HS-420I/M Intrinsically Safe Accelerometer

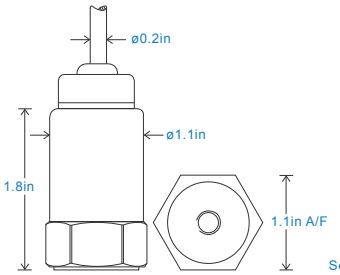
4-20mA velocity output via Flame Retardant Cable

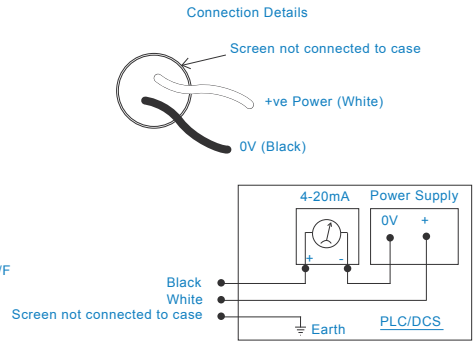
Key Features

- 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 ±10%
	Nominal 80Hz at 72°F
Frequency Response	600cpm (10Hz) to 60kcpm (1kHz) ± 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	5.9ft. lbs
Weight	5.2 oz. (nominal)
Maximum Cable Length	3,280 ft.
Standard Cable Length	16 ft.
Shielded Cable	Flame Retardant - length to be specified with order
Mounting Threads	see: 'How To Order' table

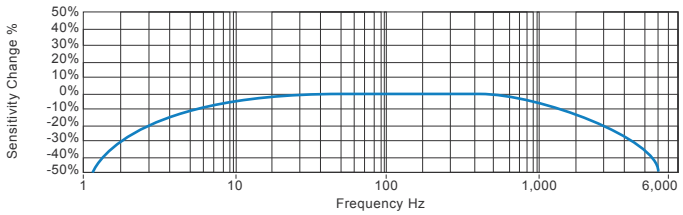
Electrical

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

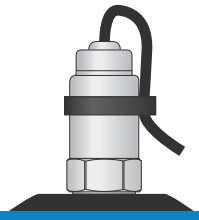
Typical Frequency Response



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

SGS C US 710318

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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TS062U.14

HS-420I/M Intrinsically Safe Accelerometer

4-20mA velocity output via Flame Retardant Cable

Intrinsically Safe Requirements

Maximum Cable Length	nominal 100 metres see attached system drawings
Certificate details: Group I + II	IECEx BAS08.0034X Baseefa08ATEX0086X Ⓔx II 1GD Ex ia IIC T6 Ga Ex ia IIIC T80°C IP65 Da Ⓔx I M1 Ex ia I Ma (-40ºC ≤ Ta ≤ +60ºC)
Certificate details: Group II	Ⓔx II 1GD Ex ia IIC T4 Ga Ex ia IIIC T130°C IP65 Da (-40ºC ≤ Ta ≤ +110ºC)
Accelerometer System Certificate	Baseefa08Y0087 Ex ia IIC T6 (-40°C ≤ Ta ≤ +60°C) *On request - consult Sales Office
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
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 (-40ºC ≤ Ta ≤ +60ºC)
South African Approval	Certificate No. MASC MS/16-0229X Group I and II (As Baseefa/ATEX)

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 Zone 20, AEx, ia, IIIC, T130°C, IP65, Da, -40°C to +110°C
Barrier	1 x Pepperl + Fuchs Galvanic Isolator KFD2-STC4-Ex1, which has superseded KFD2-CR-Ex1.30300 (BAS00ATEX7164) see attached system drawings 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
System Connections for Galvanic Isolator	see attached system drawings
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.

How To Order

Product Prefix
HS - Hansford Sensors

Product Series
420 - Industrial Vibration Sensor

Cable Length (if integral cable)
UXX - length specified in feet

H	S	4	2	0	I	X	X	X	X	X	X	X	X	X	X

Extra Options (if required)

A - Australia (Group I)
F - Filtered
G - SGS (US/Canada Approval)
I - Intrinsically Safe (Group II)
L - 316L Stainless Steel
M - Mining (Group I)
T - Temperature Output
U - Imperial Range
UP - Imperial Peak Range
UPP - Imperial Peak to Peak Range

Velocity Range (RMS unless specified)
012 - ½ IPS
025 - 1 IPS
050 - 2 IPS
100 - 4 IPS

Cable/Connector
01 - PUR*
02 - Braided
07 - Silicon
08 - Flame Retardant
50 - 2 Pin MS*
54 - M12

* Please note these connection options are NOT available in Australia

Mounting Threads
01 - ¼-28" UNF Female
02 - ¼-28" UNF Male
05 - Quick Fit Female
06 - M6 x 1mm Male
08 - M8 x 1.25mm Male
10 - M10 x 1.5mm Male

