HS-100IS Intrinsically Safe Accelerometer

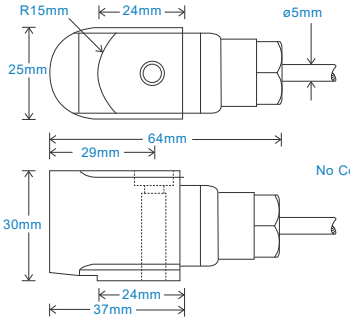
AC acceleration output via PUR Cable

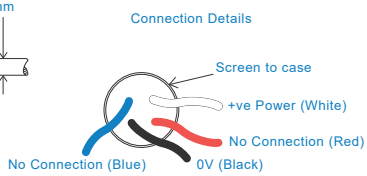
Key Features

- Intrinsically Safe with European, USA, South African 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
Maximum Cable Length	1000 metres
Standard Cable Length	5 metres
Screened Cable	PUR - length to be specified with order
Mounting Threads	see: 'How To Order' table
Submersible Depth	100 metres max (10 bar)

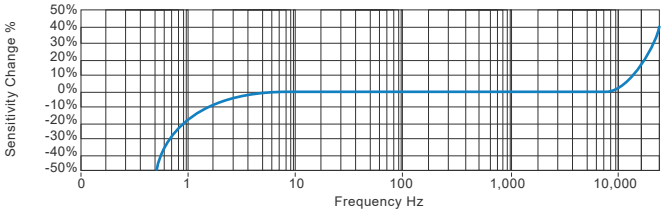
Electrical

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

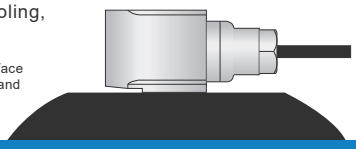
Typical Frequency Response (at 100mV/g)



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

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

TS151.11

HS-100IS Intrinsically Safe Accelerometer

AC acceleration output via PUR Cable

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 & 22.

Certified Temperature Range	Ex ic IIC T4 Ga (-55˚C ≤ Ta ≤ +110˚C)
Terminal Parameters	Ui = 25.2V, Ii = 146mA, Pi = 0.92W Ci = 83nf Li 66µH
Certificate Details: Group II (ignition temperature 130˚C)	IECEx BAS17.0054X Baseefa7ATEX0069X Ⓔx II 3G Ex ic IIC T4 Ga (-55˚C ≤ Ta ≤ +110˚C)
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

Cable Length (if integral cable)
QXX - length specified in metres

H	S	1	0	0	I	S	X	X	X	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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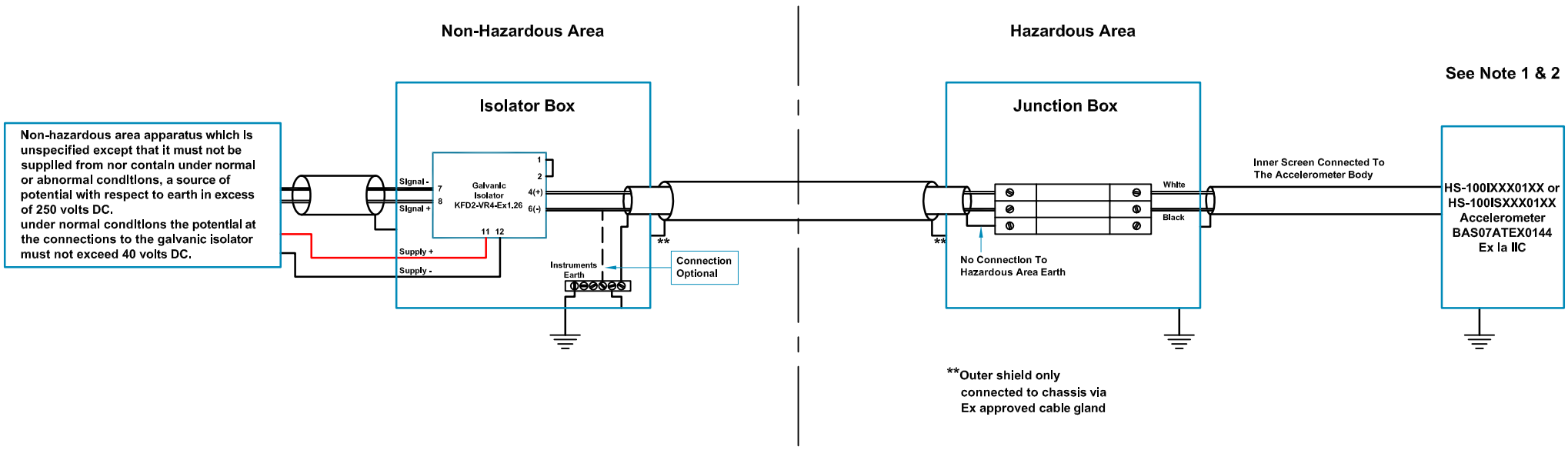

