

# EU-TYPE EXAMINATION CERTIFICATE

Equipment or Protective System Intended for use in Potentially Explosive Atmospheres Directive  
2014/34/EU

1. **EU-Type Examination Certificate Number:** ITS09ATEX26890X **Issue 8**
2. **Product:** PHOCHECK TIGER
3. **Manufacturer:** Ion Science Limited
4. **Address:** The Hive, Butts Lane, Fowlmere  
Royston, SG8 7SL, UK
5. This product and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.
6. Intertek Testing and Certification Limited, Notified Body number 0359 in accordance with Article 17 of Directive 2014/34/EU of the European Parliament and of the Council dated 26 February 2014, certifies that the product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Annex II of the Directive.

In accordance with Article 41 of Directive 2014/34/EU, EC-Type Examination Certificate referring to 94/9/EC that were in existence prior to the date of application of 2014/34/EU (20 April 2016) may be referenced as if they were issued in accordance with Directive 2014/34/EU. New issues of such EC-Type Examination Certificates, and Supplementary Certificates to such certificates, may continue to bear the original certificate number issued prior to 20 April 2016.

The examination and test results are recorded in confidential Intertek Report 103941951LHD-001 Issue 0 dated 27<sup>th</sup> February 2020.

7. Compliance with the Essential Health and Safety Requirements has been assured by compliance with EN IEC 60079-0:2018 and EN 60079-11:2012 except in respect of those requirements referred to at item 14 of the Schedule.
8. If the sign "X" is placed after the certificate number, it indicates that the product is subject to the special conditions of use specified in the Schedule to this certificate.
9. This EU-Type Examination Certificate relates only to the design and construction of the specified product. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.
10. The marking of the product shall include the following:



II 1G Ex ia IIC T4 Ga  
-15°C ≤ Ta ≤ 45°C (with Lithium Ion Battery Pack)  
-15°C ≤ Ta ≤ 40°C (with Alkaline Battery Pack)

<b>Certification Officer:</b>	V K Varma	<b>Date:</b>	19/03/2020

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Intertek Testing & Certification Limited, Cleeve Road, Leatherhead, Surrey, KT22 7SA  
Registered No 3272281 Registered Office: Academy Place, 1-9 Brook Street, Brentwood, Essex, CM14 5NQ.

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### 11. Description of Equipment or Protective System

The Ion Science PhoCheck TIGER is a handheld, battery powered Instrument using Photo-ionization technology for the detection of Volatile Organic Compounds (VOCs) which can be dangerous from both a poisoning and explosive perspective. The TIGER uses a Photo-Ionization Detector (PID) to measure gas concentrations and a patented fence electrode technology to minimize the effects of moisture and contamination, avoiding the need for compensation. The TIGER can be connected directly to a PC via a standard USB cable facilitating data download. An audio output, vibration and LEDs are used to indicate alarm conditions. Orange and Red LEDs indicate High and Low conditions respectively.

The Instrument comprises three printed circuit boards, a pump motor, a vibration motor, a Certified PID Sensor and a battery pack all housed inside a plastic enclosure. There are two battery pack options; namely a rechargeable Lithium Ion battery pack and a non-rechargeable pack using three alkaline cells, type Duracell Procell MN1500 or Industrial by Duracell ID1500 which are user replaceable.

### 12. Report Number

Intertek Report 08036757A1, Dated April 2010,  
Intertek Report 08036757B1, Dated April 2010,  
Intertek Report 10047646E1, Dated September 2010,  
Intertek Report 11052972C1, Dated June 2011,  
Intertek Report 11052972D1, Dated June 2011,  
Intertek Report 11052972B1, Dated September 2011,  
Intertek Report 101706597MAN-001, Dated: February 2015  
Intertek Report 102437242CHE-001, Dated: April 2016  
Intertek Report 102730476LHD-001, Dated December 2017  
Intertek Report 103349103LHD-001, Dated March 2018  
Intertek Report 103445491LHD-001, Dated May 2018  
Intertek Report 103568320LHD-001, Dated March 2019  
Intertek Report 103941951LHD-001, Dated February 2020.

