

HS-422I/M Intrinsically Safe Accelerometer

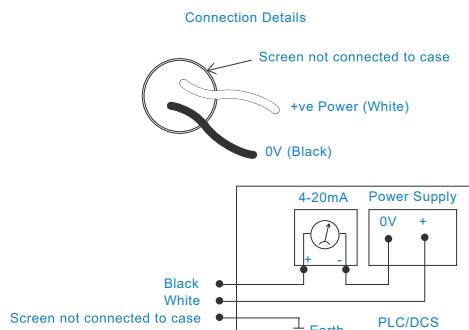
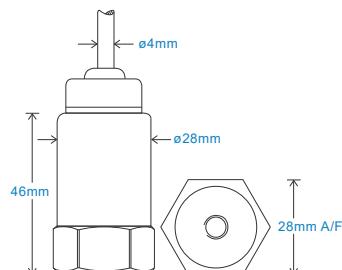
4-20mA acceleration output via Braided Cable

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
- Customisable features

Industries

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



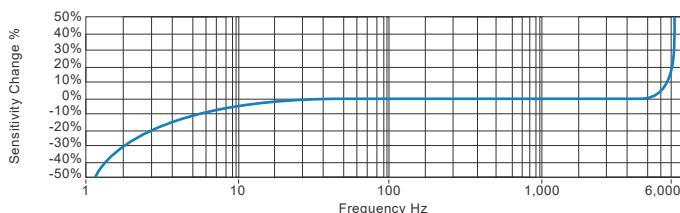
Technical Performance

Technical Performance		Mechanical	
Mounted Base Resonance	10kHz min	Case Material	Stainless Steel
Acceleration Ranges	see: 'How To Order' table ±10%	Sensing Element/Construction	PZT/Compression
	Nominal 80Hz at 22°C	Mounting Torque	8Nm
Frequency Response	10Hz (600cpm) to 5kHz (300kcpm) ± 5%	Weight	150gms (nominal)
	- ISO10816	Maximum Cable Length	1000 metres
Isolation	Base isolated	Standard Cable Length	5 metres
Range	50g peak	Screened Cable	Braided - length to be specified with order
Transverse Sensitivity	Less than 5%	Mounting Threads	see: 'How To Order' table

Electrical

Current Output	4-20mA DC proportional to acceleration	Operating Temperature Range	see: attached certification details
Supply Voltage	15-30 Volts DC (for 4-20mA)	Sealing	IP65
Settling Time	2 seconds	Maximum Shock	5000g
Output Impedance	Loop Resistance 600 Ohms max. at 24 Volts	EMC	EN61326-1:2013
Case Isolation	>10 ⁸ Ohms at 500 Volts		

Typical Frequency Response



Environmental

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

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
TS065.22



HS-422I/M Intrinsically Safe Accelerometer

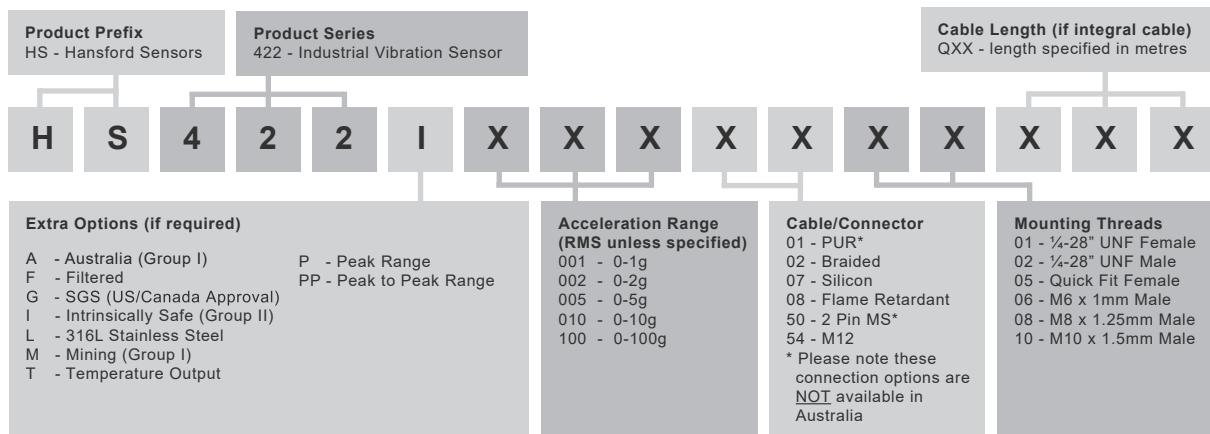
4.20mA acceleration output via Braided Cable

