

# HS-420I/M Intrinsically Safe Accelerometer

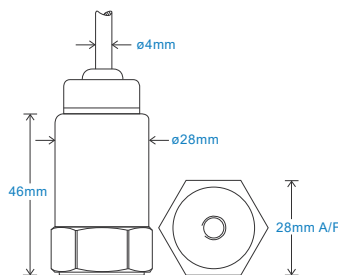
## 4-20mA velocity output via Flame Retardant Cable

### Key Features

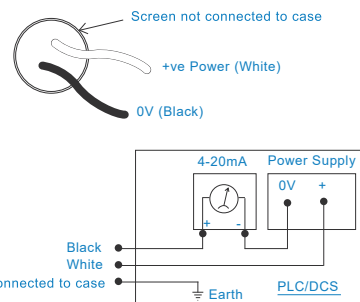
- Intrinsically Safe with European, USA, Australian, South African, and Indian approvals
- Approved SIL 2 and SIL 3
- For use with PLC/DCS systems
- Low smoke, halogen free cable

### Industries

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



Connection Details



### Technical Performance

Mounted Base Resonance	5kHz min
Velocity Ranges	see: 'How To Order' table $\pm 10\%$ Nominal 80Hz at 22°C
Frequency Response	10Hz (600cpm) to 1kHz (60kcpm) $\pm 5\%$ - 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)
Maximum Cable Length	1000 metres
Standard Cable Length	5 metres
Screened Cable	Flame Retardant - length to be specified with order
Mounting Threads	see: 'How To Order' table

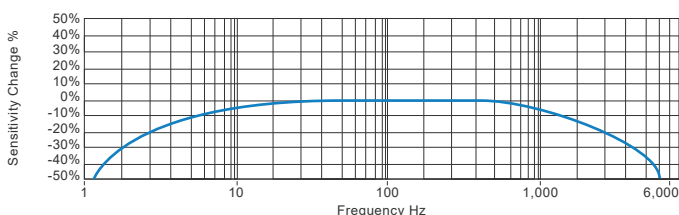
### Electrical

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

### Environmental

Operating Temperature Range	see: attached certification details
Sealing	IP65
Maximum Shock	5000g
EMC	EN61326-1:2013

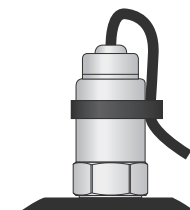
### Typical Frequency Response



### 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



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[sales@hansfordsensors.com](mailto:sales@hansfordsensors.com)

We reserve the right to alter the specification of this product without prior notice  
TS062.23

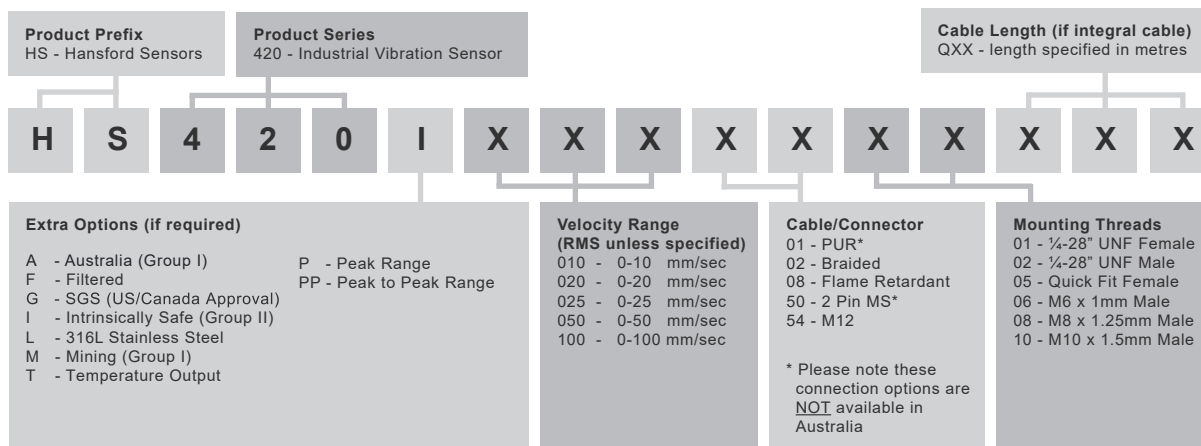


## 4-20mA velocity output via Flame Retardant Cable

## 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	
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	Barrier	1 x Pepperl + Fuchs Galvanic Isolator
		Ex ia IIC T6 Ga		KFD2-STC4-Ex1, which has superseded
		Ex ia IIIC T80°C IP65 Da		KFD2-CR-Ex1.30300 (BAS00ATEX7164)
		Ⓜ I M1		see attached system drawings
		Ex ia I Ma (-40°C ≤ Ta ≤ +60°C)		1 x MTL Zener Barrier MTL7787+ (BAS01ATEX7217)
Certificate details: Group II		Ⓜ II 1GD		or Pepperl + Fuchs Zener Barrier
		Ex ia IIC T4 Ga		Z787 (BAS01ATEX7005) or any other barrier that
		Ex ia IIIC T130°C IP65 Da (-40°C ≤ Ta ≤ +110°C)		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 = Vmax = 28V Ii = Imax = 115mA Pi = 0.65W
Terminal Parameters	Ui = 28V, Ii = 115mA, Pi = 0.65W	Group II		
		or Ui = 28V Ii = 115mA Pi = 0.65W	Group I	
			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



