

# HS-420I/M Intrinsically Safe Accelerometer

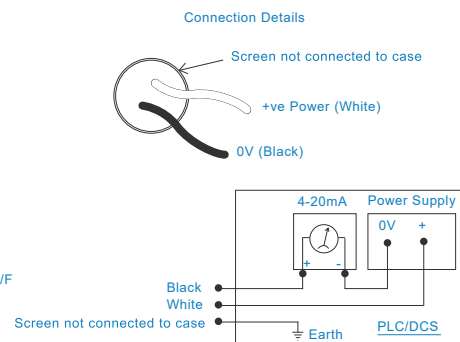
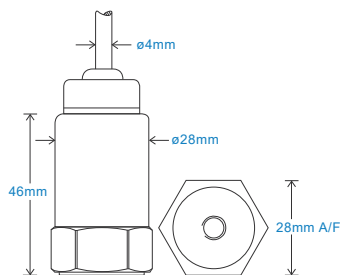
## 4-20mA velocity output via Flame Retardant Cable

### 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



### 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

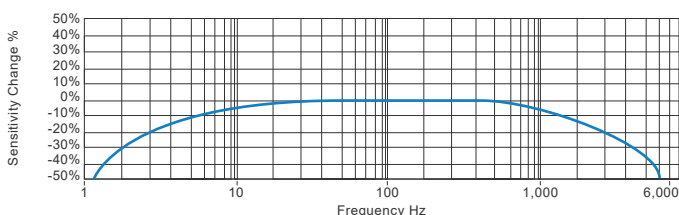
### Electrical

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

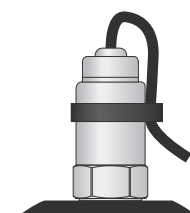
### Typical Frequency Response



### 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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We reserve the right to alter the specification of this product without prior notice  
TS062.24

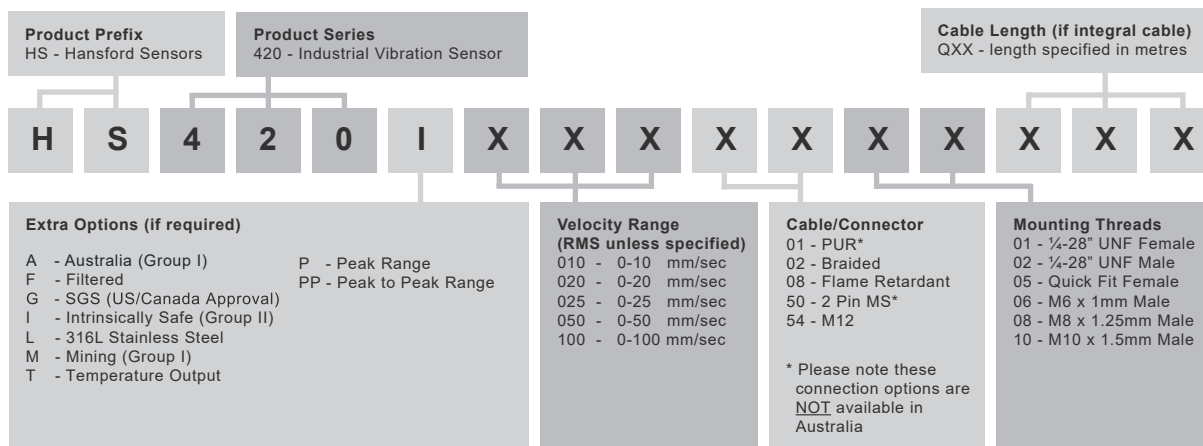


### 4-20mA velocity output via Flame Retardant Cable

## Intrinsically Safe Requirements

Maximum Cable Length		nominal 100 metres	US/Canada Approvals	Certificate No. SGSNA/18/SUW/0000231
		see attached system drawings	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		conforms to system drawings attached
		(-40°C ≤ Ta ≤ +110°C)		
			System Connections for Zener Barrier	see attached system drawings
Accelerometer System Certificate		Baseefa08Y0087		
		Ex ia IIC T6 (-40°C ≤ Ta ≤ +60°C)	System Connections for Galvanic Isolator	see attached system drawings
		*On request - consult Sales Office		
			Terminal Parameters	Ui = Vmax = 28V
Terminal Parameters		Ui = 28V, Ii = 115mA, Pi = 0.65W Group II		Ii = Imax = 115mA
		Ui = 16.5V Pi = 0.65W		Pi = 0.65W
		or Ui = 28V Ii = 115mA Pi = 0.65W Group I		
			Notes:	Special conditions of safe use for Group II dust.
500V Isolation		Units Will Pass A 500V Isolation Test		The free end of the cable on the integral cable
				version of the apparatus must be terminated in
Certified Temperature Range		Ex ia IIC T6 Ga (-40°C ≤ Ta ≤ +60°C) (Gas)		an appropriately certified dust-proof enclosure.
		Ex ia IIC T4 Ga (-40°C ≤ Ta ≤ +110°C) (Gas)		The unit has no serviceable parts.
		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.

