# HS-420IT Intrinsically Safe Accelerometer

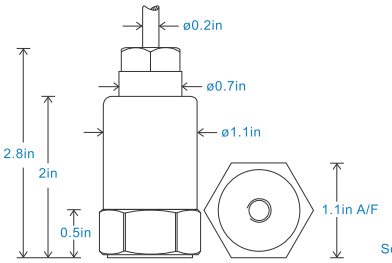
## 4-20mA velocity and temperature output via PUR Cable

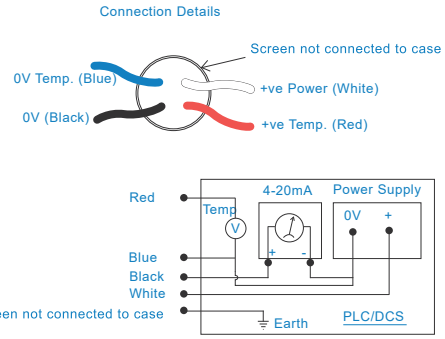
### Key Features

- Intrinsically Safe with European, USA, South African, and Indian approvals
- Approved SIL 2 and SIL 3
- For use with PLC/DCS systems
- Temperature output

### Industries

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




## Technical Performance

| | |
|---|---|
| Mounted Base Resonance | 5kHz min |
| Velocity Ranges | see: 'How To Order' table ±10% |
| | Nominal 80Hz at 72°F |
| Frequency Response | 600cpm (10Hz) to 60kcpm (1kHz) ± 5% - ISO10816 |
| Isolation | Base isolated |
| Range | 50g peak |
| Temperature Output | 10mV/°C - 0-1V proportional to 32-212°F (to convert this to 4-20mA use the HS-540 module) |
| Transverse Sensitivity | Less than 5% |

## Mechanical

| | |
|---|---|
| Case Material | Stainless Steel |
| Sensing Element/Construction | PZT/Compression |
| Mounting Torque | 5.9ft. lbs |
| Weight | 5.2 oz. (nominal) |
| Maximum Cable Length | 3,280 ft. |
| Standard Cable Length | 16 ft. |
| Screened Cable | PUR - length to be specified with order |
| Mounting Threads | see: 'How To Order' table |
| Submersible Depth | 100 metres max (10 bar) |

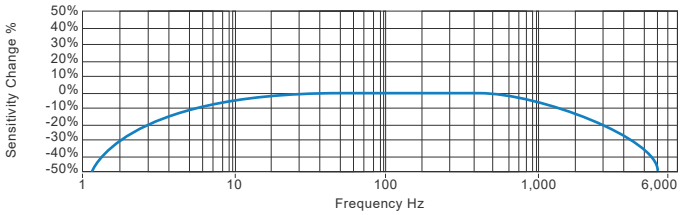
## Electrical

| | |
|---|---|
| Current Output | 4-20mA DC proportional to Velocity Range |
| 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 | IP68 |
| Maximum Shock | 5000g |
| EMC | EN61326-1:2013 |

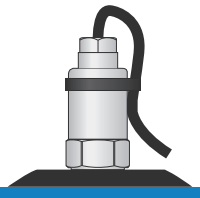
## Typical Frequency Response




## 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

SGS C US 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**


Hansford Sensors
*Excellence in Vibration Monitoring*

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# HS-420IT Intrinsically Safe Accelerometer

## 4-20mA velocity and temperature output via PUR Cable

## Intrinsically Safe Requirements

| | |
|---|---|
| Maximum Cable Length | nominal 100 metres<br>see attached system drawings |
| Certificate details: Group II | IECEx BAS08.0034X<br>Baseefa08ATEX0086X<br>Ⓔx II 1GD<br>Ex ia IIC T6 Ga<br>Ex ia IIIC T80°C IP65 Da<br>(-40ºC ≤ Ta ≤ +60ºC)<br>Ⓔx II 1GD<br>Ex ia IIC T4 Ga<br>Ex ia IIIC T130°C IP65 Da<br>(-40ºC ≤ Ta ≤ +110ºC) |
| Accelerometer System Certificate | Baseefa08Y0087<br>Ex ia IIC T6 (-40°C ≤ Ta ≤ +60°C)<br>*On request - consult Sales Office |
| Terminal Parameters | Ui = 44V, Ii = 117mA, Pi = 0.722W Group II |
| 500V Isolation | Units Will Pass A 500V Isolation Test |
| Certified Temperature Range | Ex ia IIC T6 Ga (-40°C ≤ Ta ≤ +60°C) (Gas)<br>Ex ia IIC T4 Ga (-40°C ≤ Ta ≤ +110°C) (Gas)<br>Ex ia IIIC T80°C IP65 Da ( -40°C ≤ Ta ≤ +60°C) (Dust)<br>Ex ia IIIC T130°C IP65 Da ( -40°C ≤ Ta ≤ +110°C) (Dust) |
| South African Approval | Certificate No. MASC MS/16-0229X<br>Group I and II (As Baseefa/ATEX) |

