

HS-420I/M Intrinsically Safe Accelerometer

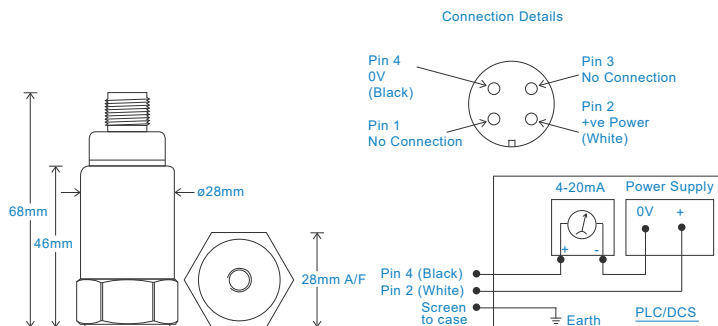
4-20mA velocity output via M12 Connector

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	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)
Screened Cable Assembly	HS-AC010 - straight HS-AC011 - right angle
Mounting Threads	see: 'How To Order' table

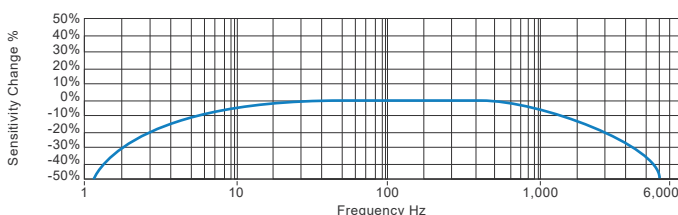
Electrical

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	IP67
Maximum Shock	5000g
EMC	EN61326-1:2013

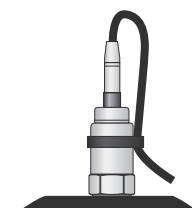
Typical Frequency Response



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
sales@hansfordsensors.com

We reserve the right to alter the specification of this product without prior notice
TS064.22

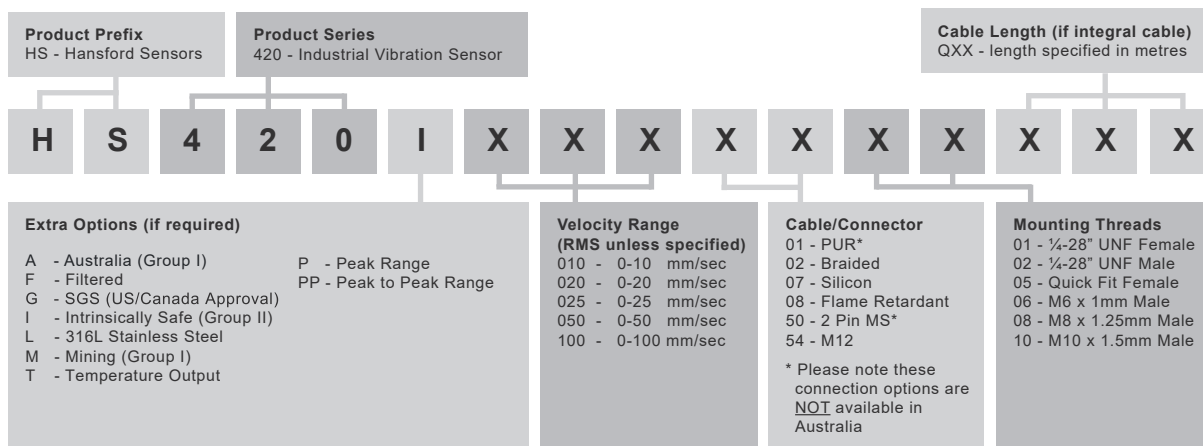


4-20mA velocity output via M12 Connector

Intrinsically Safe Requirements

Maximum Cable Length	See website: www.hansfordsensors.com 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		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



www.hansfordsensors.com
sales@hansfordsensors.com

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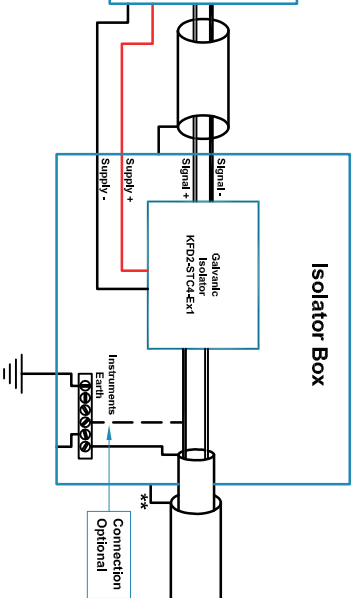
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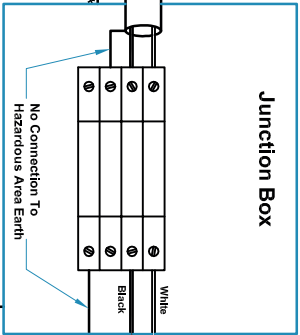
Non-Hazardous Area

Non-hazardous area apparatus which is unsupplied 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.



