



IECEX Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification Scheme for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.: IECEx BAS 08.0034X

Issue No: 12

Certificate history:

Status: **Current**

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Issue No. 12 (2018-08-17)

Issue No. 11 (2017-11-01)

Issue No. 10 (2017-05-16)

Issue No. 9 (2015-06-17)

Issue No. 8 (2013-01-15)

Issue No. 7 (2012-10-12)

Issue No. 6 (2012-02-02)

Issue No. 5 (2011-01-24)

Issue No. 4 (2009-11-30)

Issue No. 3 (2009-02-05)

Date of Issue: **2018-08-17**

Applicant: **Hansford Sensors Limited**
Artisan
Hillbottom Road
Sands Industrial Estate
Bucks
HP12 4HJ
United Kingdom

Equipment: **HS-420 Series Accelerometer**

Optional accessory: *Fuse Box*

Type of Protection: **Intrinsic Safety, gas and dust**

Marking:

Ex ia I Ma (-40°C ≤ Ta ≤ +60°C)

Ex ia IIC T4/T6 Ga (-40°C ≤ Ta ≤ +110°C/60°C)

Ex ia IIIC T130°C/T80°C IP65 Da (-40°C ≤ Ta ≤ +110°C/60°C)

Approved for issue on behalf of the IECEx
Certification Body:

R S Sinclair

D BREARLEY
Certification
Manager

Position:

Technical Manager

Signature:

(for printed version)

Date:

DP Brearley
17/1 8/18

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting the [Official IECEx Website](http://www.iecex.com).

Certificate issued by:

SGS Baseefa Limited
Rockhead Business Park
Staden Lane
Buxton, Derbyshire, SK17 9RZ
United Kingdom





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Manufacturer: **Hansford Sensors Limited**
Artisan
Hillbottom Road
Sands Industrial Estate
Bucks
HP12 4HJ
United Kingdom

Additional Manufacturing location(s):

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended.

STANDARDS:

The apparatus and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards:

IEC 60079-0 : 2011 Explosive atmospheres - Part 0: General requirements
Edition:6.0

IEC 60079-11 : 2011 Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
Edition:6.0

*This Certificate **does not** indicate compliance with electrical safety and performance requirements other than those expressly included in the Standards listed above.*

TEST & ASSESSMENT REPORTS:

A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in

Test Report:

GB/BAS/ExTR08.0059/00	GB/BAS/ExTR08.0112/00	GB/BAS/ExTR08.0181/00
GB/BAS/ExTR09.0014/00	GB/BAS/ExTR11.0013/00	GB/BAS/ExTR12.0005/00
GB/BAS/ExTR12.0254/00	GB/BAS/ExTR15.0175/00	GB/BAS/ExTR17.0322/00
GB/BAS/ExTR18.0140/00		

Quality Assessment Report:

[GB/BAS/QAR07.0040/07](#)



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Schedule

EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

The HS-420 Series Accelerometers are designed to measure velocity or acceleration by converting the signal generated by the compression of a piezo electric crystal by a given seismic mass and output a 4 to 20mA signal proportional to velocity or acceleration to the monitoring equipment.

The accelerometer comprises a piezo electric crystal connected to a signal conditioning board all contained within a stainless steel enclosure of various shapes measuring approximately 33cm³. The enclosure is a fully welded construction.

Electrical connections are made to the apparatus either via an IP65 rated connector or via an integral cable which is encapsulated in the end of the apparatus.

For terminal parameters see Annex.

SPECIFIC CONDITIONS OF USE: YES as shown below:

1. The free end of the cable on the integral cable version of the apparatus must be terminated in an appropriately certified dust proof enclosure.



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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above):

Variation 12.1

To permit minor mechanical changes to the assembly introduced at Issue 11 of this certificate, involving the use of additional sleeving on inner wires and a change to the notes on the circuit diagram relating to total capacitance.

An alternative assessment of the Mining variants is added which does not require the use of encapsulation.

Additionally, an alternative Temperature Class T4 is introduced for the Group II & III variants for an increased ambient temperature (110°C).

ExTR: GB/BAS/ExTR18.0140/00	File Reference: 18/0450
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Annex:

[IECEX BAS 08.0034X Annex Issue 4.pdf](#)

The Group II & III versions of the apparatus (excluding cable) have the following terminal parameters:

$$\begin{aligned} U_i &= 28V & C_i &= 0 \\ I_i &= 115mA & L_i &= 0 \\ P_i &= 0.65W \end{aligned}$$

The HS-420IT or HS-422IT Accelerometer, with an integral temperature sensor and 25m of cable has the following terminal parameters for all four electrical connections considered as a single intrinsically safe circuit:

$$\begin{aligned} U_i &= 44V & C_i &= 3nF \\ I_i &= 117mA & L_i/R_i &= 13nH/\Omega \\ P_i &= 0.722W \end{aligned}$$

The Group I version of the apparatus (excluding cable) has the following terminal parameters:

$$\begin{aligned} U_i &= 16.5V & C_i &= 0 \\ P_i &= 1.74W & L_i &= 0 \end{aligned}$$

The apparatus must be powered from a power limited source such as an appropriately certified fuse assembly containing a $\leq 62mA$ fuse, 1.74W (16.5V x 62mA x 1.7).

The Group I version of the apparatus (excluding cable) has the following alternative terminal parameters:

$$\begin{aligned} U_i &= 28V & C_i &= 0 \\ I_i &= 115mA & L_i &= 0 \\ P_i &= 0.65W \end{aligned}$$

The capacitance and inductance to resistance ratio of the different versions have the following parameters:

	Integral Cable or 2-Pin Mill Spec Connector with cable				4-Pin M12 Connector
	Polyurethane Cable	Silicone Cable	Armoured Cable	PUR Cable	Polyurethane Cable
C_i	= 160pF/m	= 370pF/m	= 290pF/m	= 884pF/m	= 120pF/m
L_i	= 0.72 μ H/m	= 0.5 μ H/m	= 0.5 μ H/m	= 0.6 μ H/m	= 0.7 μ H/m
L_i/R_i	= 8.32 μ H/ Ω	= 15.4 μ H/ Ω	= 15.4 μ H/ Ω	= 6.1 μ H/ Ω	= 11.7 μ H/ Ω