| | |
|---|---|
| US/Canada Approvals | Certificate No. SGSNA/18/SUW/0000231<br>Class I, II, III, Division 1, 2, Groups A - G, T4, -40°C to +110°C,<br>Class I, Zone 0, AEx, ia, IIC, T4, Ga, -40°C to +110°C<br>Zone 20, AEx, ia, IIIC, T130°C, IP65, Da, -40°C to +110°C |
| Barrier | 1 x Pepperl + Fuchs Galvanic Isolator<br>KFD2-VR-Ex1.18 (BAS01ATEX7262)<br>see attached system drawings<br><br>1 x MTL Zener Barrier MTL7764+ac (BAS01ATEX7217)<br>or Pepperl + Fuchs Zener Barrier<br>Z764 (BAS01ATEX7005) or any other barrier that<br>conforms to system drawings attached |
| System Connections for Zener Barrier | see attached system drawings |
| System Connections for Galvanic Isolator | see attached system drawings |
| Terminal Parameters | Ui = Vmax = 28V<br>Ii = Imax = 115mA<br>Pi = 0.65W |
| Notes: | Special conditions of safe use for Group II dust.<br>The free end of the cable on the integral cable<br>version of the apparatus must be terminated in<br>an appropriately certified dust-proof enclosure.<br>The unit has no serviceable parts. |

## How To Order

**Product Prefix**
HS - Hansford Sensors

**Product Series**
420 - Industrial Vibration Sensor

**Cable Length (if integral cable)**
UXX - length specified in feet

| H | S | 4 | 2 | 0 | I | T | X | X | X | X | X | X | X | X | X | X |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

**Extra Options (if required)**

F - Filtered
G - SGS (US/Canada Approval)
I - Intrinsically Safe (Group II)
L - 316L Stainless Steel
T - Temperature Output
U - Imperial Range
UP - Imperial Peak Range
UPP - Imperial Peak to Peak Range

**Velocity Range (RMS unless specified)**
012 - ½ IPS
025 - 1 IPS
050 - 2 IPS
100 - 4 IPS

**Cable/Connector**
01 - PUR*
54 - M12
* Please note these connection options are NOT available in Australia

**Mounting Threads**
01 - ¼-28" UNF Female
02 - ¼-28" UNF Male
05 - Quick Fit Female
06 - M6 x 1mm Male
08 - M8 x 1.25mm Male
10 - M10 x 1.5mm Male

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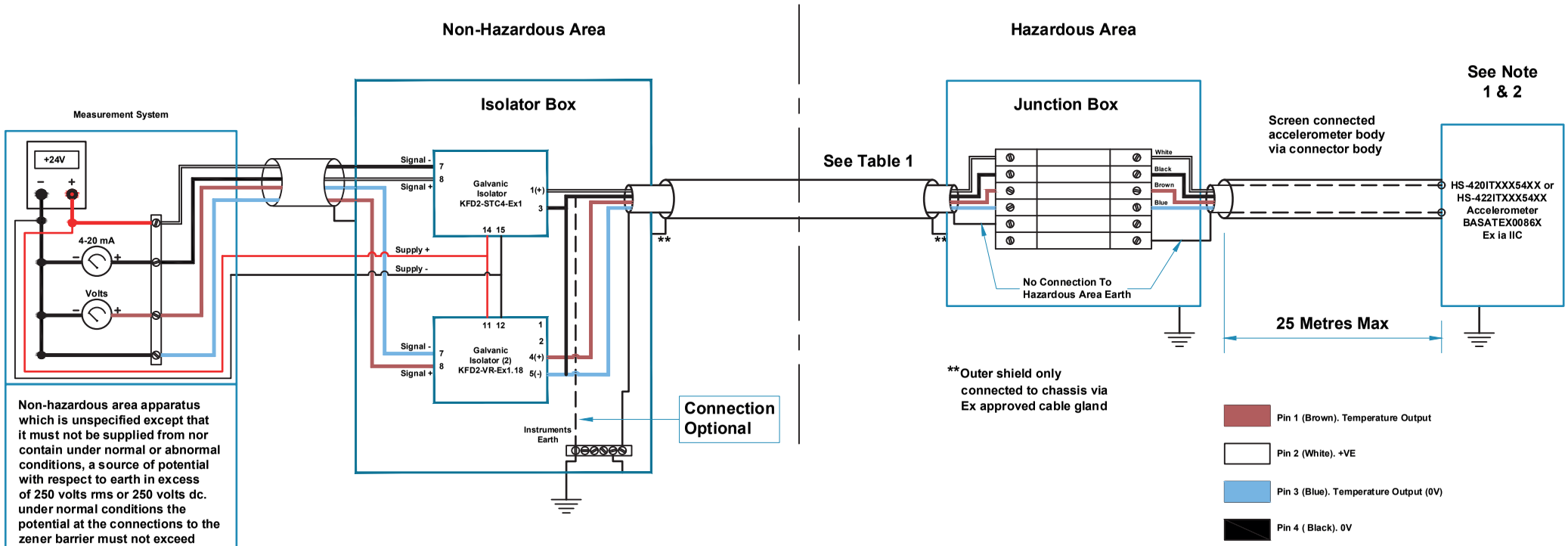


