- Approved SIL 2 and SIL 3
- For use with PLC/DCS systems
- Waterproof and resistant to oil

## Industries

Building services, Pulp and Paper, Mining, Metals, Utilities, Automotive, Water, Pharmaceutical



### Connection Details

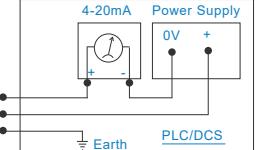


No Connection (Blue)

No Connection (Red)

0V (Black)

+ve Power (White)



Screen not connected to case

## Technical Performance

Mounted Base Resonance	5kHz min	Case Material	Stainless Steel
Velocity Ranges	see: 'How To Order' table $\pm 10\%$	Sensing Element/Construction	PZT/Compression
	Nominal 80Hz at 72°F	Mounting Torque	5.9ft. lbs
Frequency Response	600cpm (10Hz) to 60kcpm (1kHz) $\pm 5\%$ - ISO10816	Weight	5.2 oz. (nominal)
Isolation	Base isolated	Maximum Cable Length	3,280 ft.
Range	50g peak	Standard Cable Length	16 ft.
Transverse Sensitivity	Less than 5%	Shielded Cable	PUR - length to be specified with order
		Mounting Threads	see: 'How To Order' table
		Submersible Depth	328 ft. max (10 bar)

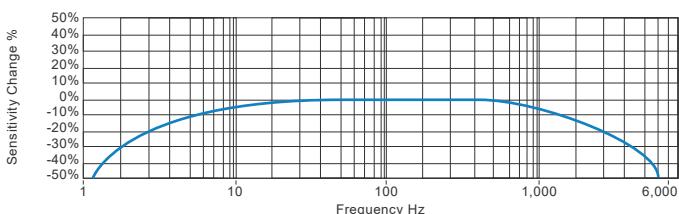
## Electrical

Current Output	4-20mA DC proportional to Velocity Range
Supply Voltage	15-30 Volts DC (for 4-20mA)
Settling Time	2 seconds
Output Impedance	Loop Resistance 600 Ohms max. at 24 Volts
Case Isolation	$>10^8$ Ohms at 500 Volts

## Mechanical

Operating Temperature Range	see: attached certification details
Sealing	IP68
Maximum Shock	5000g
EMC	EN61326-1:2013

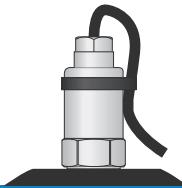
## Typical Frequency Response



## Environmental

Fans, Motors, Pumps, Compressors, Centrifuges, Conveyors, Air Handlers, Gearboxes, Rolls, Dryers, Presses, Cooling, VAC, Spindles, Machine Tooling, Process Equipment

Vibration sensor should be firmly fixed to a flat surface (spot face surface may be needed to be produced and cable anchored to sensor body.)



## Certifications



This product is certified in accordance with  
UL 913, 8th Ed. Rev. December 6, 2013  
CAN/CSA C22.2 No. 157-92 (R2012) +Upd1 +Upd2



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We reserve the right to alter the specification of this product without prior notice  
TS389U.19



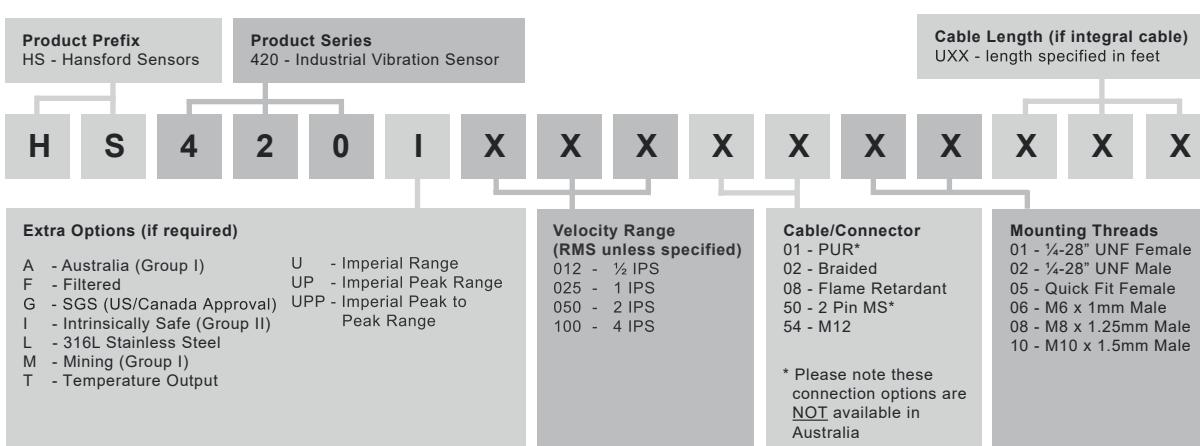
# HS-420I/M Intrinsically Safe Accelerometer

