1 **EC TYPE-EXAMINATION CERTIFICATE**

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

3 Certificate Number: **Sira 04ATEX2199X** Issue: **10**

4 Equipment: **Type B-##-###-# ## Float Switches**

5 Applicant: **CYNERGY3 COMPONENTS LIMITED**

6 Address: 7 Cobham Road
Ferndown Industrial Estate
Wimborne
Dorset BH21 7PE
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 60079-0:2009 EN 60079-11:2007 EN 60079-26:2007 EN 61241-0:2006 IEC 61241-11:2005

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 D
Ex ia IIC T4 Ga (T_a = -50°C to +110°C)
Ex ia IIIC T135°C Da

Project Number 70065095

C Ellaby
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13 **DESCRIPTION OF EQUIPMENT**

The Type B-##-###-# ## Float Switches are designed to be either vertically mounted types or side entry types. They are intended for use in Hazardous Area Zones 0, 1, 2, 20, 21 and 22 and are mounted on a tank, which is then sealed with a suitable gasket that is compatible with the process fluids. Electrical connection to the devices is made via an M20 conduit entry to a terminal block that is fixed inside the enclosure of the Float Switches; the devices are earthed using an M4 screw connection that is also fitted within the enclosure. The Float Switches can incorporate one or more internal, reed switches. The electrical contacts of these reed switches are contained within a hermetically sealed, glass envelope that is filled with an inert gas. Although safety does not rely on encapsulation, the reed switch itself is encapsulated within the instrument and the reed switch looms are shrink sleeved and potted in either silicone rubber or epoxy resin, depending on the application. The Float Switch enclosures are made from either stainless steel or aluminium and the stem is made from stainless steel or brass. The internal, reed switches of vertically mounted Float Switches are operated by a magnet carried in the float(s) that move vertically up and down the stem of the instrument, the reed switches of the side entry types are mechanically operated by a swinging arm. All the Float Switches are available in the following configurations:

- Break on rise / make on fall (SPST)
- Break on fall / make on rise (SPST)
- Change over on rise (SPDT)
- Change over on fall (SPDT)

Certified Float Switches - whilst drawing number DT850 defines all the products made by the manufacturer, only the following part numbers are covered by this certification (note that digits defined with an X are non-specific):

Digit 1	Digits 2 & 3	-	Digit 4	Digit 5	Digit 6	-	-	Digit 7	Digits 8 & 9
B	14	-	1 to 4	1 or 2	X	-		X	X X
B	17	-	1 to 4	1 or 2	X	-		X	X X
B	19	-	1 to 4	1 or 2	X	-		X	X X
B	30	-	1 to 4	1 or 2	X	-		X	X X
B	34	-	1 to 4	1 or 2	X	-		X	X X
B	35	-	1 to 4	1 or 2	X	-		X	X X
B	36	-	1 to 4	1 or 2	X	-		X	X X
B	42	-	1 to 4	1 or 2	X	-		X	X X
B	43	-	1 to 4	1 or 2	X	-		X	X X
B	46	-	1 to 4	1 or 2	X	-		X	X X
B	47	-	1 to 4	1 or 2	X	-		X	X X
B	60	-	1 to 4	1 or 2	X	-		X	X X
B	66	-	1 to 4	1 or 2	X	-		X	X X
B	70	-	1 to 4	1 or 2	X	-		X	X X

Input Parameters - the Type B-##-###-# ## Float Switches may contain up to 4 separate switch elements on different IS circuits. The input parameters for each switch element (one wire of a switch element with respect to the other wire of the same switch element) are:

U_i = 30 V C_i = 0 (there is no specific P_i limit; any value of input power
I_i = 100 mA L_i = 0 that is within U_i and I_i is permitted)

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SCHEDULE

EC TYPE-EXAMINATION CERTIFICATE **Sira 04ATEX2199X**
Issue 10

Variation 1 - This variation introduced the following change:

i. To permit the use of a self-adhesive, label.

Variation 2 - This variation introduced the following changes:

i. A change of the Applicant's name on the certificate:
To: TAV Engineering, a division of Crydom Magnetics Ltd.
ii. The introduction of administrative amendments of drawings that change the revision status but do not affect the technical content.

Variation 3 - This variation introduced the following change:

i. A change of the Applicant's name on the certificate:

From:	To:
TAV Engineering a Division of Crydom Magnetics Ltd.	TAV Engineering a division of cynergy3 components Ltd. The label will show 'TAV Engineering'7

Variation 4 - This variation introduced the following change:

i. The use of a stainless steel label instead of a plastic label.

Variation 5 - This variation introduced the following change:

i. A change of the Applicant's name on the certificate:

From:	To:
TAV Engineering a division of cynergy3 components Ltd.	TAV Engineering Components Limited The label will show 'TAV Eng'

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 (amendments 1 and 2), EN 50020:2002, EN 50284:1999 and EN 50281-1-1:1998, were replaced by those currently listed, in consequence:
   - The markings in section 12 were updated accordingly.
   - A special condition for safe use was amended.
   - An additional special condition for safe use was introduced.
   - A condition of certification was amended.
   - An additional condition of certification was introduced.
ii. A reduction in the insulation thickness of the internal wiring was recognised.
iii. The introduction of an additional Special Condition for Safe Use and an additional Condition of Certification.
iv. A change of the Applicant's address on the certificate:

From:	To:
Units 13 & 14 Airspeed Way Priory Industrial Park Christchurch Dorset BH23 4HD UK	7 Cobham Road Ferndown Industrial Estate Wimborne Dorset BH21 7PE UK

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Variation 7 - This variation introduced the following change:

i. The applicant's name was changed from TAV Engineering Components Limited to that currently shown.

