1 # EU - TYPE EXAMINATION CERTIFICATE

2 **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres Directive 2014/34/EU**

3 EU - Type Examination Certificate Number: **Baseefa18ATEX0130X – Issue 1**

4 Product: **HS-150I & HS-170I Series Accelerometers.**

5 Manufacturer: **Hansford Sensors Limited**

6 Address: **Artisan, Hillbottom Road, Sands Industrial Estate, Bucks, HP12 4HJ**

7 This re-issued certificate extends EU Type Examination Certificate No. Baseefa18ATEX0130X to apply to product designed and constructed in accordance with the specification set out in the Schedule of the said certificate but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

8 SGS Baseefa, Notified Body number 1180, in accordance with Article 17 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential Report No. **See Certificate History**

9 Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN IEC 60079-0: 2018 EN 60079-11: 2012

except in respect of those requirements listed at item 18 of the Schedule.

10 If the sign "X" is placed after the certificate number, it indicates that the product is subject to the Specific Conditions of Use specified in the schedule to this certificate.

11 This EU - TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified product. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

12 The marking of the product shall include the following :

Refer to Certificate Schedule.

SGS Baseefa Customer Reference No. **5943** Project File No. **19/0094**

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R S SINCLAIR
TECHNICAL MANAGER
On behalf of SGS Baseefa Limited

13 **Schedule**

14 **Certificate Number Baseefa18ATEX0130X – Issue 1**

15 Description of Product

The HS-150i and HS-170i Series Accelerometers are designed to measure acceleration or vibration by converting the signal generated by the compression of a Piezo electric crystal by a given seismic mass and outputting a broadband ac signal to the monitoring equipment.

The accelerometer comprises of a piezo electric crystal connected to a signal conditioning board, all contained within a fully welded steel enclosure.

HS-150xT versions include a temperature transmitter.

HS-173 is a tri-axial sensor comprising three individual circuits with common 0V line, sharing a single set of parameters.

Electrical connections are made via a connector or integral cable.

The equipment carries the following markings:

Uni-axial accelerometers with integral cable and no temperature sensor

⟨Ex⟩ II 1G Ex ia IIC T6 Ga	$-55°C \leq T_a \leq +57°C$
⟨Ex⟩ II 1G Ex ia IIC T4 Ga	$-55°C \leq T_a \leq +107°C$
⟨Ex⟩ II 1G Ex ia IIC T3 Ga	$-55°C \leq T_a \leq +128°C$
⟨Ex⟩ II 1D Ex ia IIIC T_{200}110°C Da	$-55°C \leq T_a \leq +57°C$
⟨Ex⟩ II 1D Ex ia IIIC T_{200}135°C Da	$-55°C \leq T_a \leq +70°C$
⟨Ex⟩ II 1D Ex ia IIIC T_{200}160°C Da	$-55°C \leq T_a \leq +107°C$
⟨Ex⟩ II 1D Ex ia IIIC T_{200}172°C Da	$-55°C \leq T_a \leq +119°C$
⟨Ex⟩ I M1 Ex ia I Ma	$-55°C \leq T_a \leq +127°C$

Uni-axial accelerometers with connectors and no temperature sensor

⟨Ex⟩ II 1G Ex ia IIC T6 Ga	$-55°C \leq T_a \leq +57°C$
⟨Ex⟩ II 1G Ex ia IIC T4 Ga	$-55°C \leq T_a \leq +107°C$
⟨Ex⟩ II 1G Ex ia IIC T3 Ga	$-55°C \leq T_a \leq +128°C$
⟨Ex⟩ II 1D Ex ia IIIC T_{200}135°C Da	$-55°C \leq T_a \leq +70°C$
⟨Ex⟩ II 1D Ex ia IIIB T_{200}110°C Da	$-55°C \leq T_a \leq +57°C$
⟨Ex⟩ II 1D Ex ia IIIB T_{200}160°C Da	$-55°C \leq T_a \leq +107°C$
⟨Ex⟩ II 1D Ex ia IIIB T_{200}172°C Da	$-55°C \leq T_a \leq +119°C$
⟨Ex⟩ I M1 Ex ia I Ma	$-55°C \leq T_a \leq +127°C$

Uni-axial accelerometers with integral cable and temperature sensor.

