HS-100IS Intrinsically Safe Accelerometer

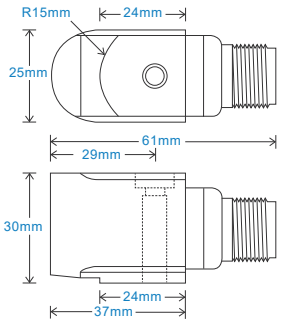
AC acceleration output via 2 Pin MS Connector

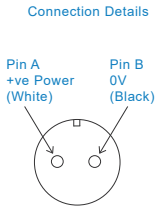
Key Features

- Intrinsically Safe with European, USA, South African, Indian and Australian approvals
- Side entry for easy access

Industries

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





Technical Performance

Mounted Base Resonance	see 'How To Order' table (nominal)
Sensitivity	see: 'How To Order' table ±10%
	Nominal 80Hz at 22°C
Frequency Response	2Hz (120cpm) to 10kHz (600kcpm) ± 5%
	1.5Hz (90cpm) to 12kHz (720kcpm) ± 10%
	0.8Hz (48cpm) to 15kHz (900kcpm) ± 3dB
Isolation	Base isolated
Range	see: 'How To Order' table
Transverse Sensitivity	Less than 5%

Mechanical

Case Material	Stainless Steel
Sensing Element/Construction	PZT/Compression
Mounting Torque	8Nm
Mounting Bolt Provided	see: 'How To Order' table x 30mm long
Weight	185gms (nominal) body only
Screened Cable Assembly	see: www.hansfordsensors.com for options
Connector	HS-AA004 - non-booted
	HS-AA053 or HS-0054 - booted
Mounting Threads	see: 'How To Order' table

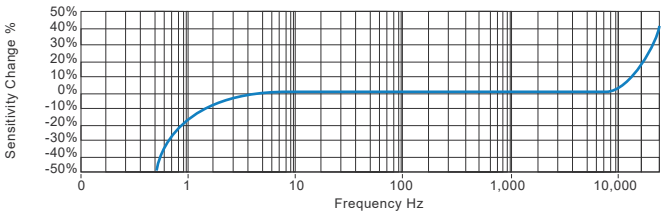
Electrical

Excitation Voltage:	18-30Volts DC
Electrical Noise	0.1mg max
Current Range	0.5mA to 8mA
Bias Voltage	10 - 12 Volts DC
Settling Time	2 seconds
Output Impedance	200 Ohms max.
Case Isolation	>10^8 Ohms at 500 Volts

Environmental

Operating Temperature Range	see: attached certification details
Sealing	IP68
Maximum Shock	5000g
EMC	EN61326-1:2013

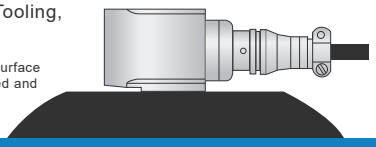
Typical Frequency Response (at 100mV/g)



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

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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Excellence in Vibration Monitoring

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HS-100IS Intrinsically Safe Accelerometer

AC acceleration output via 2 Pin MS Connector

Intrinsically Safe Requirements

Maximum Cable Length	See website www.hansfordsensors.com - see attached system drawing
Certificate details: Group I	IECEx BAS07.0037X Baseefa07ATEX0149X Ⓔx I M1 Ex ia I Ma (-55ºC ≤ Ta ≤ +110ºC)
Certificate details: Group II (ignition temperature 130ºC)	IECEx BAS07.0035X Baseefa07ATEX0144X Ⓔx II 1GD Ex ia IIC T4 Ga Ex ia IIIC T130ºC IP65 Da (-55ºC ≤ Ta ≤ +110ºC)
Certificate details: Group II (ignition temperature 80ºC)	IECEx BAS07.0035X Baseefa07ATEX0144X Ⓔx II 1GD Ex ia IIC T6 Ga Ex ia IIIC T80ºC IP65 Da (-55ºC ≤ Ta ≤ +60ºC)
Accelerometer System Certificate	Baseefa07Y0145 Ex ia IIC T6 (-55°C ≤ Ta ≤ +60°C) Ex ia IIC T4 (-55ºC ≤ Ta ≤ +110ºC) On request - consult Sales Office
Terminal Parameters	Ui = 28V, Ii = 93mA, Pi = 0.65W Ci = 83nf Li/Ri = 15.4µH/Ohm
500V Isolation	Units Will Pass A 500V Isolation Test
Certified Temperature Range	Ex ia IIC T6 Ga (-55°C ≤ Ta ≤ +60°C) (Gas) Ex ia IIIC T80°C IP65 Da (-55ºC ≤ Ta ≤ +60ºC) (Dust) Ex ia IIC T4 Ga (-55°C ≤ Ta ≤ +110°C) (Gas)* Ex ia IIIC T130°C IP65 Da (-55°C ≤ Ta ≤ +110°C) (Dust)* Ex ia I Ma (-55°C ≤ Ta ≤ +110°C) (Mining) *On request - consult Sales Office
Australia Approval Group I	IECEx ITA 11.0013X Ex ia I Ma (-55ºC ≤ Ta ≤ +110ºC)
US/Canada Approvals	Certificate No. USTC/15/FAI/01350 Class I, II, III, Division 1, 2, Groups A - G, T4, -55°C to +110°C, IP65 Class I, Zone 0, AEx, ia, IIC, T4, Ga, -55°C to +110°C Zone 20, AEx, ia, IIIC, T130°C, IP65, Da, -55°C to +110°C Class I, II, III, Division 1, 2, Groups A - G, T6, -55°C to +60°C Class I, Zone 0, AEx, ia, IIC, T6, Ga, -55°C to +60°C Zone 20, AEx, ia, IIIC, T80°C, IP65, DA, -55°C to +60°C
South African Approval	Certificate No. MASC S/16-0231X Group II (As Baseefa/ATEX) MASC M/16-0230X Group I (As Baseefa/ATEX)
System Connections	see attached system drawings
Barrier	1 x Pepperl + Fuchs Galvanic Isolator KFD2-VR4-Ex1.26 (BAS02ATEX7206) see attached system drawings 1 x MTL Zener Barrier MTL7728+ (BAS01ATEX7217) or Pepperl + Fuchs Zener Barrier Z728 (BAS01ATEX7005) or any other barrier that conforms to system drawings on website

