

# HS-422I/M Intrinsically Safe Accelerometer

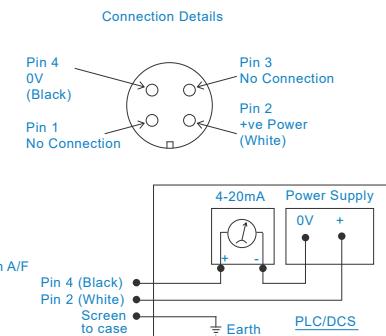
4-20mA acceleration output via M12 Connector

## 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
- Customisable features

## Industries

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



## Technical Performance

Mounted Base Resonance	10kHz min
Acceleration Ranges	see: 'How To Order' table $\pm 10\%$
	Nominal 80Hz at 22°C
Frequency Response	10Hz (600cpm) to 5kHz (300kcpm) $\pm 5\%$ - ISO10816
Isolation	Base isolated
Range	50g peak
Transverse Sensitivity	Less than 5%

## Mechanical

Case Material	Stainless Steel
Sensing Element/Construction	PZT/Compression
Mounting Torque	8Nm
Weight	150gms (nominal)
Screened Cable Assembly	HS-AC010 - straight
Mounting Threads	HS-AC011 - right angle
	see: 'How To Order' table

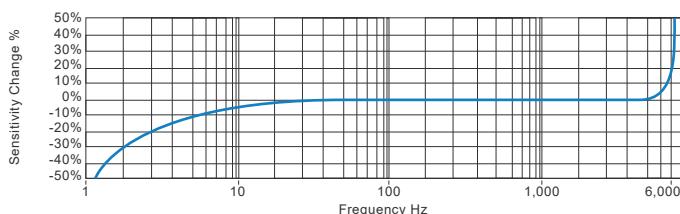
## Electrical

Current Output	4-20mA DC proportional to acceleration
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

## Environmental

Operating Temperature Range	see: attached certification details
Sealing	IP67
Maximum Shock	5000g
EMC	EN61326-1:2013

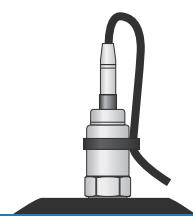
## Typical Frequency Response



## Applications

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



[www.hansfordsensors.com](http://www.hansfordsensors.com)  
[sales@hansfordsensors.com](mailto:sales@hansfordsensors.com)

We reserve the right to alter the specification of this product without prior notice  
TS067.20



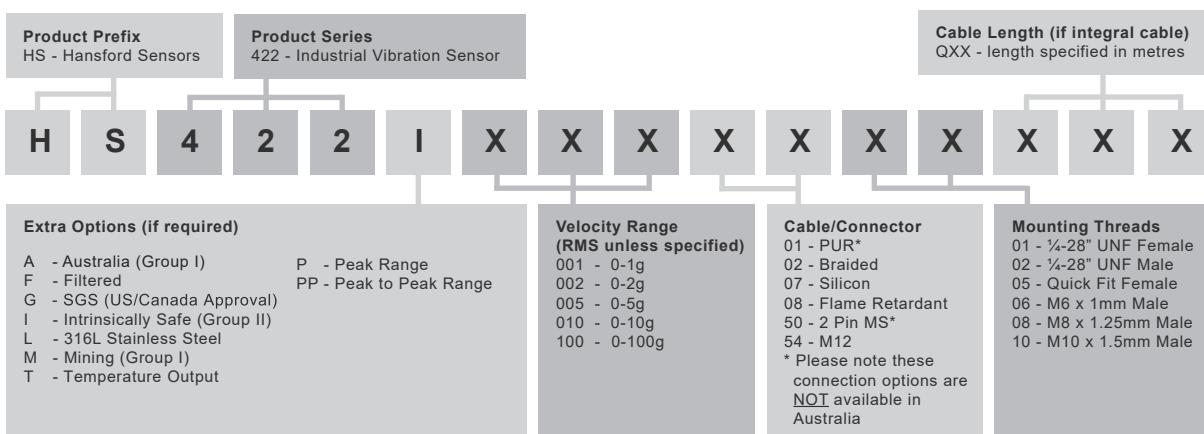
# HS-422I/M Intrinsically Safe Accelerometer

