ATEX Sensori serie M approvati a sicurezza intrinseca “AMBIENTI MINERARI”

Sensori in atmosfera con vapori di gas
Sensori in atmosfera con polveri
Sensori in atmosfera in ambiente minerario

Sistemi di Sicurezza Intrinseca operativi in ambienti per la sicurezza del personale. Sicurezza Intrinseca (IS) si basa sul principio funzionale della limitazione di energia elettrica trasmessa in una zona pericolosa, assicurando in tal modo che qualsiasi scintilla o superfici riscaldante possano verificarsi a seguito di guasti elettrici che possono causare un innesco. La minaccia di una esplosione viene limitata, i sensori Positek e amplificatori isolati galvanicamente a Sicurezza Intrinseca possono essere utilizzati in ambienti pericolosi, per le seguenti tre classificazioni:

'X' Serie Sensori di posizione per l'utilizzo in atmosfere potenzialmente esplosive Vapori di gas.

'E' Serie Sensori di posizione per l'utilizzo in atmosfere potenzialmente esplosive vapori di gas e atmosfera con polveri.

'M' Serie Sensori di posizione per l'utilizzo in atmosfere potenzialmente esplosive vapori di gas, polveri e ambienti minerari.

Sensori Positek disponibili nelle versioni EX04 equivalenti a Qualifica ATEX specifiche a sicurezza intrinseca:

Ex II 1G EEx ia IIC T4 (Ta = da -40 ° C a +80 ° C)
Ex II 1GD, EEx ia IIC T4, Ex IAD 20 T135 ° C (Ta = da -40 ° C a +80 ° C)

Ex I / II M1/1GD, EEx ia I / IIC T4, Ex IAD 20 T135 ° C (Ta = da -40 ° C a +80 ° C)

- Numero di certificato Sira 00ATEX2076X e ATEX SIRA M064
- La temperatura ambiente per T4 è esteso a +80 ° C.
- I sensori devono essere usati con una separazione galvanica a tre stadi di amplificazione progettato con alimentazione del sensore a 5V nominali.
- Uscita elettrica in zona sicura.

Positek X005, amplificatore di isolamento galvanico progettato specificamente per l'utilizzo con i sensori Positek a sicurezza intrinseca disponibile nelle seguenti opzioni di output:

0.5 a 9.5V - X005-545
9,5 a 0,5 V - X005-546
4 a 20 mA - X005-425
20 a 4 mA - X005-426

CLASSIFICAZIONE ATEX

POSITEK UK costruttore di sensori di posizione, angolo e inclinazione omologati antideflagranti ATEX
In campo e luoghi con pericolo di esplosione per la presenza di gas, vapori infiammabili, combustibili e polveri combustibili richiedono sensori e trasduttori di costruzione elettrica sicura incapaci di innescare esplosioni dovute alle condizioni di normale funzionamento e condizioni di guasto. La costruzione di questi oggetti deve essere idonea alla Normativa a Sicurezza Atex.

La classificazione e la disciplina che regolamenta questo argomento si divide nei seguenti livelli:

- Classificazione delle sostanze pericolose
- Classificazione iniziale delle zone pericolose
- Classificazione finale delle zone pericolose
- Classificazione delle apparecchiature in America e Europa
- Classificazione delle temperature America e Europa
- Classificazione apparati nuova Direttiva Europea

La recente classificazione ha di fatto annullato e sostituito situazioni nazionali per sostanze pericolose e modi di protezione.
Positek nella sua produzione di sensori e trasduttori di posizione lineare, angolare e inclinazione rispecchia queste normative con:

- ATEX Assurance Notification
- Sensor Intrinsic Safety Certificate
- Galvanic Isolation Amplifier Intrinsic Safety Certification
- Galvanic Isolation Amplifier IECEx Certificate

Positek dispone dei sensori nelle versioni EX04 che sono ATEX Qualificato a specifica di sicurezza intrinseca:

- Ex II 1G EEx ia IIC T4 (Ta = da -40 ° C a +80 ° C)
- Ex II 1GD, EEx ia IIC T4, Ex IAD 20 T135 ° C (Ta = da -40 ° C a +80 ° C)
- Ex I / II M1/1GD, EEx ia I / IIC T4, Ex IAD 20 T135 ° C (Ta = da -40 ° C a +80 ° C)
- Numero di certificato Sira 00ATEX2076X e ATEX SIRA M064