### 13. Special Conditions of Certification

#### (a). Special Conditions of Use

- The PhoCheck Tiger must be functionally checked prior to entering a hazardous area after every occasion when a connection has been made to the USB port. The instrument must complete its start-up routine and display legible readings. If the LCD fails to show an intelligible and uncorrupted display the instrument must not enter a hazardous area.
- Do not make any connection to the charger port or USB port of this instrument in a hazardous area.
- When the Phocheck Tiger has the optional 5m or 10m extension nozzle installed, the classification of the system reduces to Ex ia IIB T4 Ga

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(b). Conditions of Manufacture - Routine Tests

- None

### 14. Essential Health and Safety Requirements (EHSRs)

The relevant Essential Health and Safety Requirements (EHSRs) have been identified and assessed in Intertek Report: 103941951LHD-001 Dated: 23<sup>rd</sup> December 2019.

### 15. Drawings and Documents

Title:	Drawing No.:	Rev. Level:	Date:
PhoCheck Tiger GENERAL ASSEMBLY (Mechanical).	CERT0082	13	25/01/2019
PhoCheck Tiger REAR MOUNT PID ASSEMBLY (MECHANICAL)	CERT0083	16	12/04/2016
Phocheck Tiger Mechanical – Rechargeable Battery Assembly (2 Pages)	CERT0084	9	20/04/2010
PhoCheck Tiger Mechanical – Alkaline Battery Assembly. (2 Pages)	CERT0085	6	31/03/2010
PhoCheck Tiger Mechanical – Charger Assembly	CERT0086	4	23/10/2017
*PhoCheck Tiger Instrument Label Details	CERT0091	19	22/10/2019
PhoCheck Tiger Li-ion Battery Label Details	CERT0092	13	20/10/2017
PhoCheck Tiger Alkaline Battery Label Details	CERT0093	14	20/10/2017
PhoCheck Tiger Alkaline Battery Warning Label Details	CERT0094	8	06/03/18
PhoCheck Tiger Mechanical – Exploded Assembly	CERT0095	2	01/04/2010
PhoCheck Tiger user manual warnings (4 Pages)	CERT0096	2.2	06/11/18
Main PCB Schematic (17 Pages)	CERT0097	0.9	06/09/2010
Main PCB Layout (6 Pages)	CERT0098	0.9	06/09/2010
Safety Bill Of Materials for Main PCB Schematic	CERT0099	1.2	05/12/2018
Sensor PCB Schematic (2 Pages)	CERT0100	0.5	06/09/2010
Sensor PCB Layout (4 Pages)	CERT0101	0.5	06/09/2010
Safety Bill of Materials for Sensor PCB	CERT0102	1.0	30/09/2014
Alkaline Battery PCB Schematic	CERT0103	0.5	02/07/2010
Alkaline Battery PCB Layout (4 Pages)	CERT0104	0.5	25/05/2010
Safety Bill of Materials for Alkaline Battery PCB	CERT0105	0.5	06/09/2010
Li-ion Battery PCB Schematic	CERT0106	0.5	25/05/2010
Li-ion battery PCB Layout (4 Pages)	CERT0107	0.5	25/05/2010
Safety Bill of Materials for Li-Ion Battery PCB	CERT0108	0.5	10/08/2010
Charger PCB Schematic (2 Pages)	CERT0109	0.8	29/09/2011
Charger PCB Layout (4 Pages)	CERT0110	0.8	29/09/2011

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Safety Bill of Materials for Charger PCB	CERT0111	0.8	30/09/2011
Rework of Main PCB Conformal Coating Instructions	CERT0112	0.5	14/06/2011
*Li-ion Battery.	CERT0115	10	22/10/2019
PhoCheck Tiger Sensor Cover Label Details	CERT0123	02	14/06/2011
PhoCheck Tiger Battery Contact Label Details	CERT0124	02	14/06/2011
Tiger Charger Label	CERT0152	05	20/10/2017
Extension Hose – 5 Meter	A-861413	2	25/04/2017
Extension Hose – 10 Meter	A-861414	2	25/04/2017

Note: An \* is included before the title of documents that are new or revised.

### 16. Details of Certificate changes - Variation 1 – 30<sup>th</sup> September 2010

#### To permit the following changes:

- The PCB Layouts of all PCBs have been changed to improve segregation; allowing the product to remain safe under two countable faults.
- Components have been added to permit triple redundancy in critical circuits, allowing the product to remain safe under two countable faults.
- The schematic diagrams for all circuits have been re-drawn for clarity.
- Encapsulant has been added to wire connection point on the Li-Ion battery to improve wire anchorage.
- The marking is updated to reflect the requirements of EN 60079-0:2006. The coding is changed to reflect an upgrade from 'ib' to 'ia'.
- Revised marking: Ex ia IIC T4 Gb.

