1 **EC TYPE-EXAMINATION CERTIFICATE**

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

3 Certificate Number: **Sira 03ATEX2333X** Issue: **6**

4 Equipment: **Transmitter Type MICROFLEX-CIS***

5 Applicant: **Hycontrol Limited**

6 Address: Larchwood House
Orchard Street
Redditch
Worcestershire B98 7DP
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:

IEC 60079-0:2011 Ed 6 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:

II 1 G
Ex ia IIC T4 Ga ($-40^{o}C \leq T_a \leq +60^{o}C$)
Ex ia IIC T6 Ga ($-40^{o}C \leq T_a \leq +55^{o}C$)

A C Smith
Certification Manager

Project Number 28646

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13 **DESCRIPTION OF EQUIPMENT**

The Transmitter Type MICROFLEX-CIS* comprises a plastic enclosure (with lid) into which is encapsulated a main board p.c.b. assembly and a piezo-electric crystal with an associated resistor. An unencapsulated display board p.c.b. assembly is also fitted, this board contains a liquid crystal display and either pushbutton switches or a connection to a membrane keypad. A polycarbonate, protective, internal cover plate with a window for the display and the pushbutton switches is fitted over the above board and provides protection when the enclosure lid is removed (when used, the membrane keypad is attached to the internal cover plate). Interconnection of the main board and the display board is made via a resistor block p.c.b. assembly, this resistor block being directly soldered to each of these two boards.

External connections are made via two pairs of terminals within the enclosure, one pair for a supply input to the transmitter and a separate pair for a temperature input. Cable entry is via two cable glands mounted in the enclosure wall.

Parameters:

Terminals marked **1+ 2-** (Supply Input)

U_i	=	30 V
I_i	=	120 mA
P_i	=	0.82 W
C_i	=	0
L_i	=	108 µH

Terminals marked **TEMP** (External Temperature Input)

U_i	=	0	U_o	=	30 V
			I_o	=	8.42 mA
			P_o	=	63 mW
			C_o	=	66 nF
			L_o	=	502mH

Variation 1 (dated 16 September 2004) - This variation introduced the following changes:

i. The addition of a list of model code descriptions.

Variation 2 (dated 16 September 2004) - This variation introduced the following changes:

i. The addition of capacitors C84 and C86.
ii. Inductor L1 and capacitor C4 to be moved from the top of the main PCB to the underside of the main PCB.
iii. The minimum width of certain tracks to be increased to 2mm so that an additional wire link is no longer required.
iv. The use of smaller IC packages.
v. The introduction of minor track changes to accommodate the above modifications 1 to 4.

Variation 3 (dated 17 November 2005) - This variation introduced the following changes:

i. The addition of a connection of the transformer core to the 0 V plane.
ii. The correction of the transformer terminal numbering.
iii. The PCB to be changed to remove the isolation from the transformer core connection.

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SCHEDULE

EC TYPE-EXAMINATION CERTIFICATE **Sira 03ATEX2333X**
Issue 6

Variation 4 (dated 30 June 2006) -This variation introduced the following changes:

i. A longer and thicker piece of closed cell insulating foam to be fitted around the inner walls of the lower body part of the enclosure adjacent to the piezo-electric crystal/syntactic foam matching layer, a disc of the closed cell insulating foam is also introduced on top of this foam.
ii. The option to use cork in place of the closed cell insulation foam introduced in modification 1 above.
iii. The introduction of an optional, series resistor located in the lead connecting the main printed circuit board to the piezo-electric crystal.

Variation 5 (dated 15 September 2007) - This variation introduced the following changes:

i. The addition of resistors R106 and R107 on the main board before the connections to the crystal assembly, also of extra circuitry is added in the non-critical area; these changes are within the encapsulated assembly.
ii. The printed circuit board layout to be modified to reflect the circuit changes described above.
iii. The use of an alternative encapsulation material.
iv. A reduction of the front face thickness from 1 mm to 0.9 mm minimum.
v. The upper part of the transmitter and electronic housing, to be alternatively constructed from stainless steel or epoxy painted aluminium alloy enclosure, with earth connections. The lower part, transducer body, remains unchanged and is made from a plastic material.

