

# HS-100IS Intrinsically Safe Accelerometer

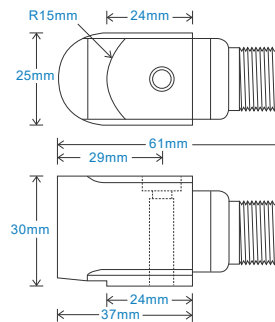
## AC acceleration output via 2 Pin MS Connector

### Key Features

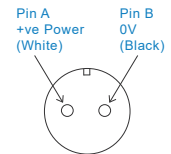
- Intrinsically Safe with European, USA, South African, Indian and Australian approvals
- Side entry for easy access

### Industries

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



Connection Details



### Technical Performance

Mounted Base Resonance	see 'How To Order' table (nominal)
Sensitivity	see: 'How To Order' table $\pm 10\%$ Nominal 80Hz at 22°C
Frequency Response	2Hz (120cpm) to 10kHz (600kcpm) $\pm 5\%$ 1.5Hz (90cpm) to 12kHz (720kcpm) $\pm 10\%$ 0.8Hz (48cpm) to 15kHz (900kcpm) $\pm 3\text{dB}$
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: <a href="http://www.hansfordsensors.com">www.hansfordsensors.com</a> for options
Connector	HS-AA004 - non-booted HS-AA053 or HS-AA054 - booted
Mounting Threads	see: 'How To Order' table

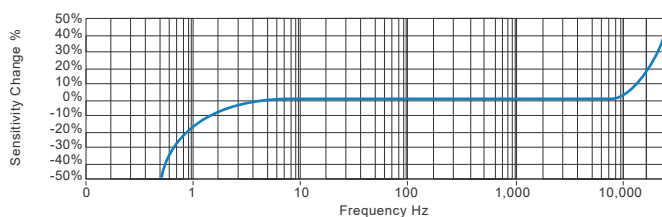
### Electrical

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

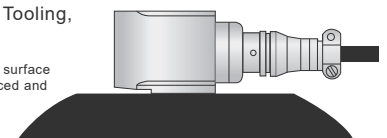
### Typical Frequency Response (at 100mV/g)



### 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



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

TS039.22



# HS-100IS Intrinsically Safe Accelerometer

## AC acceleration output via 2 Pin MS Connector

### Intrinsically Safe Requirements

Maximum Cable Length	See website <a href="http://www.hansfordsensors.com">www.hansfordsensors.com</a> - see attached system drawing	Certified Temperature Range	Ex ia IIC T6 Ga (-55°C ≤ Ta ≤ +60°C) (Gas) Ex ia IIIC T80°C IP65 Da (-55°C ≤ Ta ≤ +60°C) (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
Certificate details: Group I	IECEEx BAS07.0037X Baseefa07ATEX0149X ⒺI M1 Ex ia I Ma (-55°C ≤ Ta ≤ +110°C)	Australia Approval Group I	IECEEx ITA 11.0013X Ex ia I Ma (-55°C ≤ Ta ≤ +110°C)
Certificate details: Group II (ignition temperature 130°C)	IECEEx BAS07.0035X Baseefa07ATEX0144X ⒺII 1GD Ex ia IIC T4 Ga Ex ia IIIC T130°C IP65 Da (-55°C ≤ Ta ≤ +110°C)	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
Certificate details: Group II (ignition temperature 80°C)	IECEEx BAS07.0035X Baseefa07ATEX0144X ⒺII 1GD Ex ia IIC T6 Ga Ex ia IIIC T80°C IP65 Da (-55°C ≤ Ta ≤ +60°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	
Accelerometer System Certificate	Baseefa07Y0145 Ex ia IIC T6 (-55°C ≤ Ta ≤ +60°C) Ex ia IIC T4 (-55°C ≤ Ta ≤ +110°C) On request - consult Sales Office	South African Approval	Certificate No. MASC S/16-0231X Group II (As Baseefa/ATEX) MASC M/16-0230X Group I (As Baseefa/ATEX)
Terminal Parameters	Ui = 28V, Ii = 93mA, Pi = 0.65W Ci = 83nf Li/Ri = 15.4μH/Ohm	System Connections	see attached system drawings
500V Isolation	Units Will Pass A 500V Isolation Test	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 Variations