**Table 1: Cable Connecting The Connector Version**

| Group | Capacitance µF | L/R Ratio µH/Ω |
|---|---|---|
| IIC | 0.024 | 47 |
| IIB | 0.247 | 71 |
| IIA | 0.767 | 429 |

## Hansford Sensors Ltd

HS-420IT & HS-422IT
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 | 17/06/10 | MJS | CMH |
| B | DRF380 | 16/06/15 | 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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Saunderton Business Park
Haw Lane
Saunderton
Bucks HP14 4JE

Do Not Scale

All Dimensions In mm Unless Otherwise Stated

If In Doubt - Ask!

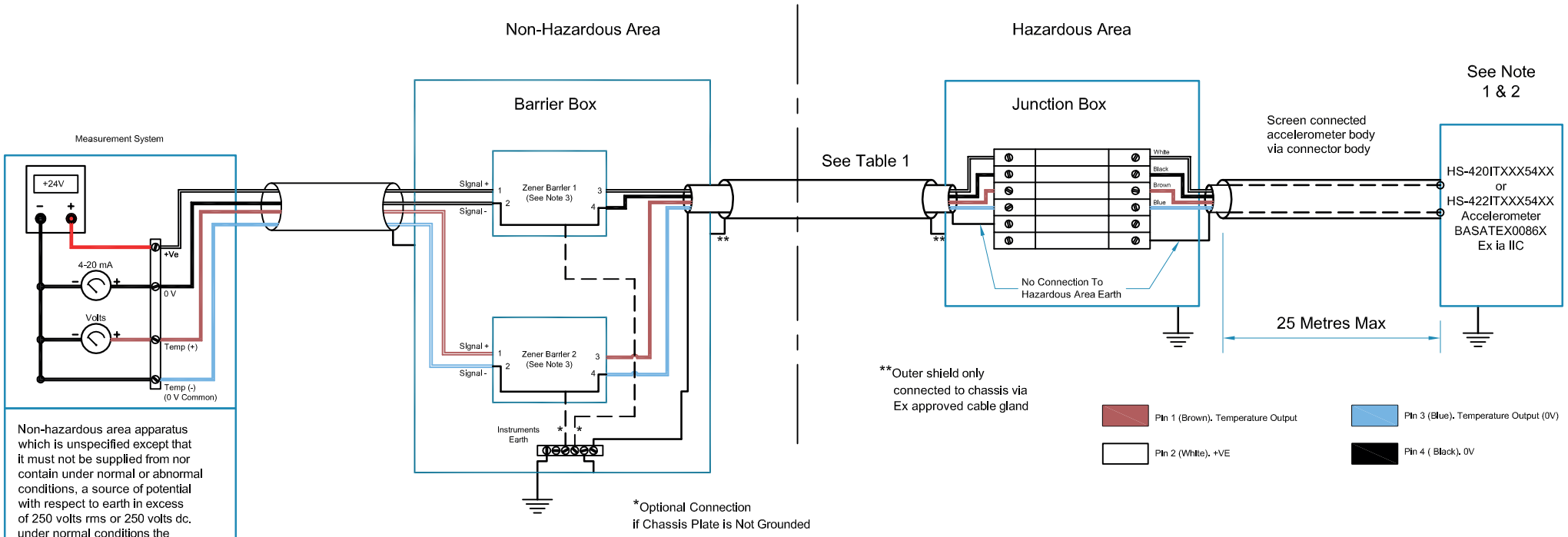
Description: System Connections For HS-420IT & HS-422IT Group II Accelerometers With Connectors F.U.W. Galvanic Isolation

Drawing No: M06-035-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.

**Table 1: Cable Connecting The Connector Version**

| Group | Capacitance µF | L/R Ratio µH/Ω |
|---|---|---|
| IIC | 0.080 | 17.9 |
| IIB | 0.246 | 60 |
| IIA | 0.661 | 161 |

**Hansford Sensors Ltd**

HS-420IT & HS-422IT 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 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. Zener diode saftey barrier (1) certified by an ec approved body to [EEx ia] IIC having the following output parameters: Uo = 28V dc, Io = 93mA dc, Po = 0.65W. e.g. MTL7787+ to BAS01ATEX7217 or Pepperl + Fuchs Z787 to BAS01ATEX7005
Zener diode saftey barrier (2) certified by an ec approved body to [EEx ia] IIC having the following output parameters: Uo = 12V dc, Io = 12mA dc, Po = 0.036W. MTL7764+ac to BAS01ATEX7217 or Pepperl + Fuchs Z764 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 | 16/04/15 | 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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Do Not Scale

All Dimensions In mm Unless Otherwise Stated

If In Doubt - Ask!

Description: System Connections For HS-420IT & HS-422IT Group II Accelerometers With Connectors F.U.W. Zener Barrier

Drawing No: M06-051-A

Scale: NTS

Sheet: 1 of 1

Form Number: QF024 Issue 1