

# HS-422I/M Intrinsically Safe Accelerometer

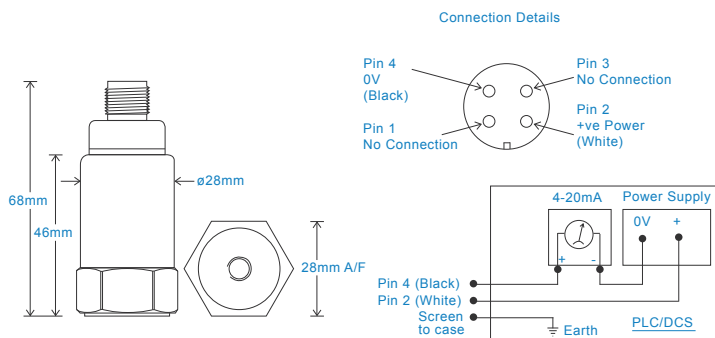
## 4-20mA acceleration output via M12 Connector

### 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	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	HS-AC010 - straight HS-AC011 - right angle
Mounting Threads	see: 'How To Order' table

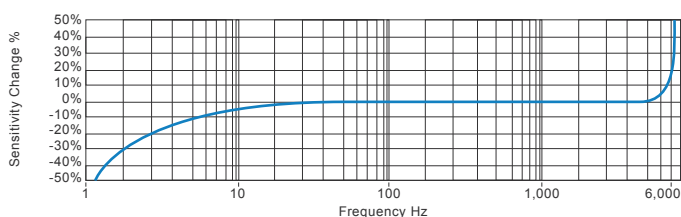
### Electrical

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	$>10^8$ Ohms at 500 Volts

### Environmental

Operating Temperature Range	see: attached certification details
Sealing	IP67
Maximum Shock	5000g
EMC	EN61326-1:2013

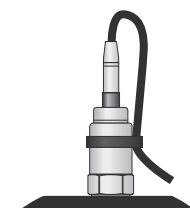
### Typical Frequency Response



### 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](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  
TS067.19