La temperatura ambiente per T4 è estesa a +80 ° C. I sensori devono essere usati con una separazione galvanica a tre stadi con l' alimentazione del sensore con un 5VDC nominali.
Il Positek X005 amplificatore di isolamento galvanico progettato in modo specifico per i sensori a catalogo.
Sistemi di sicurezza intrinseca per ambiente operativo sicuro per il personale e apparecchiature. Sicurezza intrinseca (IS) si basa sul principio di limitare l'energia elettrica trasmessa in zona pericolosa, assicurando in tal modo che scintille o superfici riscaldate possano verificarsi a seguito di guasti elettrici, cause insufficienti a causare l'accensione. La minaccia di una esplosione viene limitata.
Positek produce sensori a sicurezza intrinseca e amplificatori galvanicamente isolati e approvati, i modelli prodotti sono codificabili in aggiunta al modello in tre classificazioni distinte:

- Serie 'X' sensori di posizione per l'utilizzo in atmosfere potenzialmente esplosive 'atmosfere di gas / vapore'.
- Serie 'E' sensori di posizione per l'utilizzo in atmosfere potenzialmente esplosive 'atmosfera di polveri 'gas / vapori'.
- Serie 'M' sensori di posizione per l'utilizzo in atmosfere potenzialmente esplosive 'atmosfera gas / vapori, polveri e ambienti minerari'.

Sensori Positek sono ora disponibili nelle versioni EX04 che sono ATEX Qualificato di specifiche di sicurezza intrinseca:

- Ex II 1G EEx ia IIC T4 (Ta = da -40 ° C a +80 ° C)
- Ex II 1GD, EEx ia IIC T4, Ex IAD 20 T135 ° C (Ta = da -40 ° C a +80 ° C)
- Ex I / II M1/1GD, EEx ia I / IIC T4, Ex IAD 20 T135 ° C (Ta = da -40 ° C a +80 ° C)
- Numero di certificato Sira 00ATEX2076X e ATEX SIRA M064

La temperatura ambiente per T4 è esteso a +80 ° C.
I sensori devono essere usati con una separazione galvanica a tre amplificatore porta progettato per alimentare il sensore con un 5V nominali e di trasmettere il tamponata Uscita in una zona sicura.
Il Positek X005 amplificatore di isolamento galvanico progettato specificamente per l'utilizzo con Positek campo del sensore a sicurezza intrinseca è disponibile nelle seguenti opzioni di output

sira
Certification Service

1 # QUALITY ASSURANCE NOTIFICATION

2 **Equipment and protective systems intended for use in potentially explosive atmospheres Directive 94/9/EC**

3 Notification No. SIRA 00 ATEX M064

4 Equipment, protective system or components as listed in the schedule attached to this notification.

5 Applicant **Positek Limited**
L6 The Link
Andoversford Industrial Estate
Andoversford
Cheltenham
Gloucestershire GL54 4LB

6 Manufacturer As above

7 Sira Certification Service being a Notified Body No. 0518 for Annexes IV and VII in accordance with Article 9 of Directive 94/9/EC of the European Parliament and the Council of 23 March 1994, notifies to the applicant that the manufacturer has a quality system which complies with the requirements of Annexes IV and VII of Directive 94/9/EC.

8 This notification is based upon Sira Report No. 55A/27698 issued on 28 May 2012.

This notification can be withdrawn if the manufacturer no longer satisfies the requirements of Annexes IV and VII.

Results of periodical re-assessment of the quality system form part of this notification.

9 This notification is valid until 27 July 2015 and can be withdrawn if the manufacturer does not satisfy the quality assurance re-assessment.

10 According to Article 10 [1] of directive 94/9/EC the CE marking shall be followed by the identification number 0518 of Sira Certification Service as the notified body involved in the production control stage.

Certification Manager

Date of Initial Issue: 31 July 2000
Date of Current Issue: 25 July 2012

Sira Certification Service
Rake Lane • Eccleston • Chester CH4 9JN • UK

QUALITY ASSURANCE NOTIFICATION

SCHEDULE

Explosion protection concepts for which the manufacturer has been assessed

ia, ib Intrinsic Safety

Equipment categories for which the manufacturer has been assessed

Sensors, Transducers and Signalling Switches

Certificates included within the scope of this Notification

As acknowledged by Sira Certification Service

Notification No : SIRA 00 ATEX M064
Date of Initial Issue: 31 July 2000
Date of Current Issue: 25 July 2012

Sira Certification Service
Rake Lane • Eccleston • Chester CH4 9JN • UK

Certificate of Compliance

Certificate: 2588225 **Master Contract:** 256053

Project: 2588225 **Date Issued:** February 22, 2013

Issued to: **POSITEK Ltd.**

Unit L6 The Link, Andoversford
Cheltenham, GL54 4LB
United Kingdom
Attention: Roger Swadling

The products listed below are eligible to bear the CSA Mark shown with adjacent indicators 'C' and 'US' for Canada and US or with adjacent indicator 'US' for US only or without either indicator for Canada only.

