



IECEX Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification System for Explosive Atmospheres

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

Certificate No.: **IECEX ITS 10.0036X**

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Certificate history:

Status: **Current**

Issue No: 9

Issue 8 (2019-04-02)
Issue 7 (2018-06-08)
Issue 6 (2018-04-22)
Issue 5 (2016-06-01)
Issue 4 (2015-03-24)
Issue 3 (2011-11-25)
Issue 1 (2010-09-30)
Issue 0 (2010-05-19)

Date of Issue: 2020-03-19

Applicant: **ION SCIENCE LIMITED.**
The Hive
Butts Lane
Fowlmere
Royston
SG8 7SL.
United Kingdom

Equipment: **PHOCHECK TIGER**

Optional accessory:

Type of Protection: **Intrinsic Safety Ex i.a**

Marking: ION SCIENCE LIMITED.
IECEX ITS 10.0036X
Ex ia IIC T4 Ga
Tamb.= -15°C to +45°C (with Li-Ion Battery pack)
Tamb.= -15°C to +40°C (with Alkaline Battery pack)

Approved for issue on behalf of the IECEx
Certification Body:

V K Varma

Position:

Certification Officer

Signature:
(for printed version)

2020-03-19

Date:

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 www.iecex.com or use of this QR Code.



Certificate issued by:

Intertek Testing & Certification Limited
ITS House, Cleeve Road
Leatherhead
Surrey, KT22 7SA
United Kingdom



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Manufacturer: **ION SCIENCE LIMITED.**
The Hive
Butts Lane
Fowlmere
Royston
SG8 7SL.
United Kingdom

Additional manufacturing locations:

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 equipment 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 60079-0:2017 Explosive atmospheres - Part 0: Equipment - General requirements
Edition:7.0

IEC 60079-11:2011 Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
Edition:6.0

This Certificate **does not** indicate compliance with 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 Reports:

[GB/ITS/ExTR10.0032/00](#)
[GB/ITS/ExTR10.0032/03](#)
[GB/ITS/ExTR10.0032/06](#)

[GB/ITS/ExTR10.0032/01](#)
[GB/ITS/ExTR10.0032/04](#)
[GB/ITS/ExTR10.0032/07](#)

[GB/ITS/ExTR10.0032/02](#)
[GB/ITS/ExTR10.0032/05](#)
[GB/ITS/ExTR10.0032/08](#)

Quality Assessment Report:

[GB/BAS/QAR07.0023/08](#)



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EQUIPMENT:

Equipment and systems covered by this Certificate are as follows:

Handheld, battery powered instrument using photo-ionisation technology for the detection of Volatile Organic Compounds (VOC's) 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 minimise 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 LED's are used to indicate alarm conditions. Orange and Red LED's indicate High and Low conditions respectively.

The Instrument comprises three printed circuit boards, a pump motor, a vibration motor, 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 using a SAFT MP174565 Integration cell and a non-rechargeable pack using three alkaline manganese cells, type Duracell Procell MN1500 which are user replaceable.

Input Parameters: USB port: $U_m = 6V$. Charging connector for Li-Ion Battery Pack: $U_m = 6V$.

Refer to attached schedule of drawings.

SPECIFIC CONDITIONS OF USE: YES as shown below:

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 display 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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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)

Variation 1:

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 IEC 60079-0:2006. The coding is changed to reflect an upgrade from 'ib' to 'ia'.

Revised marking: Ex ia IIC T4 Gb.

Variation 2:

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.

Variation 3:

Addition of alternative fuse (FU1) on main PCB.

Update to latest standards IEC 60079-0:2011 and IEC 60079-11:2011

The maximum permitted capacitance of metallic probes is reduced to 3pF in accordance with IEC 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.

Variation 4:

Additional of alternative casting compound for fuses FU400 & FU401

Alternative vibration motor specified.

Unused connectors made optional on Bill of Materials.

Variation 5:

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. Due to the small nature of the nozzle, only the ATEX Certificate number could be applied, however the same condition applies to the IECEx Certification

Alternative cells added to be used in the Alkaline battery pack for PhoCheck Tiger. These are ID1500, size: AA (LR6) Alkaline-Manganese Dioxide batteries manufactured by Duracell, which have a nominal voltage of 1.5V.

Variation 6:

Update from IEC 60079-0:2011 to IEC 60079-0:2017.

Alternative cell type permitted to be used in the Li-Ion Battery pack manufacturing for PhoCheck Tiger.

Variation 7: GB/ITS/ExTR10.0032/07



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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 by 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

Variation 8: GB/ITS/ExTR10.0032/08

Alternate cells added to be use in the Lithium Ion battery pack for the PhoCheck Tiger.

Marking plate updated by client to include alternative certification information.

Drawing CERT0091 (Phocheck Tiger Instrument Label) Details updated.

Drawing CERT0115 update to reflect the alternative lithium battery.

Annex:

[GBITSExTR10.0032-08 - Annex.pdf](#)



Annex to IECEx Certificate of Conformity

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Annex No. 1		

Technical 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 September 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 September 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 August 2010
Charger PCB Schematic (2 Pages)	CERT0109	0.8	29/09/2011
Charger PCB Layout (4 Pages)	CERT0110	0.8	29/09/2011
Safety Bill of Materials for Charger PCB	CERT0111	0.8	30 September 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.