HS-100IC3 Variation is certified as Category 3 equipment. These sensors are only certified for use within Zones 2.	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
Certificate Details: Group II (ignition temperature 130°C)	IECEEx BAS17.0054X Baseefa7ATEX0069X ⒺII 3G Ex ic IIC T4 Gc (-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										
H	S	1	0	0	I	S	X	X	X	X	X
Extra Options (if required)		Sensitivity		Range		Resonant Frequency		Cable/Connector		Mounting Threads	
A - Australia (Group I)		010 - 10mV/g		±800g		27kHz (1,620kcpm)		01 - PUR		02 - ¼-28" UNF Male	
G - SGS (US/Canada Approval)		030 - 30mV/g		±250g		25kHz (1,500kcpm)		02 - Braided		06 - M6 x 1mm Male	
I - Intrinsically Safe (Group II)		050 - 50mV/g		±160g		23kHz (1,380kcpm)		07 - Silicon		08 - M8 x 1.25mm Male	
L - 316L Stainless Steel		100 - 100mV/g		±80g		21kHz (1,260kcpm)		50 - 2 Pin MS			
M - Mining (Group I)								54 - M12			
S - 90° Side Exit											
Y - 5% tolerance on sensitivity											
IC3 - Category 3 Classification											

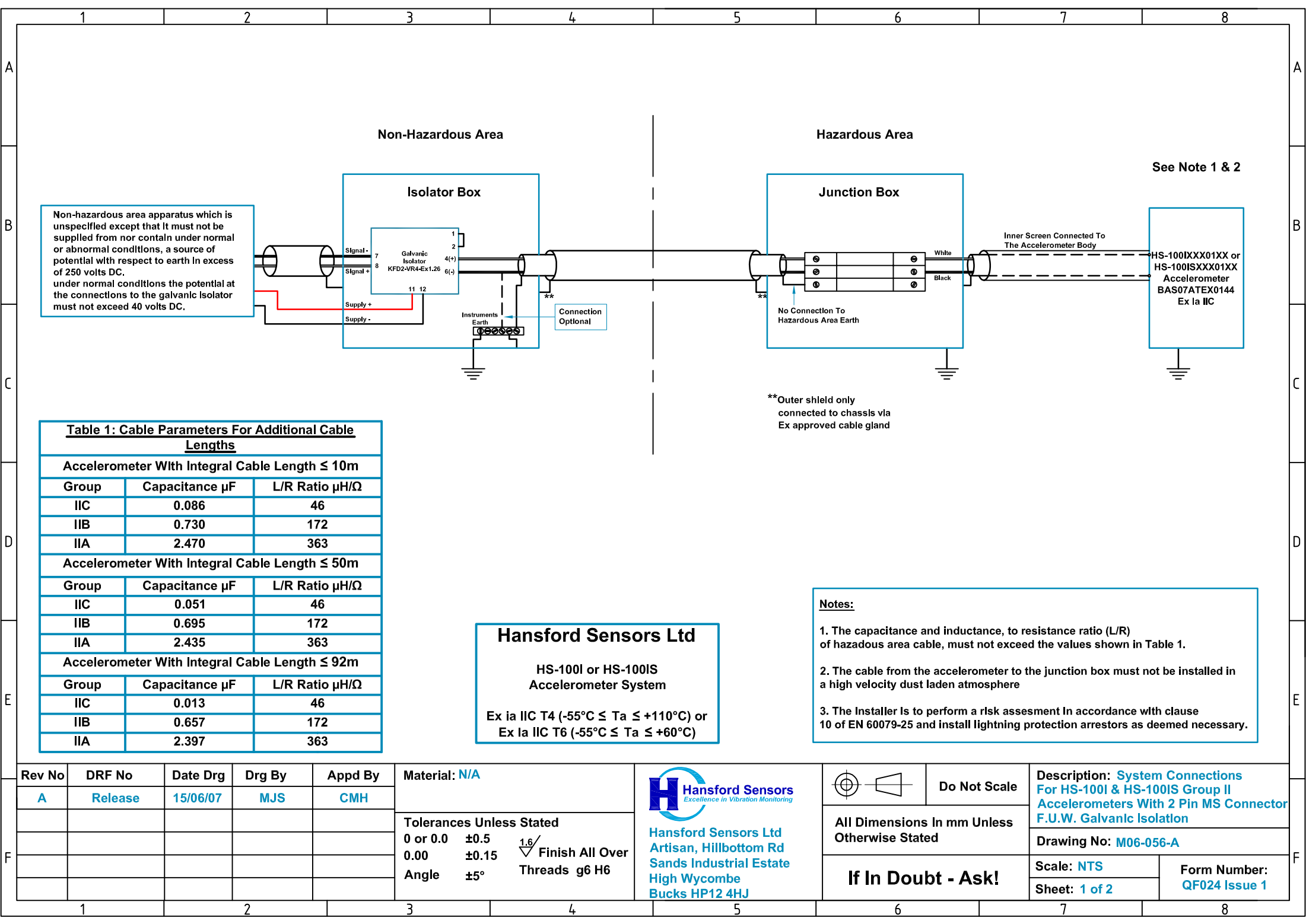


[www.hansfordsensors.com](http://www.hansfordsensors.com)  
[sales@hansfordsensors.com](mailto:sales@hansfordsensors.com)

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

TS039.22





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 DC, under normal conditions the potential at the connections to the galvanic isolator must not exceed 40 volts DC.