C US

Richard Dibler Jr

Issued by: Richard Dibler Jr

PRODUCTS

CLASS 2258 84 - PROCESS CONTROL EQUIPMENT - Intrinsically Safe, Entity - - For Hazardous Locations - Certified to US Standards

CLASS 2258 04 - PROCESS CONTROL EQUIPMENT - Intrinsically Safe, Entity - For Hazardous Locations

Ex ia IIC T4

AEx ia IIC T4

AEx iD IIIC T93°C

Series EX06 Models Gxxx or Hxxx, rated for an ambient temperature range of -40°C to +80°C.

Where xxx = three digit numeric code for specific sensor design

Certificate: 2588225 **Master Contract:** 256053

Project: 2588225 **Date Issued:** February 22, 2013

The equipment has the following Entity Parameters:

Parameter	**EX06**
Ui	11.4 V
Ii	0.2 A
Pi	0.51 W
Ci without integral cable	1.16 µF
Ci with integral cable (Max. length)	1.36 µF(1000 m)
Li without integral cable	50 µH
Li with integral cable (Max. length)	710 µH (1000 m)

The EX06 shall be connected according to the installation drawing nos. G000-19a or H000-19a as applicable; in hazardous locations.

The final installation of the system shall meet all applicable codes and it shall be subjected to acceptance of local authority having jurisdiction.

Special Conditions of Safe Use:

This apparatus is to be powered via a suitably certified galvanic isolator.

APPLICABLE REQUIREMENTS

CSA C22.2 No. 0-10	General Requirements - Canadian Electrical Code, Part II

Certificate: 2588225 **Master Contract:** 256053

Project: 2588225 **Date Issued:** February 22, 2013

CAN/CSA C22.2 No. 142-M1987	Process Control Equipment
UL 508	Industrial Control Equipment
CAN/CSA-C22.2 No. 60079-0:11	Explosive atmospheres — Part 0: Equipment — General requirements
CAN/CSA-C22.2 No. 60079-11:11	Explosive atmospheres — Part 11: Equipment protection by intrinsic safety “i”
ANSI/UL 60079-0:09 (5th Ed.)	Electrical Apparatus for Explosive Gas Atmospheres - Part 0: General Requirements
ANSI/UL 60079-11:09 (5th Ed.)	Electrical apparatus for Explosive Gas Atmospheres - Part 11: Intrinsic Safety “i”
ANSI/ISA-61241-0 (12.10.02)-2006	Electrical Apparatus for Use in Zone 20, Zone 21 and Zone 22 Hazardous (Classified) Locations – General Requirements
ANSI/ISA-61241-11 (12.10.04)-2006 (R2011)	Electrical Apparatus for Use in Zone 20, Zone 21 and Zone 22 Hazardous (Classified) Locations − Protection by Intrinsic Safety “iD”

MARKINGS

Product markings shall be in accordance with the related standards. In addition, it shall be the responsibility of the manufacturer to provide additional markings on the product to comply with the requirements of the local regulatory authorities. For example, in Canada, any caution and warning markings must be provided in French and English.

The following markings are etched onto the EX06 Gxxx or Hxxx sensor body:

- Manufacturer’s name or CSA Master Contract Number “256053”, adjacent to the CSA Mark in lieu of manufacturer’s name.
- CSA certificate number 13.2588225
- Model number: As specified in the PRODUCTS section, above.
- Ambient temperature rating: As specified in the PRODUCTS section, above.
- Manufacturing date in MMYY format, or serial number, traceable to month of manufacture.
- The CSA Mark with or without “C” and/or “US” indicators, as shown on the Certificate of Conformity.
- The following words:
  - “Ex ia”.
- “Install per drawing G000-19 or H000-19”
  - Electrical ratings.
  - “WARNING: Substitution of components may impair intrinsic safety.”

Note - Jurisdictions in Canada may require these markings to also be provided in French language. It is the responsibility of the manufacturer to provide bilingual marking, where applicable, in accordance with the requirements of the Provincial Regulatory Authorities. It is the responsibility of the manufacturer to determine this requirement and have bilingual wording added to the "Markings".

Certificate of Compliance

Certificate: 2534055 **Master Contract:** 256053

Project: 2534055 **Date Issued:** December 11, 2012

Issued to: **Positek Limited**

L6 the Link, Andoversford
Cheltenham, GL GL54 4HP
GB
Attention: Roger Swadling

The products listed below are eligible to bear the CSA Mark shown with adjacent indicators 'C' and 'US' for Canada and US or with adjacent indicator 'US' for US only or without either indicator for Canada only.

