TYPE EXAMINATION CERTIFICATE

Intrinsically Safe System Intended for use in Potentially Explosive Atmospheres

3	Type Examination Certificate Number:	**Baseefa07Y0145**
4	System:	**HS-100 Series Accelerometer System**
5	Certificate Holder:	**Hansford Sensors Ltd**
6	Address:	**Saunderton, Bucks, HP14 4JE**

7 This system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

8 Baseefa (2001) Ltd. certifies that this system has been found to comply with the following standards

EN 60079-25: 2004

9 The examination and test results are recorded in confidential Report No. **07(C)0288**

10 If the sign "X" is placed after the certificate number, it indicates that the system is subject to special conditions of safe use specified in the schedule to this certificate.

11 This TYPE EXAMINATION CERTIFICATE relates only to the design of the specified intrinsically safe system and not to specific items of equipment therein. It is the responsibility of the system certificate holder to supply the relevant documentation to the installer of the intrinsically safe electrical system referred to in this certificate.

The installer has the responsibility to ensure that the system conforms to the specification laid down in the Schedule to this certificate and has satisfied routine verifications and tests specified therein.

12 The marking of the system shall include the following :

SYST Baseefa 07Y0145 Ex ia IIC T4 ($-55°C \le T_a \le +110°C$) or Ex ia IIC T6 ($-55°C \le T_a \le +60°C$)

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

Baseefa Customer Reference No. **5943**

Project File No. **07/0288**

This certificate is granted subject to the general terms and conditions of Baseefa (2001) Ltd. It does not necessarily indicate that the system may be used in particular industries or circumstances.

R S SINCLAIR
DIRECTOR
On behalf of
Baseefa (2001) Ltd.

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13 **Schedule**

14 **Certificate Number Baseefa07Y0145**

15 **System Description**

The HS-100 Series Accelerometer System consists of a single HS-100 Series Accelerometer mounted in a Zone 0 hazardous area, connected to a single zener barrier or galvanic isolator mounted in the non-hazardous area.

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

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

U_o = 28V
I_o = 93mA
P_o = 0.65W
Lo/Ro ≥ 15.4μH/Ω

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, MTL7728; BAS01ATEX7217
Pepperl & Fuchs, Z728, BAS01ATEX7005

15.1.2 Other barriers having lower values than these are permitted

The above barriers are to be supplied from apparatus 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.

15.1.3 Pepperl & Fuchs KFD2-VR4.Ex1.26 Galvanic Isolator; BAS02ATEX7206 with the following combined output parameters:

U_o = -26.4V
I_o = 90mA
P_o = 0.57W
C_i = 0
L_i = 0

15.1.4. 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.

15.2. Apparatus that may be installed in a Hazardous Area

15.2.1 A HS-100 Series Accelerometer to BASEEFA Certificate No. Baseefa07ATEX0144X and coded Ex ia IIC T4 (-55°C ≤ Ta ≤ +110°C) or T6 (–55°C ≤ Ta ≤ +60°C).

15.3. Permissible Interconnecting Cables

There are two different configurations used with the Accelerometer in this system.

15.3.1. Zener Barrier Configuration

The capacitance and the inductance to resistance ratio (L/R) of the hazardous area cables connecting the HS-100 Series Accelerometer with 100m of integral cable to the zener barrier must not exceed the following values:

GROUP	CAPACITANCE (µF)	OR	L/R RATIO (µH/ohm)
IIC	0.042		56
IIB	0.208		168
IIA	0.623		448

The capacitance and the inductance to resistance ratio (L/R) of the hazardous area cables connecting the HS-100 Series Accelerometer with 50m of integral cable to the zener barrier must not exceed the following values:

GROUP	CAPACITANCE (µF)	OR	L/R RATIO (µH/ohm)
IIC	0.062		56
IIB	0.228		168
IIA	0.643		448

The capacitance and the inductance to resistance ratio (L/R) of the hazardous area cables connecting the HS-100 Series Accelerometer with 10m of integral cable to the zener barrier must not exceed the following values:

GROUP	CAPACITANCE (µF)	OR	L/R RATIO (µH/ohm)
IIC	0.079		56
IIB	0.245		168
IIA	0.660		448

15.3.2. Pepperl & Fuchs KFD2-VR4.Ex1.26

The capacitance and the inductance to resistance ratio (L/R) of the hazardous area cables connecting the HS-100 Series Accelerometer with 100m of integral cable to the zener barrier must not exceed the following values:

GROUP	CAPACITANCE (µF)	OR	L/R RATIO (µH/ohm)
IIC	0.055		46
IIB	0.699		172
IIA	2.439		363

The capacitance and the inductance to resistance ratio (L/R) of the hazardous area cables connecting the HS-100 Series Accelerometer with 50m of integral cable to the zener barrier must not exceed the following values:

GROUP	CAPACITANCE (µF)	OR	L/R RATIO (µH/ohm)
IIC	0.075		46
IIB	0.719		172
IIA	2.459		363

The capacitance and the inductance to resistance ratio (L/R) of the hazardous area cables connecting the HS-100 Series Accelerometer with 10m of integral cable to the zener barrier must not exceed the following values:

GROUP	CAPACITANCE (μF)	OR	L/R RATIO (μH/ohm)
IIC	0.092		46
IIB	0.736		172
IIA	2.476		363

15.4 Wiring to terminals of the safe area apparatus may be achieved by separate cables or by separate circuits within a Type A or Type B multicore cable (as defined in clause 8 of EN60079-25: 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

07(C)0288

17 Special Conditions for Safe Use

None.

18 Drawings and Documents

Number	Issue	Date	Description
M06-003-A	A	15.06.07	System Connections for HS-100I & HS-100IS Group II Accelerometers with Armoured Cable F.U.W Galvanic Isolation
M06-003-A	A	15.06.07	System Connections for HS-100I & HS-100IS Group II Accelerometers with Armoured Cable F.U.W Zener Barrier
M06-004-A	A	15.06.07	System Connections for HS-100I & HS-100IS Group II Accelerometers with Non-Armoured PUR Cable F.U.W Galvanic Isolation
M06-004-A	A	15.06.07	System Connections for HS-100I & HS-100IS Group II Accelerometers with Non-Armoured PUR Cable F.U.W Zener Barrier
M06-005-A	A	15.06.07	System Connections for HS-100I & HS-100IS Group II Accelerometers with Non-Armoured Silicone Cable F.U.W Galvanic Isolation
M06-005-A	A	15.06.07	System Connections for HS-100I & HS-100IS Group II Accelerometers with Non-Armoured Silicone Cable F.U.W Zener Barrier