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

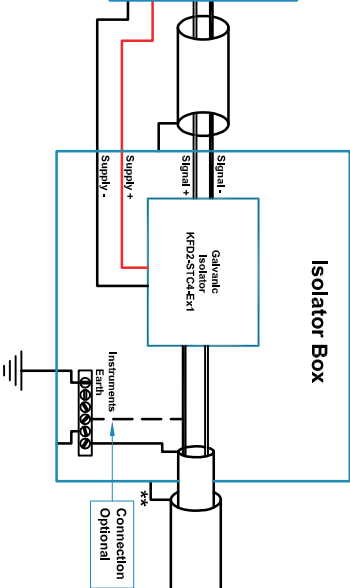


Non-Hazardous Area

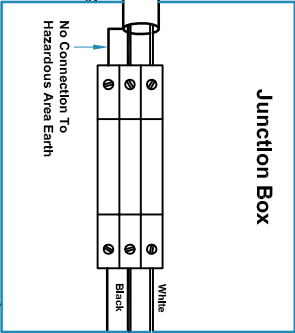
Hazardous Area

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 DC.

under normal conditions the potential at the connections to the galvanic isolator must not exceed 40 volts DC.



See Table 1



See Note 1 & 2

HS-420XXXX08XX or HS-4221XXX08XX Accelerometer BASATEX0086X Ex Ia IIC

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

Table 1: Cable Parameters For Additional Cable Lengths

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.

Rev No	DRF No	Date Drg	Drg By	Appd By	Material: N/A
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A	Release	17/06/10	MJS	CMH	
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Haw Lane  
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Do Not Scale

All Dimensions in mm Unless Otherwise Stated

If In Doubt - Ask!

Description: System Connections

For HS-420I & HS-422I Group II Accelerometers With Non Armoured F.U.W. Galvanic Isolation

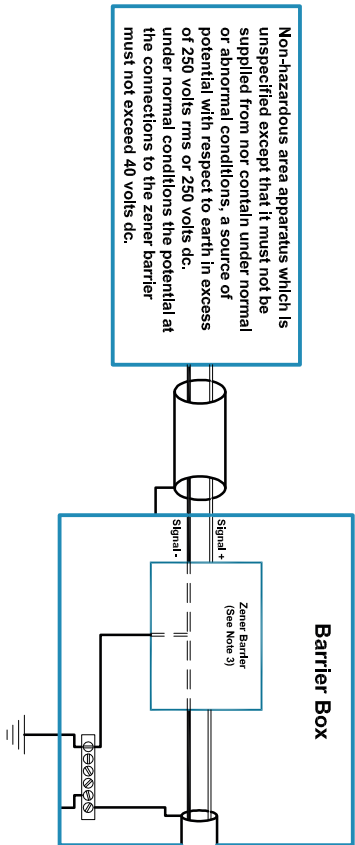
Drawing No: M06-033-A

Scale: NTS

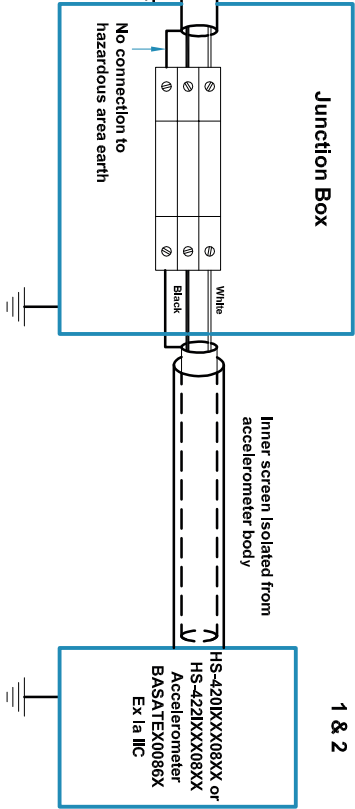
Sheet: 1 of 1

Form Number: QF024 Issue 1

Non-Hazardous Area



Hazardous Area



Baseefa  
Certification  
Schedule  
Drawing

baseefa 08 Y 0087



*Handwritten signature*

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	

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HS-4201 & HS-4221  
Accelerometer System  
Baseefa08Y0087  
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 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.

Rev No	DRF No	Date Drg	Drg By	Appd By	Material: N/A
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A	Release	10/03/08	MJS	CMH	
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Do Not Scale

All Dimensions in mm Unless  
Otherwise Stated

If In Doubt - Ask!

Description: System Connections  
For HS-4201 & HS-4221 Group II

Accelerometers With Non Armoured  
FR Polyurethane Cable F.U.W. Zener Barrier

Drawing No: M06-013-A

Scale: NTS

Sheet: 2 of 2

Form Number:  
QF024 Issue 1

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