4-20mA acceleration output via Braided Cable

Intrinsically Safe Requirements

Maximum Cable Length	nominal 100 metres see attached system drawings	US/Canada Approvals	Certificate No. SGSNA/18/SUW/0000231
Certificate details: Group I + II	IECEx BAS08.0034X Baseefa08ATEX0086X Ex ia IIC T6 Ga Ex ia IIIC T80°C IP65 Da Ex ia I Ma (-40°C ≤ Ta ≤ +60°C)	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	
	Ex ia IIC T6 Ga Ex ia IIIC T80°C IP65 Da Ex ia I Ma (-40°C ≤ Ta ≤ +60°C)	Ex ia IIC T4 Ga Ex ia IIIC T130°C IP65 Da (-40°C ≤ Ta ≤ +110°C)	Barrier Ex ia I Ma (-40°C ≤ Ta ≤ +60°C)
Certificate details: Group II	Ex ia IIC T6 Ga Ex ia IIIC T130°C IP65 Da (-40°C ≤ Ta ≤ +110°C)	Ex ia IIC T4 Ga Ex ia IIIC T130°C IP65 Da (-40°C ≤ Ta ≤ +110°C)	1 x Pepperl + Fuchs Galvanic Isolator KFD2-STC4-Ex1, which has superseded KFD2-CR-Ex1.30300 (BAS00ATEX7164) 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 Zener Barrier	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	System Connections for Galvanic Isolator	see attached system drawings
500V Isolation	Units Will Pass A 500V Isolation Test	Terminal Parameters	Ui = Vmax = 28V Ii = Imax = 115mA Pi = 0.65W
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)	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.
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



Non-Hazardous Area

Hazardous Area

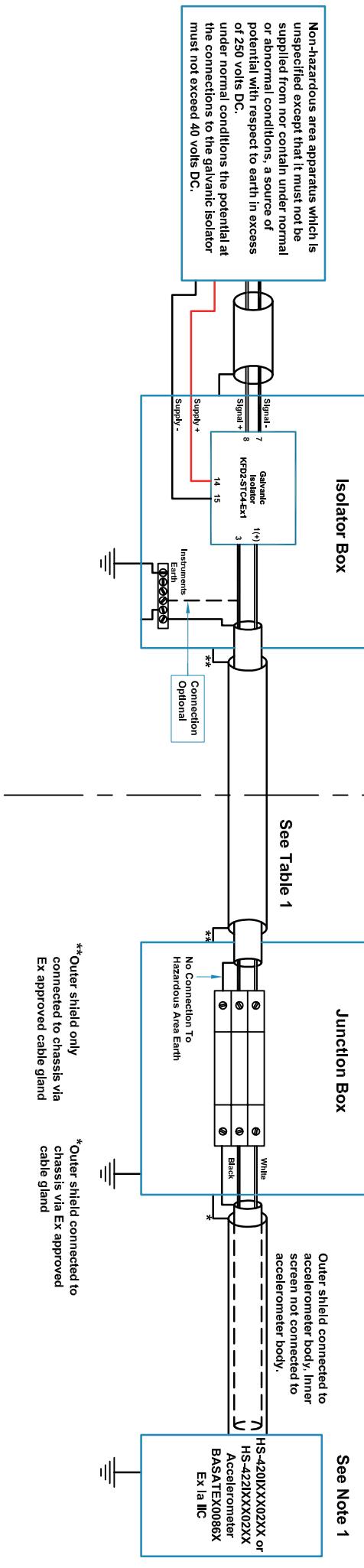


Table 1: Cable Parameters For Additional Cable Lengths

Accelerometer With Integral Cable Length \leq 10m

Group	Capacitance μ F	L/R Ratio μ H/ Ω
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 \leq Ta \leq +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 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	Do Not Scale	Description: System Connections For HS-420I & HS-422I Group II Accelerometers With Armoured Cable F.U.W. Galvanic Isolation
A	Release	17/06/10	MJS	CMH	Tolerances Unless Stated	All Dimensions In mm Unless Otherwise Stated	Hansford Sensors Ltd Saunderton Business Park Haw Lane Saunderton Bucks HP14 4JE
F					0 or 0.0 \pm 0.5 ∇ Finish All Over	Drawing No: IM06-031-A	If In Doubt - Ask!
					0.00 \pm 0.15 Threads g6 H6 Angle \pm 5°	Scale: NTS	Form Number: QF024 Issue 1
1		2			3	4	5
						6	7
							8

