

# HS-422I/M Intrinsically Safe Accelerometer

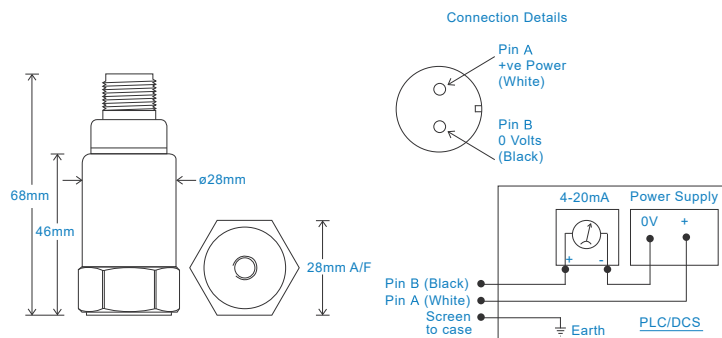
## 4-20mA acceleration output via 2 Pin MS Connector

### 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	see: <a href="http://www.hansfordsensors.com">www.hansfordsensors.com</a> for options
Connector	HS-AA004 - non-booted HS-AA053 or HS-AA054 - booted
Mounting Threads	see: 'How To Order' table

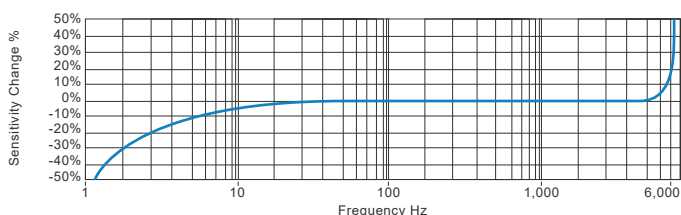
### Electrical

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 <sup>8</sup> Ohms at 500 Volts