Richard Dibler Jr

Issued by: Richard Dibler Jr

PRODUCTS

CLASS 2258 83 - PROCESS CONTROL EQUIPMENT-Intrinsically Safe and Non-Incendive - Systems-For Hazardous Locations-Certified to U.S. Standards

CLASS 2258 03 - PROCESS CONTROL EQUIPMENT - Intrinsically Safe and Non - Incendive Systems - For Hazardous Locations

[Ex ia IIC]

[AEx ia IIC]

[AEx iD IIIC]

G005 3-Port Galvanic Isolation Amplifier rated 35 Vdc max with an input current of 70mA. Ambient temperature -20°C to +60°C. Provides Intrinsically Safe outputs with the following entity parameters:

Uo =	10.66 V			
Io =	50.5 mA			
Po =	121 mW			
Group	IIC	IIB	IIA	

Co =	2.23	15.6	69.0	µF
Lo =	14	53	112	mH
OR				
L / R ratio	295	1178	2357	µH / Ω
Ci =	0 µF			
Li =	0 mH			

The G005 3-Port Galvanic Isolation Amplifier shall be connected according to the installation drawing nos. G005-19; in ordinary location and represents the associated apparatus that provides intrinsically safe circuits Ambient Temperature Range: -20°C=<Ta=<+60°C.

The final installation of the system shall meet all applicable codes and it shall be subjected to acceptance of local authority having jurisdiction.

APPLICABLE REQUIREMENTS

CSA C22.2 No. 0-10	General Requirements - Canadian Electrical Code, Part II
CAN/CSA C22.2 No. 142-M1987	Process Control Equipment
UL 508	Industrial Control Equipment
CAN/CSA-C22.2 No. 60079-0:11	Explosive atmospheres — Part 0: Equipment — General requirements
CAN/CSA-C22.2 No. 60079-11:11	Explosive atmospheres — Part 11: Equipment protection by intrinsic safety “i”
ANSI/UL 60079-0:09 (5th Ed.)	Electrical Apparatus for Explosive Gas Atmospheres - Part 0: General Requirements
ANSI/UL 60079-11:09 (5th Ed.)	Electrical apparatus for Explosive Gas Atmospheres - Part 11: Intrinsic Safety “i”
ANSI/ISA-61241-0 (12.10.02)-2006	Electrical Apparatus for Use in Zone 20, Zone 21 and Zone 22 Hazardous (Classified) Locations – General Requirements
ANSI/ISA-61241-1 (12.10.03)-2006 (R2011)	Electrical apparatus for Explosive Gas Atmospheres - Part 11: Intrinsic Safety “i”
ANSI/ISA-61241-11 (12.10.04)-2006 (R2011)	Electrical Apparatus for Use in Zone 20, Zone 21 and Zone 22 Hazardous (Classified) Locations − Protection by Intrinsic Safety “iD”

MARKINGS

Markings are provided by two means described below.

- Full product part number (G005-nnn, nnn three digit numeric code for input span and output type)
- Serial number

- Year of manufacture

Are provided on a CSA Certified or UL Recognized for Canada, and CSA Certified for U.S. or UL Recognized adhesive nameplate, which is suitable for indoor and outdoor use on polycarbonate, at a service temperature of range of 20°C to +60°C or greater. The nameplate is affixed as depicted in drawing G005-12.

The following markings are screen printed onto the G005 3-Port Galvanic Isolation Amplifier:

- Manufacturer's name or CSA Master Contract Number "256053", adjacent to the CSA Mark in lieu of manufacturers name.
- CSA certificate number 12.2534055
- Model number: As specified in the PRODUCTS section, above.
- Electrical ratings: As specified in the PRODUCTS section, above.
- Ambient temperature rating: As specified in the PRODUCTS section, above.
- The CSA Mark with or without "C" and/or "US" indicators, as shown on the Certificate of Conformity.
- The following words:
  - "[Ex ia]".
  - The words: "ASSOCIATED EQUIPMENT"
  - "WARNING: Substitution of components may impair intrinsic safety."
  - "Install per drawing G005-19"

Note - Jurisdictions in Canada may require these markings to also be provided in French language. It is the responsibility of the manufacturer to provide bilingual marking, where applicable, in accordance with the requirements of the Provincial Regulatory Authorities. It is the responsibility of the manufacturer to determine this requirement and have bilingual wording added to the "Markings".

1 **EC TYPE-EXAMINATION CERTIFICATE**

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

3 Certificate Number: **Sira 00ATEX2076X** Issue: **6**

4 Equipment: **A range of Rotary and Linear Inductive Position Sensors Incorporating the EX01, EX02 and EX04 Electronics Systems**

5 Applicant: **Positek Limited**

6 Address: L6 The Link, Andoversford Industrial Estate
Andoversford, Cheltenham, Gloucestershire GL54 4LB, UK

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 50014:1997 +A1, +A2 EN 50020:1994 EN 50303:2000
IEC 61241-0:2004 IEC 61241-11:2005

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:

Group II Gas
(Applicable to EX01, EX02 and EX04
and designated using an 'X' in the Part No.)

II 1 GD
EEx ia IIC T4 (T_a = -40°C to 80°C)

Group II Gas/Dust
(Applicable to EX02 and EX04
and designated using an 'E' in the Part No.)