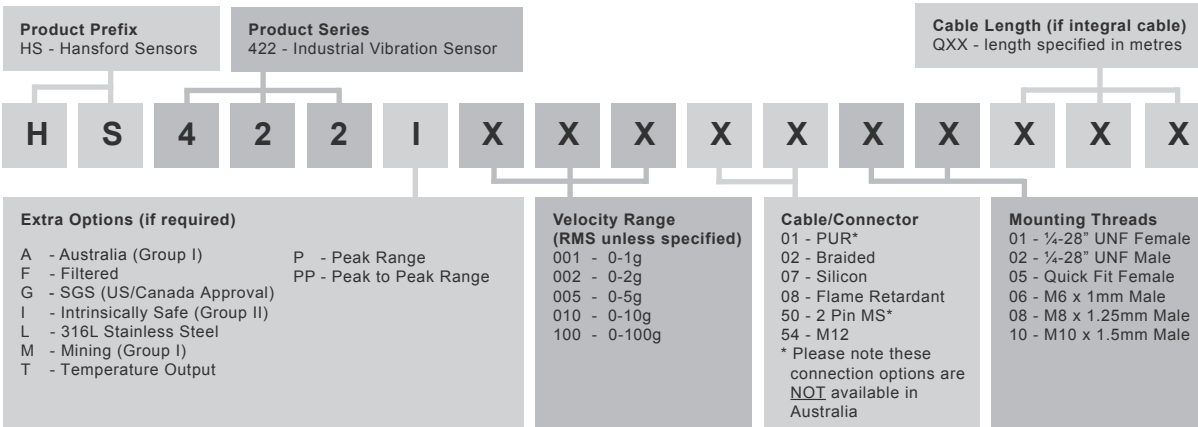


## 4-20mA acceleration output via M12 Connector

## 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

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



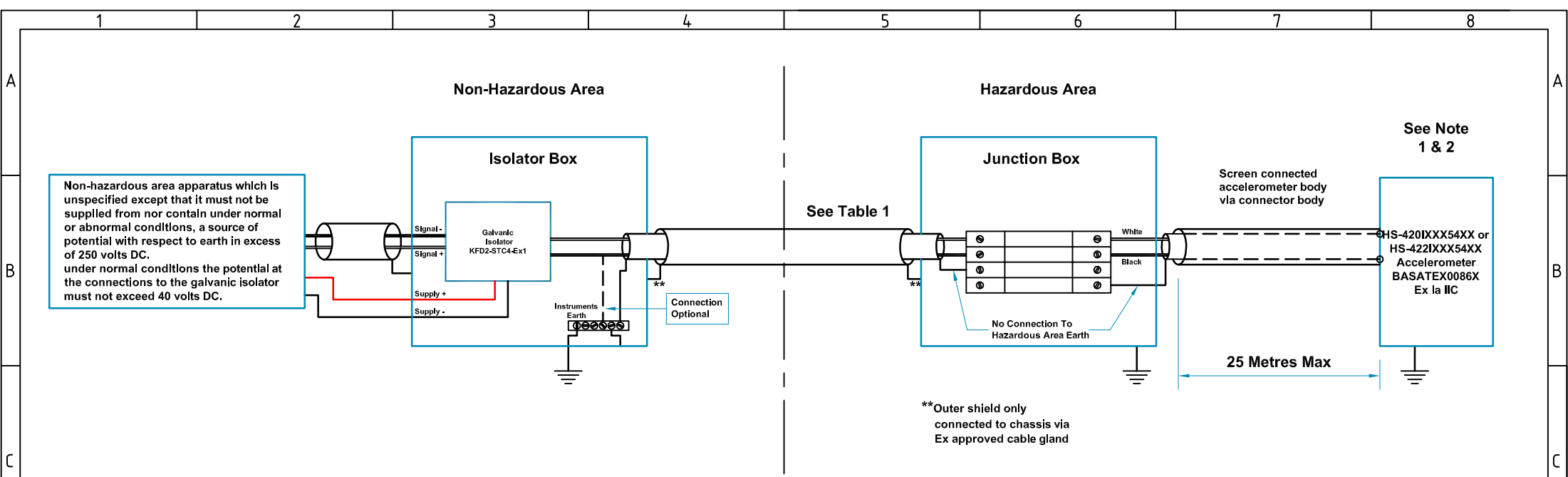


Table 1: Cable Connecting The Connector Version

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

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HS-420I & HS-422I  
Accelerometer System

Ex ia IIC T6 (-40°C ≤ Ta ≤ +60°C)

Notes:

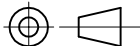
1. The capacitance and inductance, or inductance - to - resistance ratio (L/R) of hazardous area cable, must not exceed the values shown in Table 1.
2. The cable from the accelerometer to the junction box must not be installed in a high velocity dust laden atmosphere.
3. The Installer is to perform a 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	31/03/08	MJS	CMH

Material: N/A	
Tolerances Unless Stated	
0 or 0.0	±0.5
0.00	±0.15
Angle	±5°
Finish All Over Threads g6 H6	

**Hansford Sensors**  
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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