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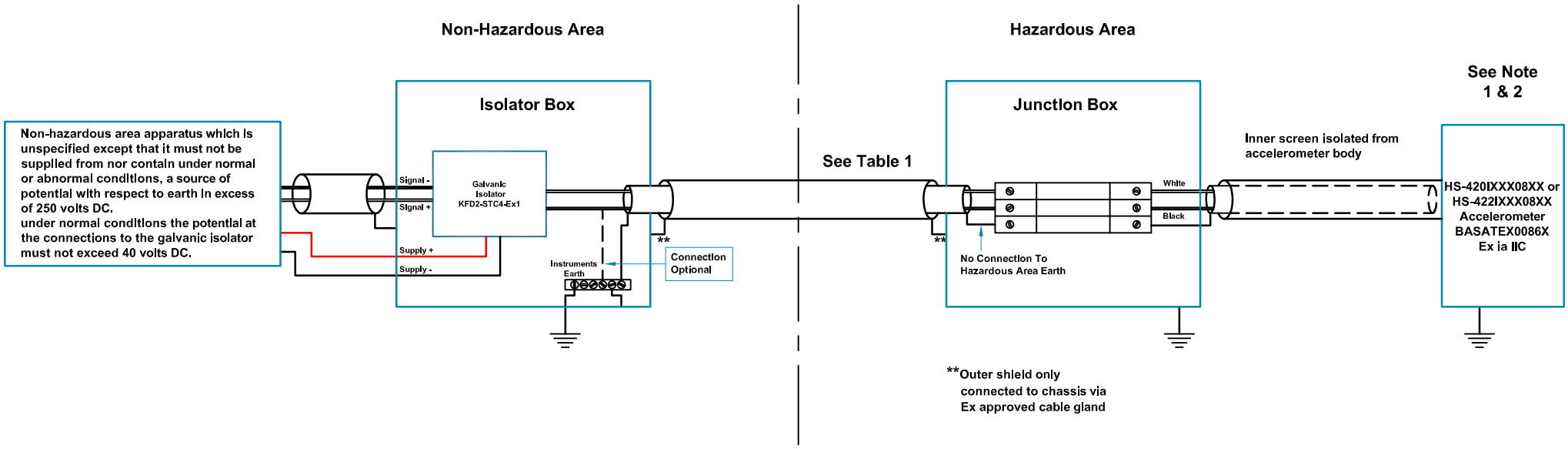

Table 1: Cable Parameters For Additional Cable Lengths		
Accelerometer With Integral Cable Length ≤ 10m		
Group	Capacitance µF	L/R Ratio µH/Ω
IIC	0.097	72
IIB	0.768	277
IIA	2.598	585
Accelerometer With Integral Cable Length ≤ 50m		
Group	Capacitance µF	L/R Ratio µH/Ω
IIC	0.091	72
IIB	0.762	277
IIA	2.592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

Rev No	DRF No	Date Drg	Drg By	Appd By
A	Release	17/06/10	MJS	CMH

Material: N/A

Tolerances Unless Stated
0 or 0.0 ±0.5
0.00 ±0.15
Angle ±5°

1.6 Finish All Over
Threads g6 H6

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

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 FR Polyurethane Cable F.U.W. Galvanic Isolation

Drawing No: M06-033-A

Scale: NTS

Sheet: 1 of 1

Form Number: QF024 Issue 1

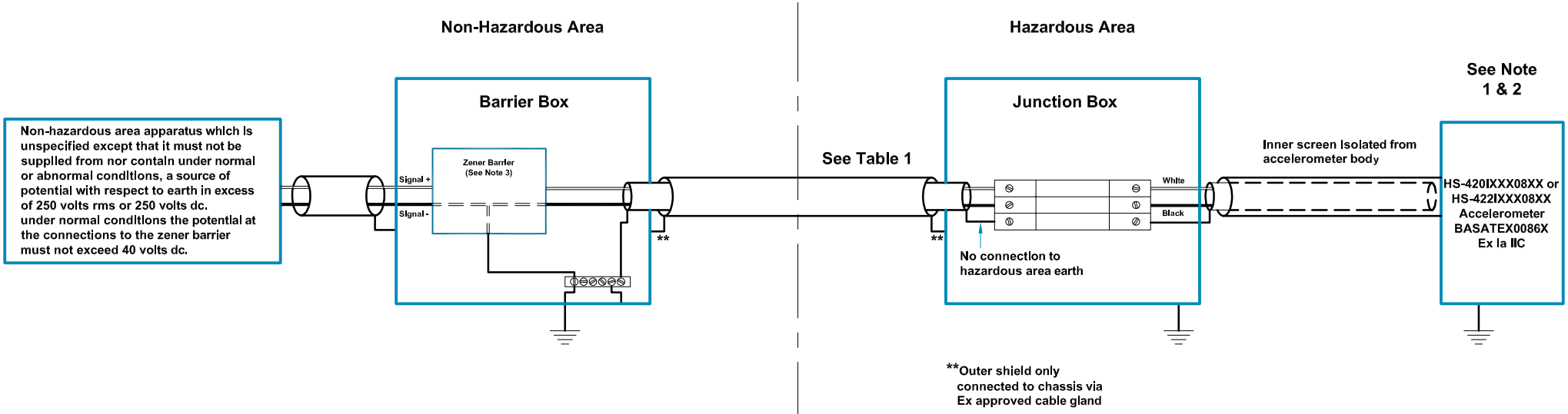

Table 1: Cable Parameters For Additional Cable Lengths		
Accelerometer With Integral Cable Length ≤ 10m		
Group	Capacitance µF	L/R Ratio µH/Ω
IIC	0.081	56
IIB	0.247	168
IIA	0.662	448
Accelerometer With Integral Cable Length ≤ 50m		
Group	Capacitance µF	L/R Ratio µH/Ω
IIC	0.075	56
IIB	0.241	168
IIA	0.656	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

Baseefa

Baseefa Certification Schedule Drawing

baseefa 08 Y 0087

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HS-420I & HS-422I
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 hazadous 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 saftey barrier certified by an ec approved body to [EEx 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 assesment 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
A	Release	10/03/08	MJS	CMH

Material: N/A

Tolerances Unless Stated
0 or 0.0 ±0.5
0.00 ±0.15
Angle ±5°
1.6 Finish All Over
Threads g6 H6

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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 FR Polyurethane Cable F.U.W. Zener Barrier

Drawing No: M06-013-A

Scale: NTS

Sheet: 2 of 2

Form Number: QF024 Issue 1