



1 **EC TYPE-EXAMINATION CERTIFICATE**

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

3 Certificate Number: **Sira 09ATEX2008X** Issue: **0**

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)

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 52A19587
C. Index 12

C Ellaby
Certification Officer

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SCHEDULE

EC TYPE-EXAMINATION CERTIFICATE

**Sira 09ATEX2008X
Issue 0**

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, 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
	Co = 0.5 µF **
	Lo = 12 µH *

* Total cable inductance between all modules

** Dependant on the supply to the terminals but shall not be greater than 0.5 µF

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.

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Sira Certification Service

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- 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 Um of 6 V.
- 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.

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Certificate Annexe

Certificate Number: Sira 09ATEX2008X
Equipment: nVision™ Reference Pressure Recorder
Applicant: Crystal Engineering Corp.



Issue 0

Number	Sheet	Rev.	Date	Description
4055	1 to 2	A	15 Apr 09	GENERAL ARRANGEMENT
3824	1 to 2	A	15 Apr 09	LABEL, FRONT PANEL, NVISION
4057	1 of 1	A	15 Apr 09	SERIAL NUMBER LABELING DETAIL, CHASSIS, NVISION
3927	1 to 2	B	20 Apr 09	LABEL, REAR, 4AA MODULE
3921-PCA	1 of 1	A	15 Apr 09	PRINTED CIRCUIT ASSEMBLY 4AA BATTERY, NVISION
3921-BOM	1 of 1	A	15 Apr 09	NVISION 4AA BATTERY PRINTED CIRCUIT ASSEMBLY
3795-SCH	1 of 1	A	15 Apr 09	4AA POWER MODULE
3795-PCB	1 of 1	A	15 Apr 09	PRINTED CIRCUIT BOARD, 4AA POWER MODULE, NVISION, MECHANICAL SPECIFICATIONS
3795-ART	1 to 3	A	15 Apr 09	PRINTED CIRCUIT BOARD LAYER DEFINITIONS
3817-PCA	1 of 1	C	15 Apr 09	MAIN BOARD
3817-BOM	1 of 1	C	15 Apr 09	NVISION MAIN PRINTED CIRCUIT ASSEMBLY
3794-SCH	1 to 10	C	15 Apr 09	MAIN PCA, NVISION
3794-PCB	1 of 1	C	15 Apr 09	MAIN BOARD
3794-ART	1 to 6	C	15 Apr 09	PRINTED CIRCUIT BOARD LAYER DEFINITIONS
3957	1 of 1	A	15 Apr 09	LCD MODULE, POTTED, NVISION
3955-PCA	1 of 1	A	15 Apr 09	PRINTED CIRCUIT ASSEMBLY LCD INTERFACE ADAPTER, NVISION
3955-BOM	1 of 1	A	15 Apr 09	NVISION LCD INTERFACE ADAPTER PRINTED CIRCUIT ASSEMBLY
3950-SCH	1 of 1	C	15 Apr 09	LCD INTERFACE ADAPTER - ATEX
3950-PCB	1 of 1	C	15 Apr 09	PRINTED CIRCUIT BOARD, LCD ADAPTER, ATEX MECHANICAL SPECIFICATIONS
3950-ART	1 of 4	C	15 Apr 09	PRINTED CIRCUIT BOARD LAYER DEFINITIONS
3888-PCA	1 of 1	B	15 Apr 09	PRINTED CIRCUIT ASSEMBLY MODULE INTERFACE, NVISION
3888-BOM	1 of 1	B	15 Apr 09	NVISION MODULE INTERFACE PRINTED CIRCUIT ASSEMBLY
3793-SCH	1 of 1	B	15 Apr 09	COMMON SENSOR INTERFACE
3793-PCB	1 of 1	B	15 Apr 09	PRINTED CIRCUIT BOARD COM. MOD. INTERFACE, NVISION MECHANICAL SPECIFICATIONS
3793-ART	1 to 6	B	15 Apr 09	PRINTED CIRCUIT BOARD LAYER DEFINITIONS
3889-PCA	1 of 1	B	15 Apr 09	PRINTED CIRCUIT ASSEMBLY DUAL ADC PRESSURE, NVISION
3889-BOM	1 of 1	B	15 Apr 09	NVISION DUAL ADC PRESSURE PRINTED CIRCUIT ASSEMBLY
3792-SCH	1 of 1	B	15 Apr 09	DUAL ADC SENSOR INTERFACE
3792-PCB	1 of 1	B	15 Apr 09	PRINTED CIRCUIT BOARD, DUAL ADC INTERFACE, NVISION MECHANICAL SPECIFICATIONS
3792-ART	1 to 5	B	15 Apr 09	PRINTED CIRCUIT BOARD LAYER DEFINITIONS
3827-PCA	1 of 1	A	15 Apr 09	PRINTED CIRCUIT ASSEMBLY, RTD INTERFACE, NVISION
3827-BOM	1 of 1	A	15 Apr 09	NVISION RTD INTERFACE MODULE PRINTED CIRCUIT ASSEMBLY
3821-SCH	1 of 1	A	15 Apr 09	RTD INTERFACE
3821-PCB	1 of 1	A	15 Apr 09	PRINTED CIRCUIT BOARD RTD MODULE, NVISION MECHANICAL SPECIFICATIONS
3821-ART	1 to 3	A	15 Apr 09	PRINTED CIRCUIT BOARD LAYER DEFINITIONS
3993-1-PCA	1 of 1	A	15 Apr 09	PRINTED CIRCUIT BOARD ASSEMBLY, MA-VOLT INTERFACE 1
3993-1-BOM	1 of 1	A	15 Apr 09	NVISION MA20 PRINTED CIRCUIT ASSEMBLY 1 of 2
3954-1-SCH	1 of 1	A	15 Apr 09	MA-VOLT INTERFACE
3954-1-PCB	1 of 1	A	15 Apr 09	PRINTED CIRCUIT BOARD, MV MODULE, NVISION, MECHANICAL SPECIFICATIONS
3954-1-ART	1 to 4	A	15 Apr 09	PRINTED CIRCUIT BOARD LAYER DEFINITIONS
3993-2-PCA	1 of 1	A	15 Apr 09	PRINTED CIRCUIT BOARD ASSEMBLY, MA20 INTERFACE, NVISION

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Certificate Annexe

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Equipment: nVision™ Reference Pressure Recorder
Applicant: Crystal Engineering Corp.



Number	Sheet	Rev.	Date	Description
3993-2-BOM	1 of 1	A	15 Apr 09	NVISION MA20 PRINTED CIRCUIT ASSEMBLY 2 of 2
3954-2-SCH	1 of 1	A	15 Apr 09	MA-VOLT INTERFACE
3954-2-PCB	1 of 1	A	15 Apr 09	PRINTED CIRCUIT BOARD, MV MODULE, NVISION, MECHANICAL SPECIFICATIONS
3954-2-ART	1 to 4	A	15 Apr 09	PRINTED CIRCUIT BOARD LAYER DEFINITIONS

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