



1 **EC TYPE-EXAMINATION CERTIFICATE**

2 Equipment intended for use in Potentially Explosive Atmospheres Directive 94/9/EC

3 Certificate Number: **Sira 09ATEX2008X** Issue: **3**

4 Equipment: **nVision™ Reference Pressure Recorder**

5 Applicant: **Crystal Engineering Corp.**

6 Address: **San Luis Obispo  
California 93401  
USA**

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

8 Sira Certification Service, notified body number 0518 in accordance with Article 9 of Directive 94/9/EC of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in the confidential reports listed in Section 14.2.

9 Compliance with the Essential Health and Safety Requirements, with the exception of those listed in the schedule to this certificate, has been assured by compliance with the following documents:

EN 60079-0:2006                      EN 60079-11:2007                      EN 60079-26:2007  
IEC 60079-0:2007 (Used for guidance in respect of marking)

The above list of documents may detail standards that do not appear on the UKAS Scope of Accreditation, but have been added through Sira's flexible scope of accreditation, which is available on request.

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

11 This EC type-examination certificate relates only to the design and construction of the specified equipment. If applicable, further requirements of this Directive apply to the manufacture and supply of this equipment.

12 The marking of the equipment shall include the following:



II 1G

Ex ia IIB T4 Ga, Ta = -20°C to +50°C, Approved battery type Rayovac Max Plus 815

Ex ia IIB T4 Ga, Ta = -20°C to +45°C, Approved battery type Duracell MN1500

Ex ia IIB T3 Ga, Ta = -20°C to +50°C, Approved battery type Energizer E91, EN91

Ex ia IIB T3 Ga, Ta = -20°C to +50°C, Approved battery type Duracell MN1500

Project Number    29000  
C. Index            12

C Ellaby  
Deputy Certification Manager

This certificate and its schedules may only be reproduced in its entirety and without change.



SCHEDULE

EC TYPE-EXAMINATION CERTIFICATE

Sira 09ATEX2008X  
Issue 3

13 DESCRIPTION OF EQUIPMENT

The nVision™ Reference Pressure Recorder is a portable battery powered device that is used to log sensor data and calibrate process pressures and 4-20 mA transmitters. It contains an optional 2.4 GHz radio link that allows communication to the non-hazardous area. The equipment is fitted with primary batteries that are secured in place within a battery holder fixed with four corner screws to the underside of the unit.

The enclosure is made from a plastic material and can be fitted with a protective rubber boot. The equipment contains the following inputs, pressure, temperature (RTD) current (mA) voltage and switches. Externally the equipment comprises a membrane keypad and an LCD with a USB connector and sensor input connection facilities. The USB connection is used in the non-hazardous area for communication. It is also able to power the nVision™ Reference Pressure Recorder in the non-hazardous area. Internally the equipment contains a main PCB, a fully or partially encapsulated display/protection board and two factory fitted plug in modules. There is a choice of three types of modules, ma-V, pressure and temperature. The equipment only has space for two and so any combination of these two can occur, with the exception of the mA-V module which may only have one. The mA-V modules are marked with "MA20". The temperature modules are marked with "RTD100" the pressure modules are marked with "PM" and the maximum permitted pressure. These modules are removable by the use of a tool, however, they can be changed by the user, in accordance with the instructions.

Entity Parameters

RTD Module	MA20 Module	
Ui = 0	Ui = 28 V	
Ii = 0	Ii = 93.3 mA	
Pi = 0	Pi = 653.3 mW	
Uo = 9.73 V	Ci = 0.36 µF	
Io = 1.6642 A	Li = 39.1 µH	
Po = 1.1 W	Uo = 6.6 V	
Co = 0.5 µF	Io = 4.45 mA	
Lo = 12 µH *	Po = 7.34 mW	* Total cable inductance between all modules.
	Co = 0.5 µF **	** Dependant on the supply to the terminals but shall not be greater than 0.5 µF.
	Lo = 12 µH *	

Variation 1 - This variation introduced the following changes:

- i. The following modifications were endorsed; the product description being amended to recognise that the method of encapsulation of the display/protection board may differ depending on the build:
  - An alternative MA20 module design was introduced.
  - An alternative LCD assembly design was introduced.