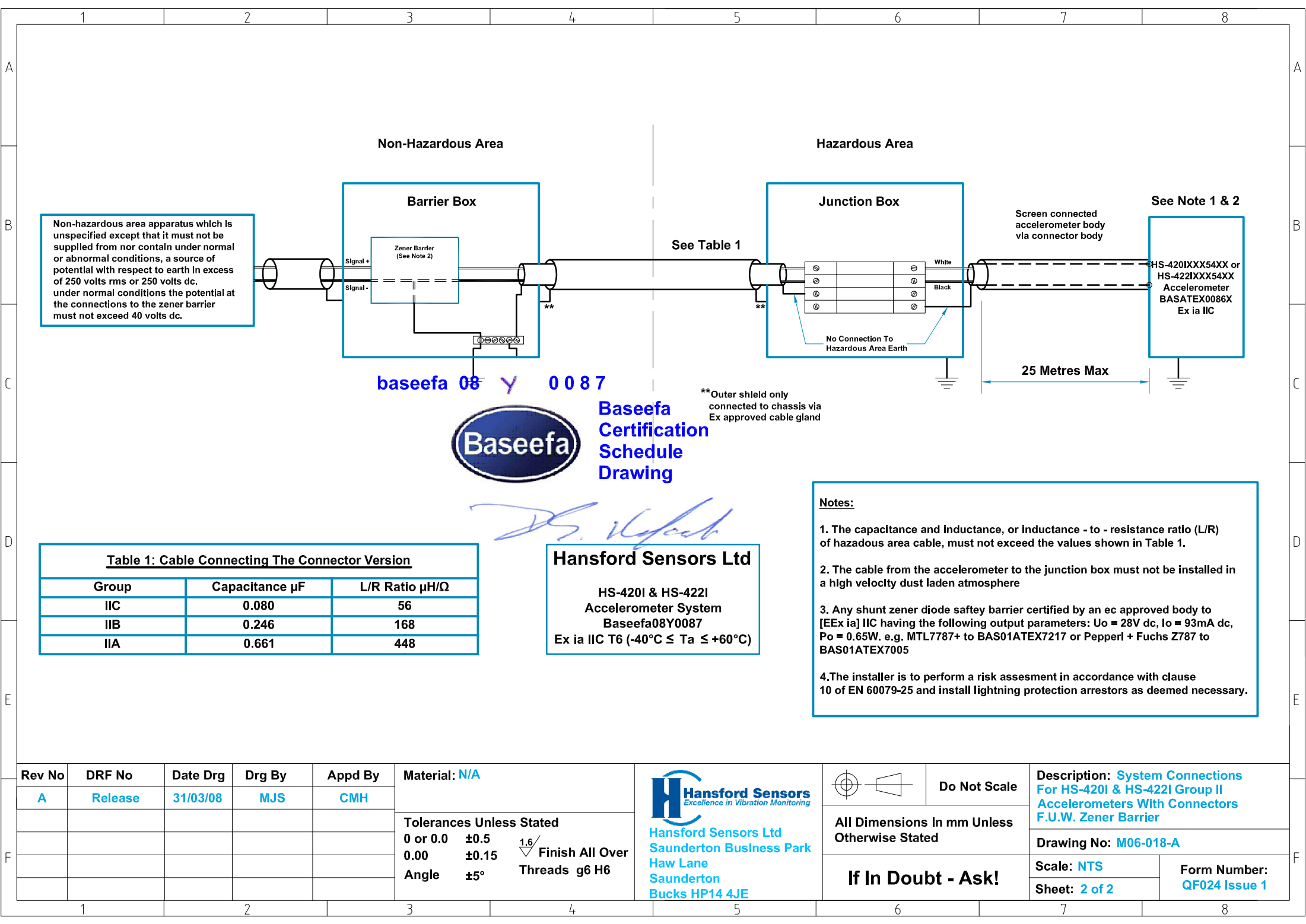
If In Doubt - Ask!

Description: System Connections For HS-420I & HS-422I Group II Accelerometers With Connectors F.U.W. Galvanic Isolation

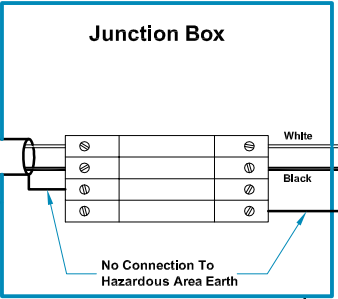
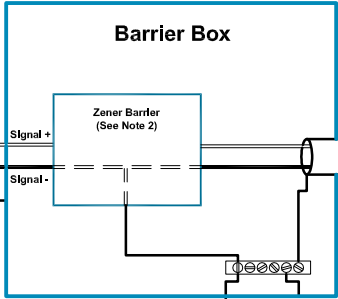
Drawing No: M06-034-A

Scale: NTS  
Sheet: 1 of 1

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.



See Note 1 & 2

HS-420I or HS-422I Accelerometer BASATEX0086X Ex ia IIC

Screen connected accelerometer body via connector body

25 Metres Max

See Table 1

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

baseefa 08 Y 0087



Baseefa Certification Schedule Drawing

*Handwritten signature*

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HS-420I & HS-422I Accelerometer System  
Baseefa08Y0087  
Ex ia IIC T6 (-40°C ≤ Ta ≤ +60°C)

Table 1: Cable Connecting The Connector Version

Group	Capacitance $\mu\text{F}$	L/R Ratio $\mu\text{H}/\Omega$
IIC	0.080	56
IIB	0.246	168
IIA	0.661	448

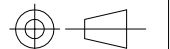
Notes:

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 [EEx ia] IIC having the following output parameters:  $U_o = 28\text{V dc}$ ,  $I_o = 93\text{mA dc}$ ,  $P_o = 0.65\text{W}$ . 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
A	Release	31/03/08	MJS	CMH

Material: N/A
Tolerances Unless Stated
0 or 0.0 $\pm 0.5$
0.00 $\pm 0.15$
Angle $\pm 5^\circ$
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 Connectors F.U.W. Zener Barrier	
Drawing No: M06-018-A	
Scale: NTS	Form Number: QF024 Issue 1
Sheet: 2 of 2	