4-20mA velocity output via PUR Cable

## Intrinsically Safe Requirements

Maximum Cable Length	nominal 100 metres see attached system drawings	US/Canada Approvals	Certificate No. SGSNA/18/SUW/0000231 Class I, II, III, Division 1, 2, Groups A - G, T4, -40°C to +110°C, Class I, Zone 0, AEx, ia, IIC, T4, Ga, -40°C to +110°C Zone 20, AEx, ia, IIIC, T130°C, IP65, Da, -40°C to +110°C
Certificate details: Group I + II	IECEx BAS08.0034X Baseefa08ATEX0086X Ex ia IIC T6 Ga Ex ia IIIC T80°C IP65 Da Ex ia I Ma (-40°C ≤ Ta ≤ +60°C)	Barrier	1 x Pepperl + Fuchs Galvanic Isolator KFD2-STC4-Ex1, which has superseded KFD2-CR-Ex1.30300 (BAS00ATEX7164) see attached system drawings
Certificate details: Group II	Ex ia IIC T4 Ga Ex ia IIIC T130°C IP65 Da (-40°C ≤ Ta ≤ +110°C)		1 x MTL Zener Barrier MTL7787+ (BAS01ATEX7217) or Pepperl + Fuchs Zener Barrier Z787 (BAS01ATEX7005) or any other barrier that conforms to system drawings attached
Accelerometer System Certificate	Baseefa08Y0087 Ex ia IIC T6 (-40°C ≤ Ta ≤ +60°C) *On request - consult Sales Office	System Connections for Zener Barrier	see attached system drawings
Terminal Parameters	Ui = 28V, li = 115mA, Pi = 0.65W Group II Ui = 16.5V Pi = 0.65W or Ui = 28V li = 115mA Pi = 0.65W Group I	System Connections for Galvanic Isolator	see attached system drawings
500V Isolation	Units Will Pass A 500V Isolation Test	Terminal Parameters	Ui = Vmax = 28V li = Imax = 115mA Pi = 0.65W
Certified Temperature Range	Ex ia IIC T6 Ga (-40°C ≤ Ta ≤ +60°C) (Gas) Ex ia IIC T4 Ga (-40°C ≤ Ta ≤ +110°C) (Gas) Ex ia IIIC T80°C IP65 Da (-40°C ≤ Ta ≤ +60°C) (Dust) Ex ia IIIC T130°C IP65 Da (-40°C ≤ Ta ≤ +110°C) (Dust) Ex ia I Ma (-40°C ≤ Ta ≤ +60°C) (Mining)	Notes:	Special conditions of safe use for Group II dust. The free end of the cable on the integral cable version of the apparatus must be terminated in an appropriately certified dust-proof enclosure. The unit has no serviceable parts.
Australia Approval Group 1	IECEx ITA 10.0003X Ex ia I Ma (-40°C ≤ Ta ≤ +60°C)		
South African Approval	Certificate No. MASC MS/16-0229X Group I and II (As Baseefa/ATEX)		