Model with plastic enclosure & plastic transducer body:	MICROFLEX CIS*
Model with aluminium enclosure & plastic transducer body:	MICROFLEX CIS*A
Model with stainless steel enclosure & plastic transducer body:	MICROFLEX CIS*S

The symbol * can be any character representing information not affecting intrinsic safety, e.g. sensor mounting thread, communication protocol, etc.

vi. The introduction of other minor changes that include the recognition of new model codes and an alternative method of labelling.

Variation 6 - This variation introduced the following changes:

i. Following appropriate re-assessment to demonstrate compliance with the requirements of the EN 60079 series of standards, the documents originally listed in section 9, EN 50014:1997 plus Amendments 1 and 2, EN 50020:2002 and EN 50284:1999, were replaced by those currently listed, the markings in section 12 were updated accordingly, in addition minor design changes were also recognised.
ii. Capacitors ‘C16’ and ‘C21’, which were originally listed as ‘not fitted’, are now listed as ‘optional.
iii. The introduction of an alternative material (Aluminium Alloy) for the internal cover to the potted electronics was endorsed.
iv. Name change of the supplier of the potting compound was recognised. The supplier of the potting compound is now known as Momentive Performance Materials.
v. The introduction of an alternative Display Board.
vi. The introduction of an alternative internal cover plate with membrane keypad which fits over the Display Board and provides protection when the enclosure lid is removed.

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vii. Minor changes to the Main Board circuit and PCB layout, involving changes to the values of components and the removal of non-critical tracks.
viii. Following appropriate re-assessment to demonstrate compliance with the requirements of the latest series of standards, the documents previously listed in section 9, EN 60079-0:2006, EN 60079-11:2007 and EN 60079-26:2004 were replaced by those currently listed.

14 DESCRIPTIVE DOCUMENTS

14.1 Drawings

Refer to Certificate Annexe.

14.2 Associated Sira Reports and Certificate History

Issue	Date	Report number	Comment
0	8 Sept 2003	R52V10505A	The release of prime certificate.
1	16 Sept 2004	R52V12346A	The introduction of Variation 1.
2	16 Sept 2004	R52V12346A	The introduction of Variation 2.
3	17 Nov 2005	R52A14283A	The introduction of Variation 3.
4	30 June 2006	R52A15139A	The introduction of Variation 4.
5	25 Sept 2007	R52A15313A	This Issue covers the following changes: • 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. • The introduction of Variation 5.
6	17 January 2013	R28646A/00	The introduction of Variation 6.

14.3 Certificate number Sira 02ATEX2405X Issue 11

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

15.1 The equipment shall not be directly installed in any process where its enclosure might be charged by the rapid flow of a non-conductive media.

15.2 The enclosure of the equipment shall only be cleaned with a damp cloth.

15.3 Transmitter model MICROFLEX CIS*A has an aluminium alloy enclosure, this presents a risk of ignition due to impact and shall be taken into consideration on installation and use.

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 03ATEX2333X

Equipment: Transmitter Type MICROFLEX-CIS*

Applicant: Hycontrol Limited

Issue 0

Number	Sheet	Rev.	Date	Description
71097/1078	1 of 1	2	22 Jul 03	I.S. Hycontrol Transmitter Label

Issue 1

Certificate number Sira 02ATEX2405X variation 1 last amended 16 September 2004

Issue 2

Certificate number Sira 02ATEX2405X variation 2 issued 16 July 2004

Issue 3

Certificate number Sira 02ATEX2405X variation 3 issued 5 September 2005.

Issue 4

Certificate number Sira 02ATEX2405X variation 4 issued 4 April 2006.

Issue 5

Certificate number Sira 02ATEX2405X variation 5 issued 5 December 2006.

Issue 6

Drawing No.	Sheets	Rev.	Date (Sira stamp)	Title
71097/1078	1 of 1	4	03 Oct 12	I.S. Hycontrol Transmitter Label

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