II 1 GD
EEx ia IIC T4 (T_a = -40°C to 80°C)
Ex iaD 20 T135°C (T_a = -40°C to 80°C)

Combined Group I and Group II Gas/Dust
(Applicable to EX02 and EX04
and designated using an 'M' in the Part No.)

I/II M1/1GD
EEx ia I/IIC T4 (T_a = -40°C to 80°C)
Ex iaD 20 T135°C (T_a = -40°C to 80°C)

Project Number 20035
C. Index 13

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Certification Officer

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13 **DESCRIPTION OF EQUIPMENT**

The apparatus comprises of a range of Rotary and Linear inductive position sensors. Each sensor incorporates the Positek EX01 Electronics System, which is used to excite the coils. The coils are either configured on a printed wiring board (for the rotary sensor) or wound onto a former (for the linear sensor). The apparatus is housed within a metal enclosure that provides a degree of protection of at least IP20.

The apparatus is to be powered via a suitably certified galvanic isolator and may have up to 100 metres of cable connected. The parameters associated with the sensors are:

Ui = 11.4 V
Ii = 0.58 A
Pi = 0.51 W

Variation 1 This variation introduced the following changes:

i. The incorporation of a new electronics package that has been given the designation EX02 electronics system; the new circuit contains less capacitance but more inductance than the original circuit, consequently, the EX02 version has different safety parameters and cable criteria, as detailed below and amended condition of certification (clause 17.3):

EX01 Electronics System	EX02 Electronics System
Ui = 11.4 V Ii = 0.58 A Pi = 0.51 W	Ui = 11.4 V Ii = 0. 46 A Pi = 0.51 W

ii. The addition of a new condition of certification (clause 17.2).

Variation 2 This variation introduced the following changes:

i. Alternative options for trimmer potentiometers R23 and R24.

Variation 3 This variation introduced the following changes:

i. Revisions to drawings that do not affect certification

Variation 4 This variation introduced the following changes:

i. The introduction of EX02 electronic package with metal enclosure types, to drawing M000-02, these are used in the presence of combustible dust and in Group I Category M1 environments.

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SCHEDULE

EC TYPE-EXAMINATION CERTIFICATE

Sira 00ATEX2076X
Issue 6

Variation 5 This variation introduced the following changes:

i. The introduction of the Positek EX04 Electronics System, this is a modified version of the EX02 incorporating the following changes.
- The reduction of a number of the electronic component package sizes and the introduction of a new, alternative potentiometer.
- The maximum cable length was increased from 150 to 1000 metres and the associated condition of certification was amended to reflect this.
- Entity parameter Ii was changed.

ii. For clarity, Ci and Li was introduced for the Positek EX01, EX02 and EX04 electronics systems, the entity parameters for all models are listed below, although some of the values are essentially the same as those previously specified, these parameters now take precedence.

Parameter	EX01	EX02	EX04
Ui	11.4 V	11.4 V	11.4 V
Ii	0.58 A	0.46 A	0.2 A
Pi	0.51 W	0.51 W	0.51 W
Ci without integral cable	1.64 µF	1.16 µF	1.16 µF
Ci with integral cable (Max. length)	1.66 µF (100 m)	1.19 µF (150 m)	1.36 µF(1000 m)
Li without integral cable	23 µH	50 µH	50 µH
Li with integral cable (Max. length)	89µH (100 m)	149 µH (150 m)	710 µH (1000 m)

14 DESCRIPTIVE DOCUMENTS

14.1 Drawings

Refer to Certificate Annexe.

14.2 Associated Sira Reports and Certificate History

Issue	Date	Report no.	Comment
0	29 June 2000	R52A6623A	The release of prime certificate.
1	18 February 2004	R52A11406A	The introduction of Variation 1.
2	03 December 2004	R52A12036A	The introduction of Variation 2.
3	22 May 2006	R52A14266A	The introduction of Variation 3.
4	15 August 2006	R52A14226B R52A14226C	The introduction of Variation 4 (Re-issued 4 September 2007 to allow report R52A14226C to replace R52A14226B).
5	26 June 2007	N/A	All previously issued certification was rationalised into a single certificate, Issue 5, Issues 0 to 4 referenced above are only intended to reflect the history of the previous certification and have not been issued as documents in this format.
6	17 December 2009	R20035A	This Issue covers the following changes: • The introduction of Variation 5. • The marking in section 12 was clarified. • The re-issue of Variation 4 was recognised. • The special conditions for safe use were simplified.

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SCHEDULE

EC TYPE-EXAMINATION CERTIFICATE

Sira 00ATEX2076X
Issue 6

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

15.1 The Rotary and Linear Inductive Position Sensors have not been subjected to a voltage test in accordance with EN 50020:1994 clause 10.6, the user/installer shall therefore take this into account, e.g. the Sensors shall be used in conjunction with a suitably certified galvanic isolator, the output parameters of which shall not exceed the quoted input parameters contained within the apparatus description.