## How To Order





## Non-Hazardous Area

## Hazardous Area

See Note  
1 & 2

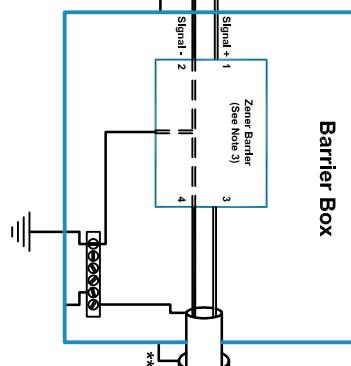
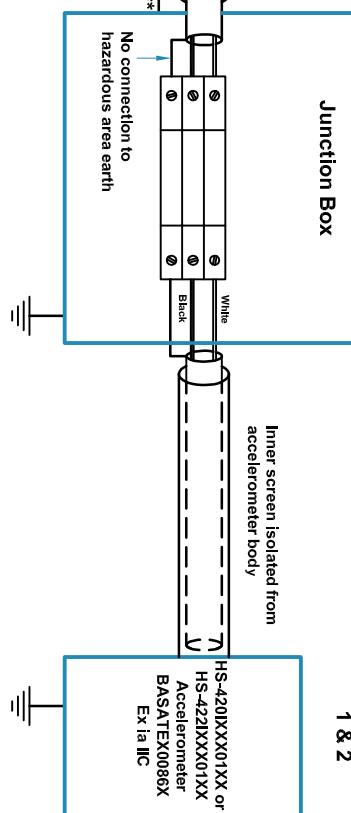
## Barrier Box

See Table 1

## Junction Box

Inner screen isolated from  
accelerometer bodyHS-420NXX01XX or  
HS-421XXX01XX  
Accelerometer  
BASATEX0086X  
Ex ia IIC

Non-hazardous area apparatus which is unspecified except that it must not be supplied from nor contain under normal or abnormal conditions, a source of potential with respect to earth in excess of 250 volts rms or 250 volts dc. under normal conditions the potential at the connections to the zener barrier must not exceed 40 volts dc.

\*\*Outer shield only  
connected to chassis via  
Ex approved cable gland

C

C

B

B

A

A

Table 1: Cable Parameters For Additional Cable Lengths

D

D

Accelerometer With Integral Cable Length $\leq$ 10m	
Group	Capacitance $\mu$ F
IIC	0.081
IIB	0.247
IIA	0.662

Accelerometer With Integral Cable Length $\leq$ 50m	
Group	L/R Ratio $\mu$ H/ $\Omega$
IIC	0.075
IIB	0.241
IIA	0.656

## Hansford Sensors Ltd

HS-420I & HS-422I  
Accelerometer SystemEx ia IIC T6 (-40°C  $\leq$  Ta  $\leq$  +60°C)

Rev No	DRF No	Date Drg	Drg By	Appd By	Material: N/A
A	Release	16/09/15	MJS	CMH	



Established in 1970 in Merton, London

Hansford Sensors Ltd

Artisan, Hillbottom Rd

Sands Industrial Estate

High Wycombe

Bucks. HP12 4HJ

Tolerances Unless Stated	
0 or 0.0	$\pm 0.5$

Finish All Over	
0.00	$\pm 0.15$

Threads g6 H6	
Angle	$\pm 5^\circ$

Bucks. HP12 4HJ	
1	2

3	
1	2

4	
1	2

5	
1	2

6	
1	2

7	
1	2

8	
1	2

Notes:

1. The capacitance and inductance, or inductance - to - resistance ratio (L/R) of hazardous area cable, must not exceed the values shown in Table 1.

2. The cable from the accelerometer to the junction box must not be installed in a high velocity dust laden atmosphere.

3. Any shunt zener diode safety barrier certified by an ec approved body to [IEEx ia] IIC having the following output parameters:  $U_o = 28V$  dc,  $I_o = 93mA$  dc,  $P_o = 0.65W$ , e.g. MTL7787 to BASATEX01 or Pepperl + Fuchs Z787 to BASATEX005.

4. The installer is to perform a risk assessment in accordance with clause 10 of EN 60079-25 and install lightning protection arrestors as deemed necessary.

Description: System Connections  
For HS-420I & HS-422I Group II  
Accelerometers With PUR CableAll Dimensions In mm Unless  
Otherwise Stated

Drawing No: M06-061-A

Scale: NTS

Form Number:  
QF024 Issue 1

If In Doubt - Ask!

Sheet: 2 of 2

Sheet: 2 of 2

QF024 Issue 1