TS062.24

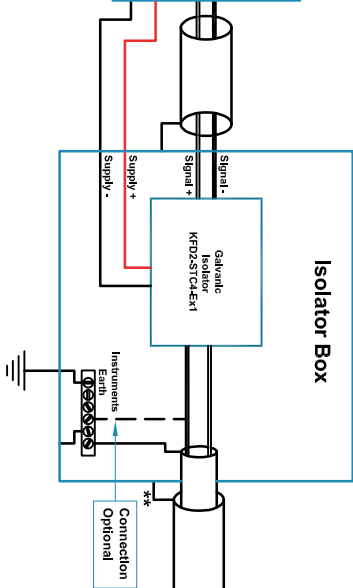


Non-Hazardous Area

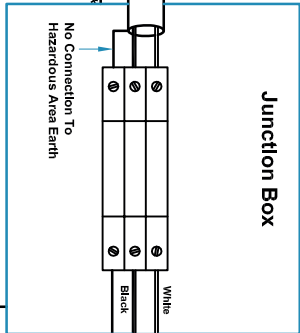
Hazardous Area

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



Inner screen isolated from accelerometer body

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

See Note 1 & 2

\*\*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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Saunderton Business Park  
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Do Not Scale

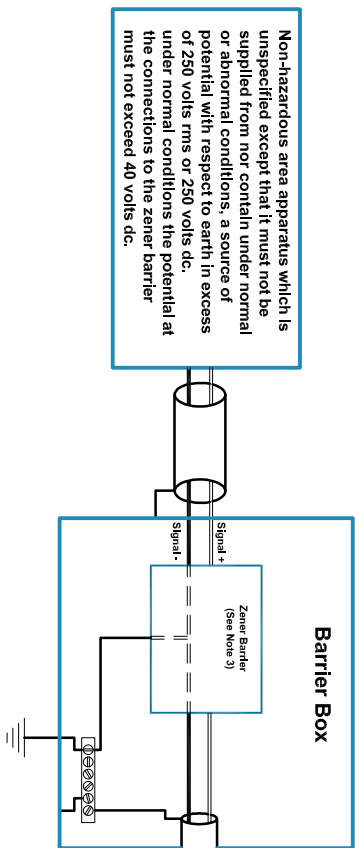
All Dimensions in mm Unless Otherwise Stated

Description: System Connections  
For HS-420I & HS-422I Group II Accelerometers With Non Armoured F.U.W. Galvanic Isolation  
Drawing No: M06-033-A

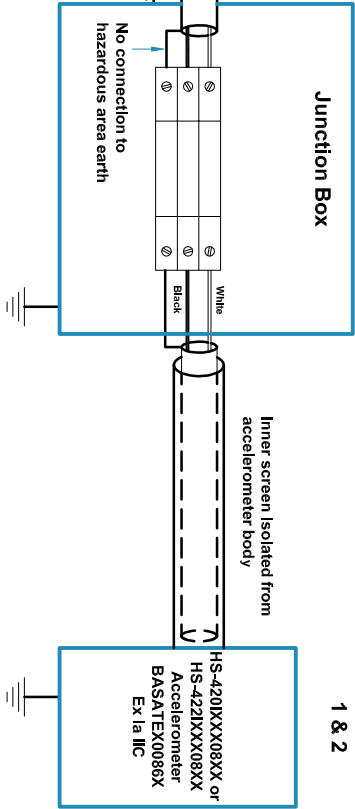
If In Doubt - Ask!

Scale: NTS  
Sheet: 1 of 1  
Form Number: QF024 Issue 1

Non-Hazardous Area



Hazardous Area



See Note 1 & 2

Inner screen isolated from accelerometer body

Non-hazardous area apparatus which is uninspected 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 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 $\mu\text{F}$	L/R Ratio $\mu\text{H}/\Omega$	
IIC	0.081	56	
IIB	0.247	168	
IIA	0.662	448	
Accelerometer With Integral Cable Length ≤ 50m			
Group	Capacitance $\mu\text{F}$	L/R Ratio $\mu\text{H}/\Omega$	
IIC	0.075	56	
IIB	0.241	168	
IIA	0.656	448	
Accelerometer With Integral Cable Length ≤ 100m			
Group	Capacitance $\mu\text{F}$	L/R Ratio $\mu\text{H}/\Omega$	
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:  $U_o = 28\text{V dc}$ ,  $I_o = 3\text{mA dc}$ ,  $P_o = 0.65\text{W}$ , 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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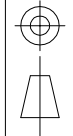
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Do Not Scale

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