15.2 When using a Sensor that has an integral cable in a dust application, the free end of the cable shall be appropriately terminated.

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 When the Rotary and Linear Inductive Position Sensors are supplied with cable, then the following cable characteristics shall not be exceeded:

EX01 Electronics System	EX02 Electronics System	EX04 Electronics System
Capacitance ≤200 pF/m Inductance ≤0.66 μH/m Length ≤100 m	Capacitance ≤0.55μF Inductance ≤0.66 μH/m Length ≤150 metres	Capacitance ≤200 pF/m Inductance ≤0.66 μH/m Length ≤1000 m

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Certificate Annexe

Certificate Number: **Sira 00ATEX2076X**

Equipment: **EX01, EX02 and EX04 Electronics System**

Applicant: **Positek Ltd**

Issue 0

Number	Sheet	Rev.	Date	Description
EX01-59B.SCH	1 of 1	B	04 May 00	Circuit diagram for EX01 Electronics Interface
EX01-20C.XLS	1 of 1	C	-	System parts list for intrinsically safe products
LB01-10	1 of 1	D	02 Jun 00	Product label for intrinsically safe sensors

Issue 1

Number	Sheet	Rev.	Date	Description
EX02-59A.SCH	1 of 1	A	18 Dec 03	Circuit diagram for EX02 electronics interface
EX02-20A	1 to 2	-	12 Feb 02*	System Parts List for Intrinsically Safe Products
LB01-10	1 of 1	E	08 Feb 04	Product label for intrinsically safe sensors

* This is the date that the drawing was stamped by Sira.

Issue 2

Number	Sheet	Rev.	Date	Description
EX02-20c	1 and 2	-	16 Nov 04*	Parts list

* This is the date that the drawing was stamped by Sira.

Issue 3

Number	Sheet	Rev.	Date	Description
EX02-59	1 of 1	B	24 Apr 06	Circuit Diagram for EB29 Sensor Board Plus External Feed Through Caps
EX02-20e	1 & 2	E	24 Apr 06	System Parts List for Intrinsically Safe Products

Issue 4

Number	Sheet	Rev.	Date	Description
EX02-20f	1 & 2	F	19 Jul 06	System Parts List for Intrinsically Safe Products
M000-02	1 to 6	C	19 Jul 06	Typical Construction Details For M Series Sensors
LB05-10	1 of 1	A	02 Aug 06	Product Label For Intrinsically Safe Dust/Mining

Issue 5 (No new drawings were introduced.)

Issue 6

Number	Sheet	Rev.	Date	Description
EX04-20b	1 to 2	A	24 Nov 09	System Parts List for Intrinsically Safe Products
M000-02	1 to 7	D	24 Nov 09	Typical Construction Details For M Series Sensors
LB13-10	1 of 1	A	24 Nov 09	Product Label for Intrinsically Safe Sensors

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1 **EC TYPE-EXAMINATION CERTIFICATE**

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

3 Certificate Number: **Sira 10ATEX2204** Issue: **0**

4 Equipment: **An X005 3-Port Galvanic Isolation Amplifier**

5 Applicant: **Positek Limited**

6 Address: L6 The Link
Andoversford Industrial Estate
Andoversford
Cheltenham GL54 4LB
UK

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 60079-0:2009 and EN60079-26:2007 were used for guidance with 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:

I (M1)
[Ex ia Ma] I
Ta = -20°C≤Ta≤+60°C

II (1)GD
[Ex ia Ga Da] IIC
Ta = -20°C≤Ta≤+60°C

Project Number 21492
C. Index 11

C Ellaby
Certification Officer

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SCHEDULE

EC TYPE-EXAMINATION CERTIFICATE

Sira 10ATEX2204
Issue 0

13 DESCRIPTION OF EQUIPMENT

An X005 3-Port Galvanic Isolation Amplifier is designed to restrict the transfer of energy, from unspecified safe area equipment to intrinsically safe circuits, by the limitation of voltage and current. The unit comprises a single printed circuit board housed in a plastic enclosure which may be clipped to a DIN rail. The printed circuit board contains isolating transformers, fuses, zener diodes and current limiting resistors together with other electronic components. Connections are made using one of four, three-way, terminal connectors on the top of the unit.

The circuit connected to the safe area terminals V+ & 0 V is designed to operate from a d.c. supply voltage of up to 35 V. Outputs O/P+ and O/P- are designed to drive a nominal 0 to 10 V or 4 to 20 mA load.

Terminal J3:1, J3:3, J4:1 and J4:3	Terminals J1:2, J1:3, J2:2, J2:1 with respect to J1:1
Um = 253 V	Uo = 10.66 V Io = 50.5 mA Po = 113 mW Ci = 0 Li = 0

14 DESCRIPTIVE DOCUMENTS

14.1 Drawings

Refer to Certificate Annexe.