4-20mA acceleration output via M12 Connector

## Intrinsically Safe Requirements

Maximum Cable Length	See website: <a href="http://www.hansfordsensors.com">www.hansfordsensors.com</a> see attached system drawings	US/Canada Approvals	Certificate No. SGSNA/18/SUW/0000231
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)	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	
	Ex ia IGD 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)	Ex ia IGD 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, Ii = 115mA, Pi = 0.65W Group II Ui = 16.5V Pi = 0.65W or Ui = 28V Ii = 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 Ii = 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

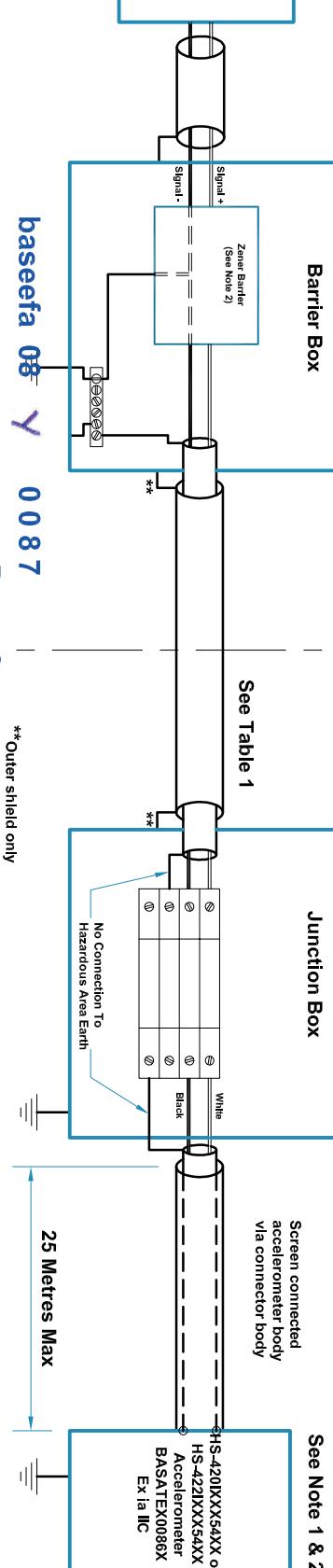




## Non-Hazardous Area

## Hazardous Area

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.



**baseefa 08 Y 0087**  
**Baseefa**  
**Certification**  
**Schedule**  
**Drawing**

## 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 BAS01ATEX7217 or Pepperl + Fuchs Z787 to BAS01ATEX7005
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.

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<u>Table 1: Cable Connecting The Connector Version</u>	
Group	Capacitance $\mu F$
IIC	0.080
IIB	0.246
IIA	0.661
	168
	448

**Hansford Sensors Ltd**  
 HS-420I & HS-422I  
 Accelerometer System  
 Baseefa08/0087  
 Ex ia IIC T6 (-40°C ≤ Ta ≤ +60°C)

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Rev No	DRF No	Date Drg	Drg By	Appd By	Material: N/A
A	Release	31/03/08	MJS	CMH	
					Tolerances Unless Stated 0 or 0.0 ±0.5 $\frac{1.6}{\vee}$ Finish All Over 0.00 ±0.15 Threads g6 H6 Angle $\pm 5^\circ$ Haw Lane Saunderton Bucks HP14 4JE



Excellence in vibration Monitoring

Hansford Sensors Ltd

Saunderton Business Park

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All Dimensions In mm Unless Otherwise Stated

Drawing No: M06-018-A

Scale: NTS

Form Number:

Sheet: 2 of 2

QF024 Issue 1

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