⟨Ex⟩ II 1G Ex ia IIC T6 Ga	$-55°C \leq T_a \leq +57°C$
⟨Ex⟩ II 1G Ex ia IIC T4 Ga	$-55°C \leq T_a \leq +107°C$
⟨Ex⟩ II 1D Ex ia IIIC T_{200}110°C Da	$-55°C \leq T_a \leq +57°C$
⟨Ex⟩ II 1D Ex ia IIIC T_{200}135°C Da	$-55°C \leq T_a \leq +70°C$
⟨Ex⟩ II 1D Ex ia IIIC T_{200}160°C Da	$-55°C \leq T_a \leq +107°C$
⟨Ex⟩ I M1 Ex ia I Ma	$-55°C \leq T_a \leq +110°C$

Uni-axial accelerometers with connectors and temperature sensor.

⟨Ex⟩ II 1G Ex ia IIC T6 Ga	$-55°C \leq T_a \leq +57°C$
⟨Ex⟩ II 1G Ex ia IIC T4 Ga	$-55°C \leq T_a \leq +107°C$
⟨Ex⟩ II 1D Ex ia IIIC T_{200}135°C Da	$-55°C \leq T_a \leq +70°C$
⟨Ex⟩ II 1D Ex ia IIIB T_{200}110°C Da	$-55°C \leq T_a \leq +57°C$
⟨Ex⟩ II 1D Ex ia IIIB T_{200}160°C Da	$-55°C \leq T_a \leq +107°C$
⟨Ex⟩ I M1 Ex ia I Ma	$-55°C \leq T_a \leq +110°C$

Tri-axial Accelerometers with integral cable and no temperature sensor.

⟨Ex⟩ II 1G Ex ia IIC T6 Ga	$-55°C \leq T_a \leq +69°C$
⟨Ex⟩ II 1G Ex ia IIC T4 Ga	$-55°C \leq T_a \leq +119°C$
⟨Ex⟩ II 1G Ex ia IIC T3 Ga	$-55°C \leq T_a \leq +131°C$
⟨Ex⟩ II 1D Ex ia IIIC T_{200}102°C Da	$-55°C \leq T_a \leq +69°C$
⟨Ex⟩ II 1D Ex ia IIIC T_{200}135°C Da	$-55°C \leq T_a \leq +70°C$
⟨Ex⟩ II 1D Ex ia IIIC T_{200}152°C Da	$-55°C \leq T_a \leq +119°C$
⟨Ex⟩ II 1D Ex ia IIIC T_{200}158°C Da	$-55°C \leq T_a \leq +125°C$
⟨Ex⟩ I M1 Ex ia I Ma	$-55°C \leq T_a \leq +131°C$

Triaxial accelerometers with connectors and no temperature sensor.

⟨Ex⟩ II 1G Ex ia IIC T6 Ga	$-55°C \leq T_a \leq +69°C$
⟨Ex⟩ II 1G Ex ia IIC T4 Ga	$-55°C \leq T_a \leq +119°C$
⟨Ex⟩ II 1G Ex ia IIC T3 Ga	$-55°C \leq T_a \leq +131°C$
⟨Ex⟩ II 1D Ex ia IIIC T_{200}135°C Da	$-55°C \leq T_a \leq +70°C$
⟨Ex⟩ II 1D Ex ia IIIB T_{200}102°C Da	$-55°C \leq T_a \leq +69°C$
⟨Ex⟩ II 1D Ex ia IIIB T_{200}135°C Da	$-55°C \leq T_a \leq +70°C$
⟨Ex⟩ II 1D Ex ia IIIB T_{200}152°C Da	$-55°C \leq T_a \leq +119°C$
⟨Ex⟩ II 1D Ex ia IIIB T_{200}158°C Da	$-55°C \leq T_a \leq +125°C$
⟨Ex⟩ I M1 Ex ia I Ma	$-55°C \leq T_a \leq +131°C$

The equipment has the following terminal parameters:

Uni-axial accelerometer.