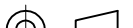
Table 1: Cable Parameters For Additional Cable Lengths		
Accelerometer With Integral Cable Length ≤ 10m		
Group	Capacitance µF	L/R Ratio µH/Ω
IIC	0.086	46
IIB	0.730	172
IIA	2.470	363
Accelerometer With Integral Cable Length ≤ 50m		
Group	Capacitance µF	L/R Ratio µH/Ω
IIC	0.051	46
IIB	0.695	172
IIA	2.435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

**Hansford Sensors Ltd**

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:**
- The capacitance and inductance, to resistance ratio (L/R) of hazardous area cable, must not exceed the values shown in Table 1.
  - The cable from the accelerometer to the junction box must not be installed in a high velocity dust laden atmosphere
  - 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	Material: N/A	 <b>Hansford Sensors</b> <i>Excellence in Vibration Monitoring</i>  <b>Hansford Sensors Ltd</b> Artisan, Hillbottom Rd Sands Industrial Estate High Wycombe Bucks HP12 4HJ	 Do Not Scale	Description: <b>System Connections</b> For HS-100I & HS-100IS Group II Accelerometers With 2 Pin MS Connector F.U.W. Galvanic Isolation		
A	Release	15/06/07	MJS	CMH						
					Tolerances Unless Stated		All Dimensions In mm Unless Otherwise Stated		Drawing No: <b>M06-056-A</b>	
					0 or 0.0 ±0.5					
					0.00 ±0.15					
					Angle ±5°	1.6/ ▽ Finish All Over Threads g6 H6	<b>If In Doubt - Ask!</b>		Scale: <b>NTS</b>	Form Number: <b>QF024 Issue 1</b>
									Sheet: <b>1 of 2</b>	