Table 1: Cable Parameters For Additional Cable Lengths		
Accelerometer With Integral Cable Length ≤ 10m		
Group	**Capacitance µF**	**L/R Ratio µH/Ω**
IIC	0.086	46
IIB	0.730	172
IIA	2.470	363
Accelerometer With Integral Cable Length ≤ 50m		
Group	**Capacitance µF**	**L/R Ratio µH/Ω**
IIC	0.051	46
IIB	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
Baseefa07Y0145/1
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
B	DFR0164	13/01/11	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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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 Non Armoured PUR Cable F.U.W. Galvanic Isolation

Drawing No: M06-004-B

Scale: NTS

Sheet: 1 of 2

Form Number: QF024 Issue 1

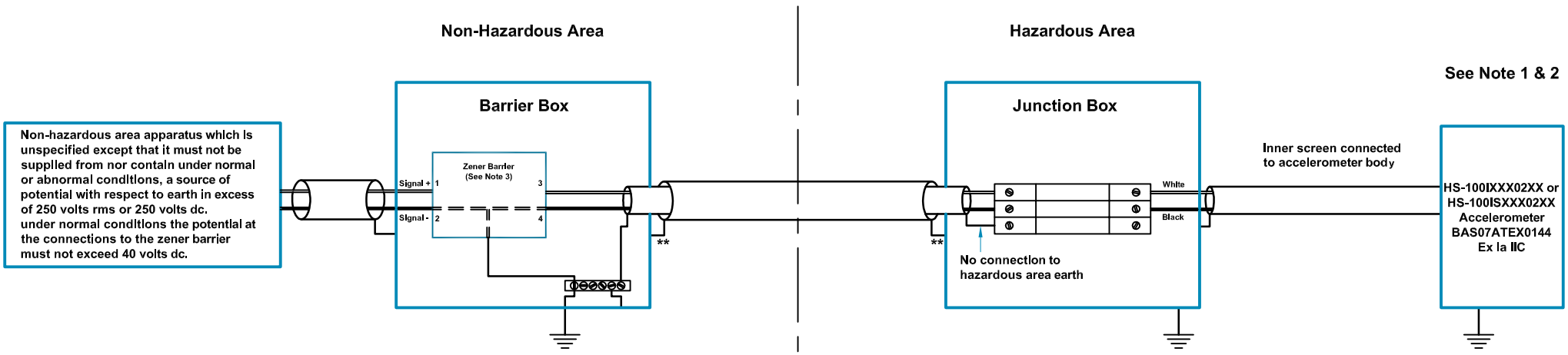

Table 1: Cable Parameters For Additional Cable Lengths

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

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HS-100I or HS-100IS
Accelerometer System
Baseefa07Y0145/1
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	15/06/07	MJS	CMH
B	DFR0164	13/01/11	MJS	CMH
C	DFR0284	15/06/12	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 Non Armoured PUR Cable F.U.W. Zener Barrier

Drawing No: M06-004-C

Scale: NTS

Sheet: 2 of 2

Form Number: QF024 Issue 1