14.2 Associated Sira Reports and Certificate History

Issue	Date	Report no.	Comment
0	21 September 2010	R21492A/00	The release of the prime certificate.

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

None

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.

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Certificate Annexe

Certificate Number: **Sira 10ATEX2204**

Equipment: **An X005 3-Port Galvanic Isolation Amplifier**

Applicant: **Positek Limited**

Issue 0

Drawing	Sheets	Rev.	Date (Sira stamp)	Title
EX05-59	1 of 2	A	16 Sep 10	Galvanic Isolation Barrier – Input Power
EX05-59	2 of 2	A	16 Sep 10	Galvanic Isolation Barrier – Input/Output Power
X005-20	1 to 6	G	16 Sep 10	Galvanic Isolation Barrier – Parts List
TR01-10	1 & 2	C	16 Sep 10	TR01 Specification
TR02-10	1 & 2	C	16 Sep 10	TR02 Specification
X005-13	1 of 1	A	16 Sep 10	Connector Coding
X005-12	1 of 1	B	16 Sep 10	Case Artwork

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1 **EC TYPE-EXAMINATION CERTIFICATE**

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

3 Certificate Number: **Sira 13ATEX2371X** Issue: **0**

4 Equipment: **Series EX07 Position Sensor**

5 Applicant: **Positek Ltd.**

6 Address: L6 Andoversford link
Andoversford Industrial estate
Andoversford Cheltenham
Gloucester GL54 4LB

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 60079-0:2012/A11:2013 EN 60079-11:2012 EN 60079-26:2007

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:

Model E

II 1 GD
Ex ia IIC T4 Ga
Ex ia IIIC T135°C Da
Ta = -40°C to 80°C

Model X

II 1 G
Ex ia IIC T4 Ga
Ta = -40°C to 80°C

Model M

II 1 GD
I M1
Ex ia IIC T4 Ga
Ex ia IIIC T135°C Da
Ex ia I Ma
Ta = -40°C to 80°C

Project Number 31630

C Ellaby
Deputy Certification Manager

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13 DESCRIPTION OF EQUIPMENT

The Series EX07 Position Sensors comprises of a range of Rotary and Linear inductive position sensors. Each sensor incorporates the Positek EX07 Electronics System, which is used to excite the coils.

The electronic components are mounted on a printed circuit board and the sensing coils are either configured on a printed wiring board or wound onto a former.

The apparatus utilises an enclosure into which the electrical components are located. The enclosure construction varies as follows:

- Model series X and E, metal or plastic and metal enclosure of at least ingress protection level IP20 for Groups II & III;
- Model series M, metal enclosure of at least ingress protection level IP54 for Group I.

The apparatus is to be powered via a suitably-certified isolator. The EX07 has the following entity parameters:

Parameter	Value
Ui	11.4 V
Ii	0.2 A
Pi	0.51 W
Ci without integral cable	1.16 uF
Ci with integral cable (Max. length)	1.36 uF (1000 m)
Li without integral cable	50 uH
Li with integral cable (Max. length)	860 uH (1000 m)

14 DESCRIPTIVE DOCUMENTS

14.1 Drawings

Refer to Certificate Annexe.

14.2 Associated Sira Reports and Certificate History

Issue	Date	Report no.	Comment
0	04 April 2014	R31630A/00	The release of the prime certificate.

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

15.1 The apparatus does not meet the 500 V r.m.s dielectric strength test between circuit and frame, in accordance with clause 6.3.13 of IEC 60079-11:2011. This must be taken into consideration on installation.

15.2 When using a Sensor that has an integral cable in a dust application, the free end of the cable shall be appropriately terminated for the zone of use.

15.3 Maximum permitted cable parameters:

- Capacitance ≤200pF/m;
- Inductance ≤0.81µH/m;
- Length ≤1000m.

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15.4 Under certain extreme circumstances, the non-metallic and isolated metal parts incorporated in the enclosure of this equipment may generate an ignition-capable level of electrostatic charge. Therefore the equipment shall not be installed in a location where the external conditions are conducive to the build-up of electrostatic charge on such surfaces. This is particularly important if the equipment is installed in a zone 0 location. In addition, the equipment shall only be cleaned with a damp cloth.

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.