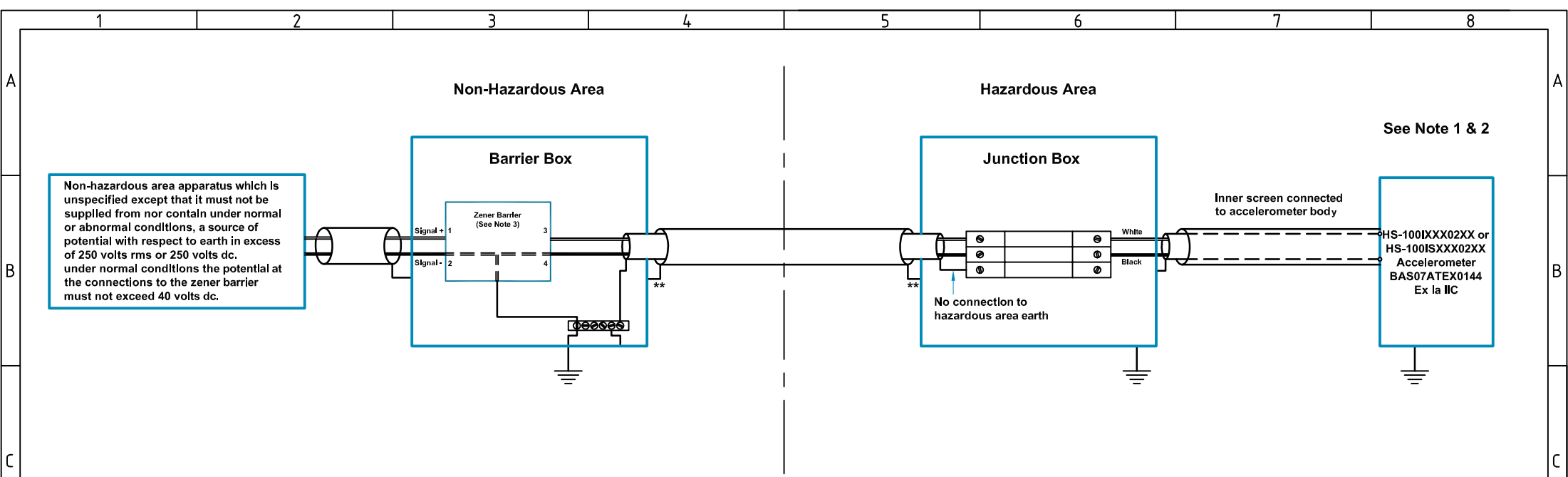


Table 1: Cable Parameters For Additional Cable Lengths		
Accelerometer With Integral Cable Length ≤ 10m		
Group	Capacitance µF	L/R Ratio µH/Ω
IIC	0.073	56
IIB	0.239	168
IIA	0.654	448
Accelerometer With Integral Cable Length ≤ 50m		
Group	Capacitance µF	L/R Ratio µH/Ω
IIC	0.038	56
IIB	0.204	168
IIA	0.619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

**Hansford Sensors Ltd**

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 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 single zener diode safety 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 assessment in accordance with clause 10 of EN 60079-25 and install lightning protection arrestors as deemed necessary.

F	Rev No	DRF No	Date Drg	Drg By	Appd By	Material: N/A	 <div>Hansford Sensors Excellence in Vibration Monitoring</div> Hansford Sensors Ltd Artisan, Hillbottom Rd Sands Industrial Estate High Wycombe Bucks HP12 4HJ	 Do Not Scale	Description: System Connections For HS-100I & HS-100IS Group II Accelerometers With 2 Pin MS Connector F.U.W. Zener Barrier			
	A	Release	16/09/15	MJS	CMH	Tolerances Unless Stated 0 or 0.0 ±0.5 0.00 ±0.15 Angle ±5° 1.6/ Finish All Over Threads g6 H6						All Dimensions In mm Unless Otherwise Stated
								If In Doubt - Ask!		Scale: NTS		Form Number: QF024 Issue 1
										Sheet: 2 of 2		
	1	2		3	4	5	6	7	8			