Connector Only	10m of Cable	92m of Cable
$U_i = 28V$	$U_i = 28V$	$U_i = 28V$
$I_i = 93mA$	$I_i = 93mA$	$I_i = 93mA$
$P_i = 0.65W$	$P_i = 0.65W$	$P_i = 0.65W$
$C_i = 1.2nF$	$C_i = 5.0nF$	$C_i = 35.9nF$
$L_i = 0$	$L_i = 7.2\mu H$	$L_i = 66\mu H$

Tri-axial accelerometer

Connector Only	10m of Cable	92m of cable
$U_i = 28V$	$U_i = 28V$	$U_i = 28V$
$I_i = 93mA$	$I_i = 93mA$	$I_i = 93mA$
$P_i = 0.65W$	$P_i = 0.65W$	$P_i = 0.65W$
$C_i = 3.6nF$	$C_i = 7.4nF$	$C_i = 38.3nF$
$L_i = 0$	$L_i = 7.2\mu H$	$L_i = 66\mu H$

16 Report Number

See certificate history

17 Specific Conditions of Use

1. Where the sensor is supplied with an integral cable, this must be terminated in an enclosure providing at least degree of protection IP20.
2. The equipment is marked with reduced certification marking. Refer to Certificate Schedule for full certification markings & applicable temperature classification and associated ambient temperature range.

18 Essential Health and Safety Requirements

In addition to the Essential Health and Safety Requirements (EHSRs) covered by the standards listed at item 9, the following are considered relevant to this product, and conformity is demonstrated in the report:

Clause	Subject
1.2.7	LVD type requirements
1.2.8	Overloading of equipment (protection relays, etc.)
1.4.1	External effects
1.4.2	Aggressive substances, etc.

19 Drawings and Documents

New drawings submitted for this issue of certificate:

Number	Sheet	Issue	Date	Description
M06-073-A	1 to 21	B	01/03/19	General arrangement and product information for Group I, Group II and Group III HS-150I and HS-170I Series accelerometers.

Current drawings which remain unaffected by this issue:

Number	Sheet	Issue	Date	Description
C01-001	1 of 1	01	14-07-2016	4 Core Screened PUR Cable, 100°C.
C01-002	1 of 1	01	14-07-2016	2 Core Screened Overbraided FEP Cable.
C01-003	1 of 1	01	14-07-2016	3 Core Armoured (FEP Jacketed version).
C01-015-C01-016	1 of 1	A	26/10/18	M12 4 Pole Straight and Right Angled Female Screened Connector PUR Cable Assembly
C01-018	1 of 1	01	14-07-2016	3 core Screened Silicon Cable, 150°C.
C01-024	1 of 1	01	14-07-2016	2 core Braided Screened & Drain wire Cable.
C01-082-2C	1 of 1	01	03-01-2017	2 core Braided Screened & Drain Wire, 200°C.
C01-082-3C	1 of 1	02	21-03-2017	3 core Braided Screened & Drain Wire, 200°C.
C01-099	1 of 1	02	10-08-2016	3 Core Braided, Screened & Drain Wire – Filled, 90°C.
P03-106	1 of 1	A	16/08/18	ATEX AC gain circuit
P01-106	1 of 1	A	30.08.18	AC gain PCB track layout
P02-106-A-1	1 of 3	A	30.08.18	HS-150I/170I PCB Component Layout
P02-106-A-2	2 of 3	A	30.08.18	HS-150I/170I PCB Component Layout, Wire Routing Through Cap.
P02-106-A-3	3 of 3	A	30.08.18	HS-150I/170I PCB Component Layout, Wire Routing Through Cap Side Exit Version

Number	Sheet	Issue	Date	Description
P01-001-A	1 of 1	A	06/02/07	100 Series connection PCB
P01-050	1 of 1	B	15.02.12	HS-109 connection PCB track layout
P02-050	1 of 1	B	15.02.12	HS-109 Connection PCB component layout
P01-006	1 of 1	C	01.10.08	Connection + temp. PCB track layout.
P01-015	1 of 1	D	03.06.16	3 Pin MS Connection + Temp PCB
P02-006	1 of 1	B	04.03.08	Connection + temp PCB component layout.
P03-015	1 of 1	A	25/10/18	Temperature Circuit Diagram

All drawings are common to, and held with, IECEx BAS 18.0082X.

20 Certificate History

Certificate No.	Date	Comments
Baseefa18ATEX0130X	9 November 2018	The release of the prime certificate. The associated test and assessment against the requirements of EN IEC 60079-0: 2018 and EN 60079-11: 2012 is documented in Test Report No. 18/0234.
Baseefa18ATEX0130X Issue 1	22 March 2019	This issue of the certificate permits changes to the construction of the equipment. The associated test and assessment of these constructional changes against the requirements of EN IEC 60079-0: 2018 and EN 60079-11: 2012 is documented in Test Report No. 19/0094.
For drawings applicable to each issue, see original of that issue.		