



1 **SUPPLEMENTARY TYPE EXAMINATION CERTIFICATE**

2 **Intrinsically safe System Intended for use in Potentially Explosive Atmospheres**

3 Supplementary Type Examination Certificate Number: **Baseefa08Y0087/1**

4 Equipment: **HS-420I Series Accelerometer System**

5 Manufacturer: **Hansford Sensors Limited**

6 Address: **Saunderton, Bucks, HP14 4JE**

7 This supplementary certificate extends Type Examination Certificate No. Baseefa08Y0087 to apply only to the design of the specified intrinsically safe system, and not to specific items of equipment therein, 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.

This supplementary certificate shall be held with the original certificate.

This certificate may only be reproduced in its entirety, without any change, schedule included.

Baseefa Customer Reference No. **5943**

Project File No. **08/0558**

This certificate is granted subject to the general terms and conditions of Baseefa. It does not necessarily indicate that the equipment may be used in particular industries or circumstances.

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DIRECTOR
On behalf of
Baseefa



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Schedule

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Certificate Number Baseefa08ATEX0087/1

15 Description of the variation to the Equipment

Variation 1.1

To permit the addition of the HS420IT and HS422IT Series Accelerometers to the existing range of Accelerometers. These new Accelerometers include an integral temperature transmitter and thus require the use of an additional barrier or isolator.

The HS-420IT Series Accelerometer System consists of a single HS-420IT or HS422IT Series Accelerometer mounted in a Zone 0 hazardous area, connected to two zener barriers or galvanic isolators mounted in the non-hazardous area, one for connection to the 4-20mA vibration signal and the second for connection to an integral temperature transmitter.

1. Apparatus that may be installed in a Non Hazardous Area (Safe Area.)

1.1 Vibration, 4-20mA signal

The vibration signal may be connected to either of the following:

- 1.1.1 Any Single Channel Shunt Zener Diode Safety Barrier certified by Baseefa or any Approved Body to [Ex ia] IIC having the following output parameters:

$$\begin{aligned}U_o &= 28V \\I_o &= 115mA \\P_o &= 0.65W \\Lo/Ro &\geq 15.4\mu H/\Omega\end{aligned}$$

In any safety barrier used the output current must be limited by a resistor "R" such that $I_o = U_o/R$. Barriers must be polarised and of like polarity.

Examples of suitable barriers are:

Measurement Technologies, MTL7787; BAS01ATEX7217

Pepperl & Fuchs, Z787, BAS00ATEX7164

- 1.1.2 Pepperl & Fuchs KFD2-CR-Ex.1.30300 Galvanic Isolator; BAS00ATEX7164 with the following combined output parameters:

$$\begin{aligned}U_o &= 26V \\I_o &= 115mA \\P_o &= 0.624W \\C_i &= 0 \\L_i &= 0\end{aligned}$$

1.2 Temperature signal

The temperature signal may be connected to either of the following:



- 1.2.1 Any Single Channel Shunt Zener Diode Safety Barrier certified by Baseefa or any Approved Body to [Ex ia] IIC having the following output parameters:

$$\begin{aligned}U_o &= 12V \\I_o &= 12mA \\P_o &= 0.036W\end{aligned}$$

In any safety barrier used the output current must be limited by a resistor "R" such that $I_o = U_o/R$. Barriers must be polarised and of like polarity.

Examples of suitable barriers are:

Measurement Technologies, MTL7764; BAS01ATEX7217

Pepperl & Fuchs, Z764, BAS00ATEX7005

- 1.2.2 Pepperl & Fuchs KFD2-VR-Ex1.18 Galvanic Isolator; BAS01ATEX7262 with the output parameters for terminals 4 & 5:

$$\begin{aligned}U_o &= 18V \\I_o &= 4.2mA \\P_o &= 19mW \\C_i &= 0 \\L_i &= 0\end{aligned}$$

- 1.3 The above apparatus is to be supplied from apparatus situated in the safe area which is unspecified except that it must not be supplied from nor contain in normal or abnormal conditions a source of potential with respect to earth in excess of 253 volts r.m.s. or 253 volts d.c.

2. Apparatus that may be installed in a Hazardous Area

- 2.1 A HS-420IT or HT-422IT Series Accelerometer to Certificate No. Baseefa08ATEX0086X and coded Ex ia IIC T6 ($-40^{\circ}\text{C} \leq T_a \leq +60^{\circ}\text{C}$)

3. Permissible Interconnecting Cables

3.1 Zener Barrier Configuration

The capacitance and the inductance to resistance ratio (L/R) of the hazardous area cables connecting the connector version of the HS-420IT or HT-422IT Series Accelerometer with 25m of cable to the zener barriers must not exceed the following values:

Group	Capacitance (μF)	L/R Ratio ($\mu\text{H}/\text{ohm}$)
IIC	0.080	17.9
IIB	0.246	60
IIA	0.661	161

3.2 Galvanic Isolator Configuration

The capacitance and the inductance to resistance ratio (L/R) of the hazardous area cables connecting the connector version of the HS-420IT or HT-422IT Series Accelerometer with 25m of cable to the Galvanic Isolators must not exceed the following values:



Group	Capacitance (μ F)	L/R Ratio (μ H/ohm)
IIC	0.024	47
IIB	0.247	71
IIA	0.767	429

3.3 The interconnections to the HS-420IT Series Accelerometer may be achieved by separate 4 core cables or by separate 4 core circuits within a Type A or Type B multicore cable (as defined in clause 8 of EN 60079-25: 2004) subject to the following:-

- a. The circuit to be individually screened when used within a Type A multicore cable.
- b. The peak voltage of any other circuit within a Type B multicore cable must not exceed 60V.

16 Report Number

08(C)0558

17 Special Conditions for Safe Use

None

18 Essential Health and Safety Requirements

Compliance with the Essential Health and Safety Requirements is not affected by this variation.

19 Drawings and Documents

Number	Sheet	Issue	Date	Description
M06-023-A	1 of 2	A	23/06/08	System Connections for HS-420IT & HS-422IT Group II Accelerometers with Connectors F.U.W Galvanic Isolation
M06-023-A	2 of 2	A	23/06/08	System Connections for HS-420IT & HS-422IT Group II Accelerometers with Connectors F.U.W Zener Barrier