This certificate and its schedules may only be reproduced in its entirety and without change.



## SCHEDULE

### EC TYPE-EXAMINATION CERTIFICATE

Sira 09ATEX2008X  
Issue 3

**Variation 2** - This variation introduced the following changes:

- i. The recognition of the introduction of a barometric sensor.

**Variation 3** - This variation introduced the following changes:

- i. The modification of the 4AA Power Module:
  - Option 1 - PCA PN: 4931:
    - Fuse F1 changed plus potting compound
    - Resistor R1 changed to 2  $\Omega$ , 0.75 W (was 2  $\Omega$ , 0.25 W)
    - Active current limiting circuit added.
  - Option 2 - PCA PN: 5052:
    - Fuse F1 changed to pre-encapsulated, certified fuse
    - Resistor R1 changed to 3.30  $\Omega$ , 0.75 W (was 2  $\Omega$ , 0.25 W)
    - Active current limiting circuit added.
- ii. The LCD Interface Adapter PN 4203-PCA is no longer manufactured and was replaced by PN 4933-PCA.
- iii. Additional Conditions of Manufacture were introduced.

## 14 DESCRIPTIVE DOCUMENTS

### 14.1 Drawings

Refer to Certificate Annexe.

### 14.2 Associated Sira Reports and Certificate History

Issue	Date	Report no.	Comment
0	30 April 2009	R52A19587A	The release of the prime certificate.
1	4 February 2010	R21259A/00	The introduction of Variation 1.
2	09 November 2010	R23012A/00	The introduction of Variation 2.
3	26 July 2013	R29000A/00	The introduction of Variation 3.

## 15 SPECIAL CONDITIONS FOR SAFE USE (denoted by X after the certificate number)

- 15.1 Parts of the enclosure may generate an ignition-capable level of electrostatic charge under certain extreme conditions. The user should ensure that the equipment is not installed or used in a location where it may be subjected to external conditions, which might cause a build-up of electrostatic charge on non-conducting surfaces. Additionally, cleaning of the equipment should be done only with a damp cloth.
- 15.2 The USB connector shall not be used within the hazardous atmosphere. It shall be used in the non-hazardous atmosphere with either "Safety Extra Low Voltage Circuits" (SELV) or "Protective Extra Low Voltage Circuits" (PELV). The USB connector has a  $U_m$  of 6 V.

This certificate and its schedules may only be reproduced in its entirety and without change.



SCHEDULE

EC TYPE-EXAMINATION CERTIFICATE

Sira 09ATEX2008X  
Issue 3

16 ESSENTIAL HEALTH AND SAFETY REQUIREMENTS OF ANNEX II (EHSRs)

The relevant EHSRs that are not addressed by the standards listed in this certificate have been identified and individually assessed in the reports listed in Section 14.2.

17 CONDITIONS OF CERTIFICATION

17.1 The use of this certificate is subject to the Regulations Applicable to Holders of Sira Certificates.

17.2 Holders of EC type-examination certificates are required to comply with the production control requirements defined in Article 8 of directive 94/9/EC.

17.3 Only one MA20 module may be used in any one nVision™ Reference Pressure Recorder.

17.4 The manufacturer shall ensure that the fuse F1 (Littelfuse 0466.125NR) (PCA PN: 4931) has a minimum resistance of 2.78  $\Omega$  when measured at an ambient temperature not exceeding 25°C. The minimum resistance at the lower certified ambient temperature (-20°C) which is relied upon for safety is 2  $\Omega$ .

17.5 This equipment incorporates a previously certified component:

Description	Certificate number	Marking
Littelfuse safe-T-Plus 259 Series (0259.125)	BASEEFA 02ATEX0071U	 II 1G Ex

It is therefore the responsibility of the manufacturer to continually monitor the status of the certification associated with this device, and the manufacturer shall inform Sira of any modifications of the device that may impinge upon the explosion safety design of the product.