### Environmental

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

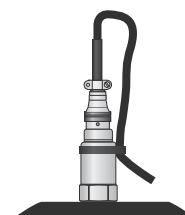
### Typical Frequency Response



### 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  
TS392.15

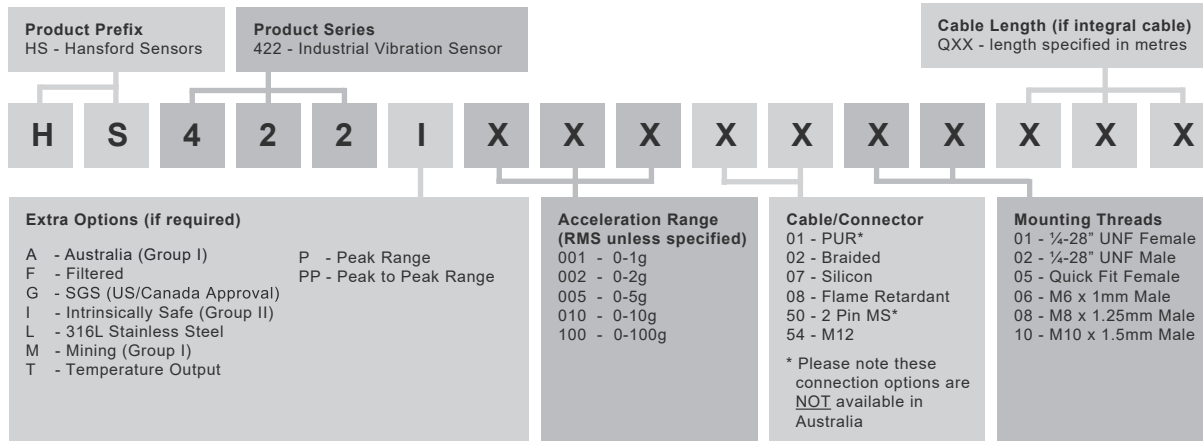


### 4-20mA acceleration output via 2 Pin MS Connector

## 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
		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	
Certificate details: Group I + II	IECEX BAS08.0034X Baseefa08ATEX0086X	Zone 20, AEx, ia, IIIC, T130°C, IP65, Da, -40°C to +110°C	
	ⓂII 1GD Ex ia IIC T6 Ga Ex ia IIIC T80°C IP65 Da	Barrier	1 x Pepperl + Fuchs Galvanic Isolator KFD2-STC4-Ex1, which has superseded KFD2-CR-Ex1.30300 (BAS00ATEX7164)
	Ⓜ I M1 Ex ia I Ma (-40°C ≤ Ta ≤ +60°C)		see attached system drawings
Certificate details: Group II	ⓂII 1GD 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	
		System Connections for Zener Barrier	see attached system drawings
Accelerometer System Certificate	Baseefa08Y0087 Ex ia IIC T6 (-40°C ≤ Ta ≤ +60°C) *On request - consult Sales Office	System Connections for Galvanic Isolator	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	Terminal Parameters	Ui = Vmax = 28V Ii = Imax = 115mA Pi = 0.65W
		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.
500V Isolation	Units Will Pass A 500V Isolation Test		
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)		
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



www.hansfordsensors.com  
sales@hansfordsensors.com

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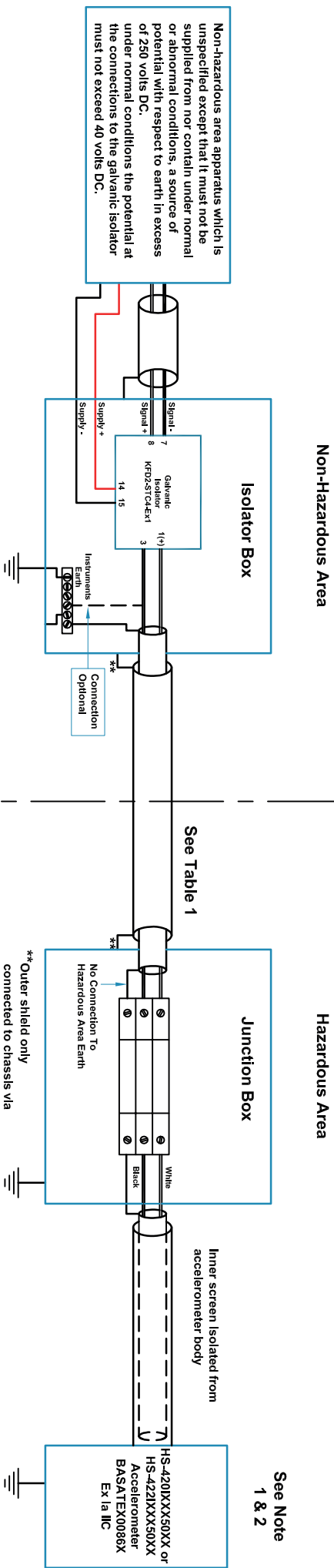




Table 1: Cable Parameters For Additional Cable Lengths		
Accelerometer With Integral Cable Length ≤ 10m		
Group	Capacitance µF	L/R Ratio µH/Ω
IIC	0.097	72
IIB	0.768	277
IIA	2.598	585
Accelerometer With Integral Cable Length ≤ 50m		
Group	Capacitance µF	L/R Ratio µH/Ω
IIC	0.091	72
IIB	0.762	277
IIA	2.592	585
Accelerometer With Integral Cable Length ≤ 100m		
Group	Capacitance µF	L/R Ratio µH/Ω
IIC	0.083	72
IIB	0.754	277
IIA	2.584	585

