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 ITA 10.0003X

Issue No: 3

Certificate history:
Issue No. 3 (2018-09-04)
Issue No. 2 (2013-02-12)
Issue No. 1 (2011-10-19)
Issue No. 0 (2010-03-10)

Status: **Current**

Date of Issue: **2018-09-04**

Applicant: **Hansford Sensors Limited**
Hillbottom Road
Sands Industrial Estate
High Wycombe,
Buckinghamshire HP12 4HJ
England
United Kingdom

Equipment: **HS-420AF & HS-422AF Accelerometers**

Optional accessory:

Type of Protection: **Intrinsic safety**

Marking:

IECEx ITA 10.0003X
Ex ia I Ma
(-40°C ≤ Ta ≤ +60°C)

Approved for issue on behalf of the IECEx Certification Body: David Price

Position: Certification Authority

Signature:
(for printed version)

Date: 2018-09-04

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.

Certificate issued by:

Ex Testing and Certification Pty Ltd
1/30 Kennington Drive
Tomago NSW 2322
Australia

TESTING & CERTIFICATION

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Manufacturer: **Hansford Sensors Limited Ltd**
Hillbottom Road
Sands Industrial Estate
High Wycombe,
Buckinghamshire HP12 4HJ
England
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 Edition:6.0	Explosive atmospheres - Part 0: General requirements
IEC 60079-11 : 2011 Edition:6.0	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"

*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/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-420AF & HS-422AF 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.

The accelerometers covered by this certificate are identified as follows:

HS-420AF XXX YY ZZ and HS-422AF XXX YY ZZ where:

XXX = Output Signal Range

YY = Cable Connector Type

ZZ = Mounting Thread Type

SPECIFIC CONDITIONS OF USE: YES as shown below:

See annexe for details.

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

See annexe for details.

Annex:

IECEx ITA 10.0003X-3 Annex Final.pdf

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Annexe

Annexe for Certificate No.:	IECEx ITA 10.0003X	Issue No.:	03

Description:

As provided in the main body of the certificate.

Conditions of Certification pertaining to Issue 0 of this Certificate:

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.

2. The following parameters are taken into account during installation and use:

	Integral Cable				
	FR Polyurethane Cable (max length 100m)	Silicone Cable (max length 100m)	Stainless Steel Braided Cable (max length 100m)	PUR Polyurethane Cable fitted with M12 4 Pole screened connector (max length 25m)	Integral PUR Cable (max length 93m)
Ui	16.5V	16.5V	16.5V	16.5V	
Ci	160pF/m	370pF/m	290pF/m	120pF/m	884pF/m
Li	0.715uH/m	0.498uH/m	0.498uH/m	0.7uH/m	0.6uH/m
Li/Ri	8.23µH/Ω	15.4µH/Ω	15.4µH/Ω	11.7µH/Ω	

Drawing list pertaining to Issue 0 of this Certificate:

Manufacturer's Documents

Title:	Drawing No.:	Pages	Rev. Level:	Date:
HS-420AF/HS-422AF 4-20mA Circuit for ITACS	HS420AF	1	A	2010-02-06
Zener Diode Arrangement HS-420A & HS-422 Accelerometer	M06-009-A	1	A	2008-01-08
General Arrangement and Product Information for Group I Fused HS-420 & HS-422 Series Accelerometers	M06-020-A	1 of 4	A	2008-05-15

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Annexe

Annexe for Certificate No.:	IECEx ITA 10.0003X	Issue No.:	03

Title:	Drawing No.:	Pages	Rev. Level:	Date:
ITACS Product Information for Group I Internal Fused HS-420AF & HS-422AF Series Accelerometers	M06-029-A	1 & 2	A	2010-02-01
4-20mA PCB Track Layout	P01-004	1	C	2008-12-01
HS420M Connection PCB for M12 Connection PCB for M12 Connector	P01.026	1	A	2008-05-19
4-20mA PCB Component Layout	P02.004	1	C	2008-12-01
HS420M Connection PCB	P02.026	1	A	2008-05-19

Variations permitted by Issue 1 of this certificate:

Minor electrical and mechanical changes that do not affect the protection concept.