Notes: Special conditions of safe use for Group I & II. The free end of the cable on the integral cable version of the apparatus must be terminated in an appropriate dust-proof enclosure.

Intrinsically Safe Requirements for IC3 Varitations

HS-100IC3 Variation is certified as Category 3 equipment. These sensors are only certified for use within Zones 2.

Certificate Details: Group II (ignition temperature 130˚C)	IECEx BAS17.0054X Baseefa7ATEX0069X Ⓔx II 3G Ex ic IIC T4 Gc (-55˚C ≤ Ta ≤ +110˚C)
Certified Temperature Range	Ex ic IIC T4 Gc (-55˚C ≤ Ta ≤ +110˚C)
Terminal Parameters	Ui = 25.2V, Ii = 146mA, Pi = 0.92W Ci = 83nf Li 66µH
500V Isolation	Units will pass a 500V Isolation Test
Special Conditions of Use:	The Ci and Li parameters listed on the equipment certificate must be taken into account when connecting this equipment.

How To Order

Product Prefix
HS - Hansford Sensors

Product Series
100 - Industrial Vibration Sensor

H	S	1	0	0	I	S	X	X	X	X	X	X	X

Extra Options (if required)
A - Australia (Group I)
I - Intrinsically Safe (Group II)
L - 316L Stainless Steel
M - Mining (Group I)
S - 90° Side Exit
Y - 5% tolerance on sensitivity
IC3 - Category 3 Classification

Sensitivity	Range	Resonant Frequency
010 - 10mV/g	±800g	27kHz (1,620kcpm)
030 - 30mV/g	±250g	25kHz (1,500kcpm)
050 - 50mV/g	±160g	23kHz (1,380kcpm)
100 - 100mV/g	±80g	21kHz (1,260kcpm)

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

Mounting Threads
02 - ¼-28" UNF Male
06 - M6 x 1mm Male
08 - M8 x 1.25mm Male

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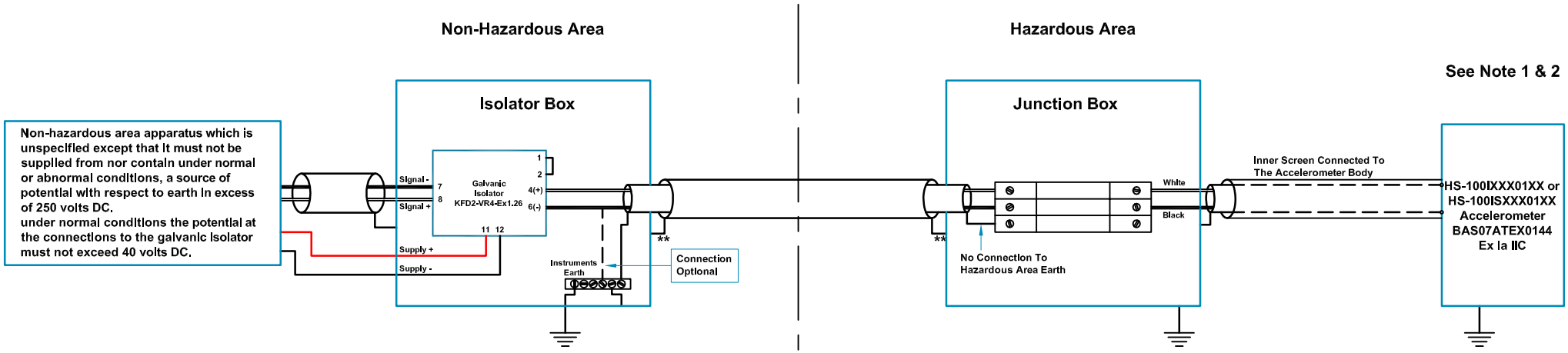
sales@hansfordsensors.com