Hazardous Area



See Note
1 & 2

HS-420XXXX54XX or
HS-4221XXXX54XX
Accelerometer
BASATEX0086X
Ex Ia IIC

25 Metres Max

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

Table 1: Cable Connecting The Connector Version

Group	Capacitance μF	L/R Ratio $\mu\text{H}/\Omega$
IIC	0.096	72
IIB	0.767	277
IIA	2.597	585

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. 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	31/03/08	MJS	CMH	
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Tolerances Unless Stated

0 or 0.0 ±0.5

0.00 ±0.15

Angle ±5°



Hansford Sensors Ltd
Saunderton Business Park
Haw Lane
Saunderton
Bucks HP14 4JE



Do Not Scale

All Dimensions in mm Unless
Otherwise Stated

Description: System Connections
For HS-420I & HS-422I Group II
Accelerometers With Connectors
F.U.W. Galvanic Isolation
Drawing No: M06-034-A

Scale: NTS

Sheet: 1 of 1

If In Doubt - Ask!

Form Number:
QF024 Issue 1

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.

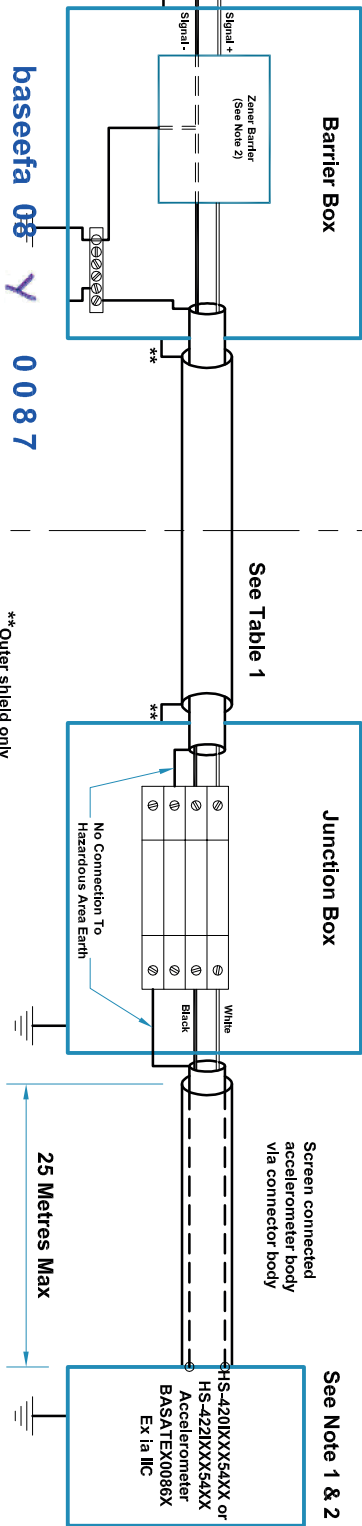




Table 1: Cable Connecting The Connector Version		
Group	Capacitance μF	L/R Ratio $\mu\text{H}/\Omega$
IIC	0.080	56
IIB	0.246	168
IIA	0.661	448

Hansford Sensors Ltd
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 [EEEx ia] IIC having the following output parameters: Uo = 28V dc, Io = 93mA 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	 Hansford Sensors Ltd Excellence in Vibration Monitoring Saunderton Business Park Haw Lane Saunderton Bucks HP14 4JE		 Do Not Scale		Description: System Connections For HS-4201 & HS-4221 Group II Accelerometers With Connectors F.U.W. Zener Barrier Drawing No: M06-018-A	
A	Release	31/03/08	MJS	CMH	Tolerances Unless Stated 0 or 0.0 ±0.5 0.00 ±0.15 Angle ±5°			All Dimensions in mm Unless Otherwise Stated		Scale: NTS Sheet: 2 of 2	
								If In Doubt - Ask!		Form Number: QF024 Issue 1	
1		2			3	4	5	6	7	8	