Conditions pertaining to Issue 1 of this certificate:

No changes from the earlier issue of this certificate.

Drawings Associated with the Issue 1 of this Certificate:

Manufacturer's Documents

Title:	Drawing No.:	Pages	Rev. Level:	Date:
HS-420AF/HS-422AF 4-20mA Circuit for ITACS	HS420AF	1	B	2011-09-30
Zener Diode Arrangement HS-420A & HS-422 Accelerometer	M06-009-B	1	B	2011-01-13
General Arrangement and Product Information for Group I Fused HS-420 & HS-422 Series Accelerometers	M06-020-A	1 of 4	B	2011-01-13
4-20mA PCB Track Layout	P01-004	1	D	2011-01-05
4-20mA PCB Component Layout	P02.004	1	D	2011-01-05

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Annexe

Annexe for Certificate No.:	IECEx ITA 10.0003X	Issue No.:	03

Variations permitted by Issue 2 of this certificate:

To permit the following:

1. The Group I version of the HS-420AF & HS-422AF accelerometer has been allocated an optional set of parameters for interconnecting into an intrinsically safe system (see Conditions below)

2. The apparatus has been assessed to the latest Standards IEC 60079-0: Edition 6 & IEC 60079-11: Edition 6

Conditions pertaining to Issue 2 of this certificate:

1. The Group I version of the HS-420AF & HS-422AF accelerometer has been allocated the following input parameters:

Ui	16.5V
Pi	1.74W

Alternately:

Ui	28V
Ii	115mA
Pi	0.65W

(All other parameters remain the same as in Issue 0 of this certificate)

Drawings Associated with the Issue 2 of this Certificate:

Manufacturer's Documents

Title:	Drawing No.:	Pages	Rev. Level:	Date:
ITACS Product Information for Group I Internal Fused HS-420AF & HS-422AF Series Accelerometers	M06-029-A	1 & 2	B	2010-02-01
General Arrangement and Product Information for Group I Fused HS-420 & HS-422 Series Accelerometers	M06-020-C	1 of 4	C	2012-08-30

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Annexe

Annexe for Certificate No.:	IECEx ITA 10.0003X	Issue No.:	03

Variations permitted by Issue 3 of this certificate:

To permit the use of an stainless steel inner case to form an assembly with the seismic mass and piezo-electrical crystal, together with PCB P2-004, and this assembly being retained in the outer case by encapsulation. The encapsulation does not enter the inner case. A limitation of the total internal capacitance has been specified.

The changes are mainly mechanical and compliance has been assessed in test report GB/BAS/ExTR18.0140/00. The drawings listed in that report were reviewed and all critical aspects are identical to the drawings listed below.

Conditions pertaining to Issue 3 of this certificate:

No changes from the earlier issue 2 of this certificate.

Drawings Associated with the Issue 3 of this Certificate:

Manufacturer's Documents

Title:	Drawing No.:	Pages	Rev. Level:	Date:
HS-420AF/HS-422AF 4-20mA Circuit for ITACS	HS420AF.B	1	C	2018-07-31
General Arrangement and Product Information for Group I Fused HS-420MF & HS-422MF Series Accelerometers	M06-020-E	1 of 5	E	2018-08-10
General Arrangement and Product Information for Group I Fused HS-420MF & HS-422MF Series Accelerometers	M06-020-E	2 of 5	E	2018-08-10
ITACS Product Information for Group I Internal Fused HS-420AF & HS-422AF Series Accelerometers	M06-029-C	1 of 2	C	2010-09-06
ITACS Product Information for Group I Internal Fused HS-420AF & HS-422AF Series Accelerometers *(with alternate customer information)*	M06-029-C	2 of 2	C	2010-09-06