TS039.19



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

Table 1: Cable Parameters For Additional Cable Lengths		
Accelerometer With Integral Cable Length ≤ 10m		
Group	**Capacitance µF**	**L/R Ratio µH/Ω**
IIC	0.086	46
IIB	0.730	172
IIA	2.470	363
Accelerometer With Integral Cable Length ≤ 50m		
Group	**Capacitance µF**	**L/R Ratio µH/Ω**
IIC	0.051	46
IIB	0.695	172
IIA	2.435	363
Accelerometer With Integral Cable Length ≤ 92m		
Group	**Capacitance µF**	**L/R Ratio µH/Ω**
IIC	0.013	46
IIB	0.657	172
IIA	2.397	363

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HS-100I or HS-100IS
Accelerometer System

Ex ia IIC T4 (-55°C ≤ Ta ≤ +110°C) or
Ex ia IIC T6 (-55°C ≤ Ta ≤ +60°C)

Notes:

1. The capacitance and 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. 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	15/06/07	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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Sands Industrial Estate
High Wycombe
Bucks HP12 4HJ

Do Not Scale

All Dimensions In mm Unless Otherwise Stated

If In Doubt - Ask!

Description: System Connections For HS-100I & HS-100IS Group II Accelerometers With 2 Pin MS Connector F.U.W. Galvanic Isolation

Drawing No: M06-056-A

Scale: NTS

Sheet: 1 of 2

Form Number: QF024 Issue 1

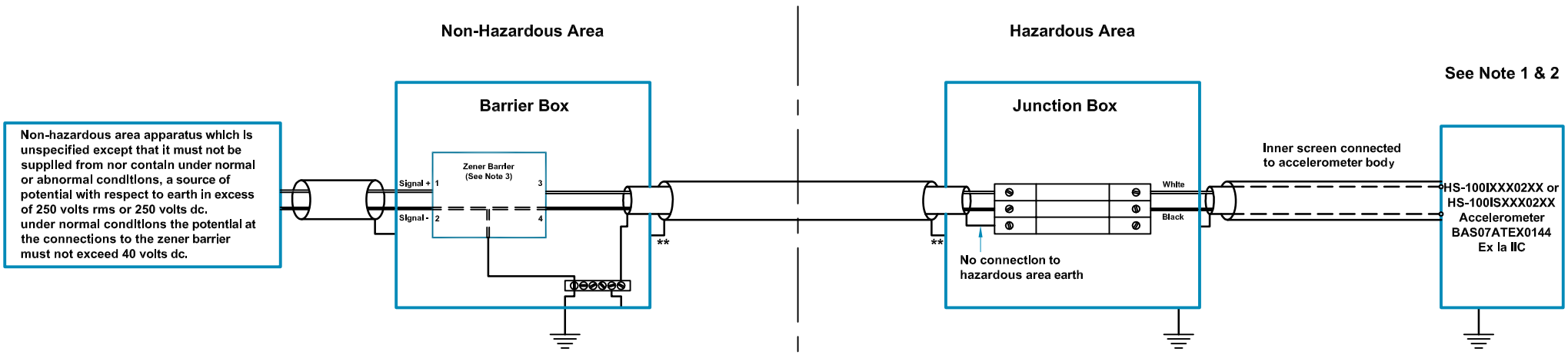

Table 1: Cable Parameters For Additional Cable Lengths		
Accelerometer With Integral Cable Length ≤ 10m		
Group	Capacitance µF	L/R Ratio µH/Ω
IIC	0.073	56
IIB	0.239	168
IIA	0.654	448
Accelerometer With Integral Cable Length ≤ 50m		
Group	Capacitance µF	L/R Ratio µH/Ω
IIC	0.038	56
IIB	0.204	168
IIA	0.619	448
Accelerometer With Integral Cable Length ≤ 92m		
Group	Capacitance µF	L/R Ratio µH/Ω
IIC	0.000	56
IIB	0.166	168
IIA	0.581	448

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HS-100I or HS-100IS
Accelerometer System

Ex ia IIC T4 (-55°C ≤ Ta ≤ +110°C) or
Ex ia IIC T6 (-55°C ≤ Ta ≤ +60°C)

Notes:

1. The capacitance and 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 single zener diode saftey barrier certified by an approved body to [Ex ia] IIC having the following output parameters: Uo = 28V dc, Io = 93mA dc, Po = 0.65W. e.g. MTL7728 to BAS01ATEX7217 or Pepperl + Fuchs Z728 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	16/09/15	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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Description: System Connections For HS-100I & HS-100IS Group II Accelerometers With 2 Pin MS Connector F.U.W. Zener Barrier

Drawing No: M06-056-A

Scale: NTS

Sheet: 2 of 2

Form Number: QF024 Issue 1