### 17. Details of Certificate changes - Variation 2 – 25<sup>th</sup> November 2011

#### To permit the following changes:

- Construction in accordance with GB/ITS/ExTR11.0032/00 schedule documents to permit use within a Zone 0 Hazardous Location and marking with EPL Ga.
- Changes to product labels to facilitate inclusion of second language translation for some content as detailed in schedule drawings.
- Modification to the battery charger in accordance with GB/ITS/ExTR11.0053/00 schedule documents to permit marking of charger label with parameters  $U_m = 42.4V_{ac}$  and  $60V_{dc}$ .  $U_o = 6V_{dc}$ .
- Revised marking: Ex ia IIC T4 Ga.

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### **18. Details of Certificate changes - Variation 3 Issue 2 – 24<sup>th</sup> March 2015**

**To permit the following changes:**

- Addition of alternative fuse (FU1) on main PCB.
- Update to latest standards EN 60079-0:2011 and EN 60079-11:2011
- The maximum permitted capacitance of metallic probes is reduced to 3pF in accordance with EN 60079-0: 2011, Section 7.5
- Drawing CERT0082 is modified to clarify the permitted metallurgy and to reflect changes to the materials permitted for the probe accessory.
- Drawing CERT0083 is modified to reflect changes to the materials permitted for the LCD window and to change the drawing title.
- Change to Drawings CERT0099 and CERT0102 to correct package type for transistors Q4-Q6 and Q390-Q392 on the Main PCB and Q100 – Q102 on the Sensor PCB.

### **19. Details of Certificate changes - Variation 4 Issue 3 – 19<sup>th</sup> April 2016**

**To permit the following changes:**

- Additional of alternative casting compound for fuses FU400 & FU401
- Alternative vibration motor specified.
- Unused connectors made optional on Bill of Materials

### **20. Details of Certificate changes - Variation 5 Issue 4 – 22<sup>nd</sup> April 2018**

**To permit the following changes:**

- Change of address for the applicant and manufacturing location from The Way, Fowlmere, Cambridgeshire, SG8 7UJ to The Hive, Butts Lane, Fowlmere, Royston, SG8 7SL.
- Addition of an optional accessory probe which has a long PTFE tube on the front of the Tiger unit. The probe will be less than 3mm in diameter and comes in 5m and 10m lengths. The accessory is marked with IIB Ga and the ATEX certificate number, the user manual defines the change in grouping when the nozzles are in use.

### **21. Details of Certificate changes - Variation 6 Issue 5 – 17<sup>th</sup> March 2018**

**To permit the following changes:**

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- Alternative cells added to be used in the Alkaline battery pack for PhoCheck Tiger.

### 22. Details of Certificate changes - Variation 7 Issue 6 – 17<sup>th</sup> May 2018

To permit the following changes:

- Alternative cell type added to be used in the manufacture of the Lithium Ion battery pack for the PhoCheck Tiger.

### 23. Details of Certificate changes - Variation 8 Issue 7 – 28<sup>th</sup> March 2019

To permit the following changes:

- Update to latest standard from EN 60079-0: 2012+A11:2013 to EN IEC 60079-0:2018
- Lithium battery cover moldings modified by machining out ribs inside.
- Declaration that flexible probe A-861406 is only suitable to use in safe area and not to be used in Hazardous Location. Drawing No. CERT0096 changed to version 2.2 to reflect this change
- Current probe material got replaced another one. Additionally, 2 materials added as alternative probe materials. CERT0082 updated to version 13 to reflect these changes.
- Added alternative MOLEX connector type and drawing no. CERT0099 changed to version 1.2

### 24. Details of Certificate changes - Variation 9 Issue 8 – 27<sup>th</sup> February 2020.

To permit the following changes:

- Alternate cells added to be used in the Lithium Ion battery pack for the PhoCheck Tiger. These are Saft MP174565 Integration ise cells with the same dimensions as the existing Saft MP174565 Integration cell. The new cell has an increased operating window of  $-40^{\circ}\text{C} \leq T_{\text{amb}} \leq +85^{\circ}\text{C}$  but with a decrease in overall capacity (4.0Ah) and nominal voltage (3.65V).
- Marking plate updated by client to include KGS (Korean gas safety) Logo.
- Drawing CERT0091 updated to reflect the KGS logo on the marking.
- Drawing CERT0115 update to reflect the alternative lithium battery.

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