Variation 8 - This variation introduced the following changes:

i. The size of the drill holes on the body casting were increased and a revised machining technique was introduced.
ii. The recognition of minor drawing modifications; these amendments are administrative and do not affect the aspects of the product that are relevant to explosion safety.

Variation 9 - This variation introduced the following change:

i. The use of a smaller, alternative cover for mounting onto smaller cast enclosures was approved.

Variation 10 - This variation introduced the following change:

i. A condition of certification was changed to include alternative terminals.

14 DESCRIPTIVE DOCUMENTS

14.1 Drawings

Refer to Certificate Annexe.

14.2 Associated Sira Reports and Certificate History

Issue	Date	Report No.	Comment
0	2 September 2004	R52A11027A	The release of prime certificate.
1	17 November 2004	V52V12624A	The introduction of Variation 1.
2	17 May 2005	R52V12972A	The introduction of Variation 2.
3	8 June 2006	R52A15008A	The introduction of Variation 3.
4	8 December 2006	R52A15809A	The introduction of Variation 4.
5	10 March 2008	R52A17968A	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	3 February 2010	R21128A/00	The introduction of Variation 6.
7	28 March 2011	R24619A/00	The introduction of Variation 7.
8	10 July 2013	R30997A/00	This Issue covers the following changes: • A typographical error was corrected in the Applicants address. • The introduction of Variation 8.
9	22 August 2014	R70008010B	The introduction of Variation 9.
10	07 April 2016	R70065095A	The introduction of Variation 10.

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SCHEDULE

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

15.1 The Type B-##-###-# ## Float Switches shall be mounted in a manner that ensures that friction sparks cannot be generated by any light metals used in the construction of its enclosure.

15.2 When the Type B-##-###-# ## Float Switches are used in the presence of combustible dust, the selected cable entries (whether gland or conduit) shall be suitably certified and shall be installed so as to maintain the enclosure's ingress protection of IP6X.

15.3 The cable and cable entries that are used with the Type B-##-###-# ## Float Switches shall be capable of operating in an ambient temperature range of -50˚C to +110°C.

15.4 The Float Switches shall not be used with process fluids that exceed 135˚C; in addition, the temperature at the surface of the tank where the enclosure of the Float Switch is mounted shall not exceed 110˚C.

15.5 Where the equipment contains more than one supply, the supplies shall be installed as separate intrinsically safe circuits

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 the **Certified Float Switches** that are identified in the schedule of this certificate shall bear the certification marking that is defined on drawing 2001 sheet 3.

17.4 The products covered by this certificate incorporate previously certified/assessed Klippon terminal blocks, it is therefore the responsibility of the manufacturer to continually monitor the status of the certification associated with these devices, and the manufacturer shall inform Sira of any modifications of the devices that may impinge upon the explosion safety design of their products.

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Certificate Annexe

Certificate Number: **Sira 04ATEX2199X**

Equipment: **Type B-##-###-# ## Float Switches**

Applicant: **CYNERGY3 COMPONENTS LIMITED**

Issues 0 to 5 inclusive: The drawings listed with these Issues were rationalised and have been superseded by those detailed in Issue 6.

Issue 6

Drawing	Sheets	Rev.	Date (Sira stamp)	Title
2001	1 of 7	5	12 Jan 09	General assembly
2001	2 of 7	2	12 Jan 09	General assembly
2001	3 of 7	7	12 Jan 09	Label
2001	4 of 7	2	12 Jan 09	General assembly
2001	5 of 7	2	12 Jan 09	General assembly
2001	6 of 7	2	12 Jan 09	General assembly
2001	7 of 7	2	12 Jan 09	General assembly
DT197/1 to DT197/4	1 of 1	N	12 Jan 09	Cover machining
DT850	1 of 1	H	12 Jan 09	Product numbering scheme
DT1109	1 of 1	G	12 Jan 09	Body machining
DT1294	1 of 1	B	12 Jan 09	Switch block
DT1400 & DT1401	1 of 1	2	12 Jan 09	Casting machining
DT1404 & DT1405	1 of 1	2	12 Jan 09	Head & cover machining

Issue 7

Drawing	Sheets	Rev.	Date (Sira stamp)	Title
2001	3 of 7	8	28 Mar 11	Floatswitch, Labels

Issue 8

Drawing	Sheets	Rev.	Date (Sira stamp)	Title
DT197/1 to DT197/4	1 of 1	AA	24 Jun 13	Cover machining
2001	7 of 7	AA	02 Jul 13	General Assembly

Issue 9

Drawing	Sheets	Rev.	Date (Sira stamp)	Title
DT1533	1 of 1	AA	14 Aug 14	Flameproof machined cover from bar for DT1400

Issue 10 No new drawings were introduced.

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