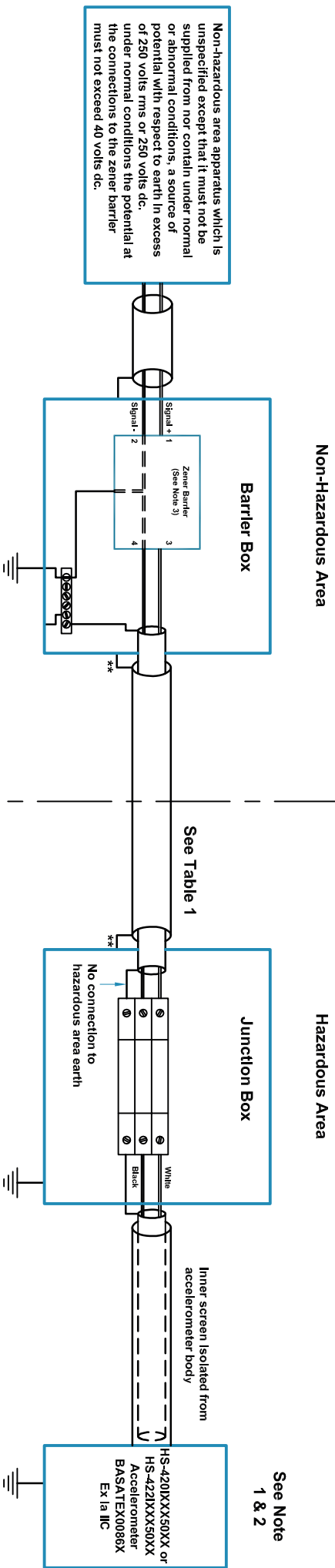
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HS-420I & HS-422I  
Accelerometer System

Ex Ia IIC T6 (-40°C ≤ Ta ≤ +60°C)

- 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. 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.

Hansford Sensors Excellence in Vibration Monitoring					Description: System Connections Details For HS-420I & HS-42I Group II Accelerometers With 2 Pin MS Connector F.U.W. Galvanic Isolation	
Rev No	DRF No	Date Drg	Drg By	Appd By		Do Not Scale
A	Release	16/09/15	MJS	CMH		
					All Dimensions in mm Unless Otherwise Stated	
					Drawing No: M06-059-A	
					Scale: NTS	Form Number: QF024 Issue 1
					Sheet: 1 of 1	
<div><b>Hansford Sensors Ltd</b> Artisan, Hillbottom Rd Sands Industrial Estate High Wycombe Bucks. HP12 4HU</div>					<b>If In Doubt - Ask!</b>	



**Table 1 : Cable Parameters For Additional Cable Lengths**

Accelerometer With Integral Cable Length ≤ 10m			
Group	Capacitance µF	L/R Ratio µH/Ω	
IIC	0.081	56	
IIB	0.247	168	
IIA	0.662	448	
Accelerometer With Integral Cable Length ≤ 50m			
Group	Capacitance µF	L/R Ratio µH/Ω	
IIC	0.075	56	
IIB	0.241	168	
IIA	0.656	448	
Accelerometer With Integral Cable Length ≤ 100m			
Group	Capacitance µF	L/R Ratio µH/Ω	
IIC	0.067	56	
IIB	0.233	168	
IIA	0.648	448	


**Hansford Sensors Ltd**

HS-420I & HS-422I  
Accelerometer System

Ex Ia IIC T6 (-40°C ≤ Ta ≤ +60°C)

**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 [Ex Ia] IIC having the following output parameters: Uo = 28V dc, Io = 33mA dc, Po = 0.65W, e.g. MTL7787 to BAS01ATEX7217 or Pepperl + Fuchs ZT87 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.

Rev No	DRF No	Date Drg	Drg By	Appd By	Material: N/A	Hansford Sensors Experiences in Vibration Monitoring		Do Not Scale		Description: System Connections For HS-420I & HS-422I Group II Accelerometers With 2 Pin MS Connector F.U.W. Zener Barrier	
A	Release	16/09/15	MJS	CMH		 Hansford Sensors Ltd Artisan, Hillbottom Rd Sands Industrial Estate High Wycombe Bucks. HP12 4HU				All Dimensions in mm Unless Otherwise Stated	
					Tolerances Unless Stated 0 or 0.0 ±0.5 0.00 ±0.15 Angle ±5°			Drawing No: M06-059-A		Scale: NTS	
								If In Doubt - Ask!		Form Number: QF024 Issue 1	
								Sheet: 2 of 2			
1			2		3	4	5	6	7	8	