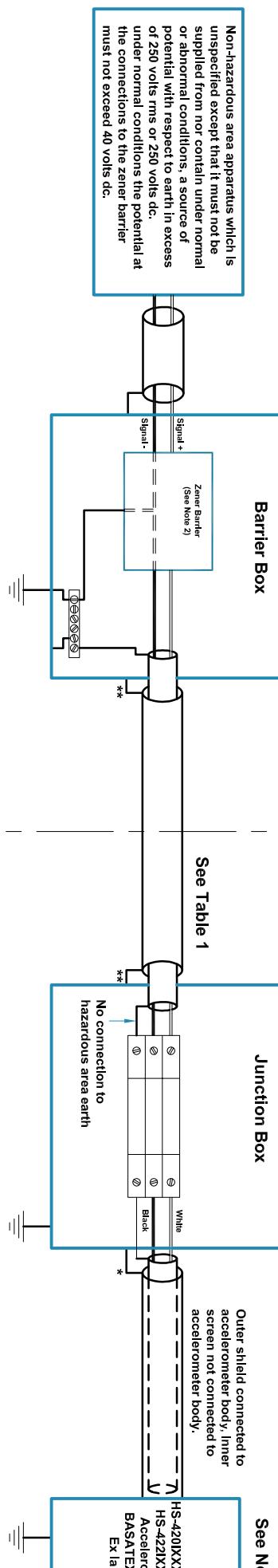


Table 1: Cable Parameters For Additional Cable Lengths

Group	Capacitance μF	L/R Ratio
Group 1	0.01	100
Group 2	0.02	50
Group 3	0.05	20
Group 4	0.1	10
Group 5	0.2	5
Group 6	0.5	2
Group 7	1.0	1
Group 8	2.0	0.5
Group 9	5.0	0.2
Group 10	10.0	0.1

Table 1: Cable Parameters For Additional Cable Lengths		
Accelerometer With Integral Cable Length \leq 10m		
Group	Capacitance μF	L/R Ratio $\mu\text{H}/\Omega$
IIC	0.080	56
IIB	0.246	168
IIA	0.661	448
Accelerometer With Integral Cable Length \leq 50m		
Group	Capacitance μF	L/R Ratio $\mu\text{H}/\Omega$
IIC	0.068	56
IIB	0.234	168
IIA	0.649	448
Accelerometer With Integral Cable Length \leq 100m		
Group	Capacitance μF	L/R Ratio $\mu\text{H}/\Omega$
IIC	0.054	56
IIB	0.220	168
IIA	0.635	448

HS-4201 & HS-4221 Accelerometer System Baseefa08Y0087 Ex ia IIC T6 (-40°C ≤ Ta ≤ +60°C)

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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. Any shunt zener diode safety barrier certified by an EC approved body to IECEx iaI IIC having the following output parameters: $U_0 = 28V$ dc, $I_0 = 93mA$ $P_0 = 0.65W$, e.g. MTL7787+ to BAS01ATEX7217 or Pepperl + Fuchs Z787 to BAS01ATEX7005
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.

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

• Outer shield connected to chassis via Ex approved cable gland

See Table 1

Junction Box

See Note

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

Outer shield connected to
accelerometer body, inner
screen not connected to
accelerometer body.

HS-420XXX02XX
HS-422XXX02XX
Accelerometer

1000

Accelerometer With Integral Cable Length ≤ 100mm					
Group	Capacitance μF	L/R Ratio $\mu\text{H}/\Omega$			
IIC	0.054	56			
IIB	0.220	168			
IIA	0.635	448			

Rev No	DRF No	Date	Drg	Drg By	Appd By	Material: N/A
A		10/03/08		MJS	CMH	Tolerances Unless Stated
						0 or 0.0 ±0.5 0.00 Angle
						±0.15 1.6° Finish All Over Threads g6 H6
						Hansford Sensors Ltd Saunderton Business Park Haw Lane Saunderton Bucks HP14 4JE

Do Not Scale	Description: System Connections For HS-4201 & HS-4221 Group II Accelerometers With Armoured Cable F.U.W. Zener Barrier
	All Dimensions In mm Unless Otherwise Stated
	Drawing No: M06-011-A
	Scale: NTS
	Form Number: QF024 Issue 1
	Sheet: 2 of 2