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Certificate Annexe

Certificate Number: **Sira 13ATEX2371X**

Equipment: **Series EX07 Position Sensor**

Applicant: **Positek Ltd**

Issue 0

Drawing	Sheets	Rev.	Date (Sira stamp)	Title
EX02-59B	1 of 1	B	17-Dec-13	Sensor board plus external feed-through capacitors (Circuit diagram)
LB24-10a	1 of 1	A	25-Mar-14	Product label for intrinsically safe sensors Gas/dust/mining (Label drawing)
M000-03a	1 to 8	A	17-Dec-13	Typical construction details for M series sensors (Mining)
EX07-20B	1 to 4	B	07-Mar-14	System Parts List For Intrinsically Safe Products

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IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification Scheme for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.:	IECEx SIR 13.0154X issue No.:0	Certificate history:
Status:	**Current**	
Date of Issue:	**2014-04-16**	Page 1 of 4

Applicant:

Positek Ltd
L6 Andoversford link
Andoversford Industrial estate
Andoversford
Cheltenham
Gloucester GL54 4LB
United Kingdom

Electrical Apparatus: **Series EX07 Position Sensor.**
Optional accessory:

Type of Protection: **Intrinsically Safe**

Marking:

Model E	**Model X**	**Model M**
Ex ia IIC T4 Ga Ex ia IIIC T135°C Da Ta = -40°C to 80°C	Ex ia IIC T4 Ga Ta = -40°C to 80°C	Ex ia IIC T4 Ga Ex ia IIIC T135°C Da Ex ia I Ma Ta = -40°C to 80°C

Approved for issue on behalf of the IECEx Certification Body: C Ellaby

Position: Deputy Certification Manager

Signature:
(for printed version)

Date: 2014-04-16

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting the Official IECEx Website.

Certificate issued by:

SIRA Certification Service
Rake Lane
Eccleston
Chester
CH4 9JN
United Kingdom

sira CERTIFICATION

IECEx Certificate of Conformity

Certificate No.: IECEx SIR 13.0154X

Date of Issue: **2014-04-16** Issue No.: **0**

Manufacturer: **Positek Ltd**
L6 Andoversford link
Andoversford Industrial estate
Andoversford
Cheltenham
Gloucester GL54 4LB
United Kingdom

Additional Manufacturing location (s):

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended.

STANDARDS:
The electrical apparatus and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards:

IEC 60079-0 : 2011 Edition: 6.0	Explosive atmospheres - Part 0: General requirements
IEC 60079-11 : 2011 Edition: 6.0	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
IEC 60079-26 : 2006 Edition: 2	Explosive atmospheres - Part 26: Equipment with equipment protection level (EPL) Ga

*This Certificate **does not** indicate compliance with electrical safety and performance requirements other than those expressly included in the Standards listed above.*

TEST & ASSESSMENT REPORTS:
A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in

Test Report:
GB/SIR/ExTR14.0091/00

Quality Assessment Report:

GB/SIR/QAR10.0029/01

IECEx Certificate of Conformity

Certificate No.: IECEx SIR 13.0154X

Date of Issue: **2014-04-16** Issue No.: **0**

Schedule

EQUIPMENT:
Equipment and systems covered by this certificate are as follows:

The Series EX07 Position Sensors comprises of a range of Rotary and Linear inductive position sensors. Each sensor incorporates the Positek EX07 Electronics System, which is used to excite the coils.
The electronic components are mounted on a printed circuit board and the sensing coils are either configured on a printed wiring board or wound onto a former.
The apparatus utilises an enclosure into which the electrical components are located. The enclosure construction varies as follows:

- Model series X and E, metal or plastic and metal enclosure of at least ingress protection level IP20 for EPL Ga and Da
- Model series M, metal enclosure of at least ingress protection level IP54 for EPL Ma

The apparatus is to be powered via a suitably-certified isolator.
Refer to Equipment (Continued) for Safety Parameters

CONDITIONS OF CERTIFICATION: YES as shown below:

1. The apparatus does not meet the 500V r.m.s dielectric strength test between circuit and frame, in accordance with clause 6.3.13 of IEC 60079-11:2011. This must be taken into consideration on installation.
2. When using a Sensor that has an integral cable in a dust application, the free end of the cable shall be appropriately terminated for the zone of use.
3. Maximum permitted cable parameters:
   - Capacitance ≤200 pF/m.
   - Inductance ≤0.81 µH/m.
   - Length ≤1000 m.
4. Under certain extreme circumstances, the non-metallic and isolated metal parts incorporated in the enclosure of this equipment may generate an ignition-capable level of electrostatic charge. Therefore the equipment shall not be installed in a location where the external conditions are conducive to the build-up of electrostatic charge on such surfaces. This is particularly important if the equipment is installed in a zone 0 location. In addition, the equipment shall only be cleaned with a damp cloth.

IECEx Certificate of Conformity

Certificate No.: IECEx SIR 13.0154X

Date of Issue: **2014-04-16** Issue No.: **0**

EQUIPMENT(continued):

The EX07 has the following entity parameters:

Parameter	
Ui	11.4 V
Ii	0.2 A
Pi	0.51 W
Ci without integral cable	1.16 uF
Ci with integral cable (Max. length)	1.36 uF (1000 m)
Li without integral cable	**50 uH**
Li with integral cable (Max. length)	860 uH (1000 m)