IECEx TEST REPORT COVER

ExTR Reference Number..... :	NO/PRE/ExTR15.0012/01
ExTR Free Reference Number ..... :	D0001494-01
Compiled by + signature (ExTL) .... :	Hien Van Le Thanh
Reviewed by + signature (ExTL).... :	Arne Hortman
Approved by + signature (ExCB) ... :	Asle Kaastad
Date of issue ..... :	2015-06-16
Ex Testing Laboratory (ExTL) ..... :	Presafe AS
Address ..... :	Gaustadalléen 30, NO - 0373 Oslo, Norway
Ex Certification Body (ExCB) ..... :	Presafe AS
Address ..... :	Gaustadalléen 30, NO - 0373 Oslo, Norway
Applicant's name..... :	Riken Keiki Co., Ltd
Address ..... :	2-7-6 Azusawa, Itabashi, Tokyo 174-8744, Japan
Standards associated with this ExTR package ..... :	IEC 60079-0: 2011 6th Edition IEC 60079-11: 2011 6th Edition IEC 60079-26: 2006 2nd Edition
Clauses considered ..... :	All clauses
Test procedure ..... :	IECEx System
Test Report Form Number ..... :	ExTR Cover_5 (released 2014-01)
Test item description..... :	Portable Gas Monitor
Model/type reference ..... :	GX-6000
Code (e.g. Ex __ II__ T__)..... :	Ex II 1 G Ex ia IIC T4 Ga -20°C ≤ Ta ≤ +50°C
Rating..... :	Battery operated. Battery units BUL-6000 & BUD-6000. Charger modules BC-6000 or SDM-6000: U_m= 250V
All testing fully performed by ExTL staff at ExTL address above:	No. See General product information and below for additional details.

Instructions for Intended Use of ExTR Cover:
An ExTR Cover is the sole top-level document to associate together all other parts of an IECEx Test Report (ExTR) package. An ExTR package is comprised of an ExTR Cover and one or more associated ExTR documents (which may include Ex Test Reports, ExTR Addendums and ExTR of National Differences). All ExTR package documents are compiled and reviewed by the ExTL. The Issuing ExCB indicates final approval of the overall ExTR package on this ExTR Cover.

Manufacturer's name ..... :	Riken Keiki Co., Ltd
Address ..... :	2-7-6 Azusawa, Itabashi, Tokyo 174-8744, Japan
Trademark ..... :	RIKEN KEIKI

Particulars: Test item vs. Test requirements

Classification of installation and use ..... :	portable / hand-held
Ingress protection ..... :	Min. IP 20
Rated ambient temperature range (°C) ..... :	-20°C ≤ Ta ≤ +50°C
Rated service temperature range (°C) for Ex Components ..... :	Not applicable

General remarks:

The test results presented in this ExTR package relate only to the item or product tested.

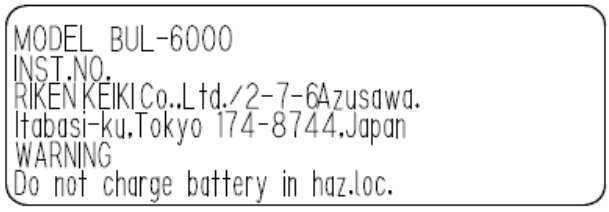
- "(see Attachment #)" refers to additional information appended to the ExTR package.
- "(see appended table)" refers to a table appended to the ExTR package.
- Throughout this ExTR package, a point is used as the decimal separator.
- *Where the term "N/A" appears in any part of an ExTR package, it indicates that the associated issue was considered "Not applicable" to the involved evaluation.*
- *In accordance with IECEx 02, a Receiving ExCB may request a sample of the Ex equipment and copies of the documentation referred to in an ExTR Cover.*
- The majority of test results presented in this ExTR package are extracted from the respective certification which are listed in appended tables for reference.

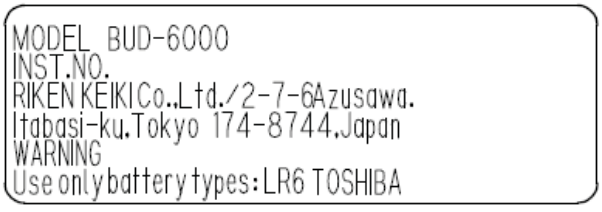
The technical content of this ExTR package shall not be reproduced except in full without the written approval of the Issuing ExCB and ExTL.

The standard IEC 60079-26: 2006 2nd Edition make reference to IEC 60079-0: 2004 4th edition. However since IEC 60079-0: 2004 4th edition is withdrawn, IEC 60079-0: 2011 6th edition is considered for this investigation.

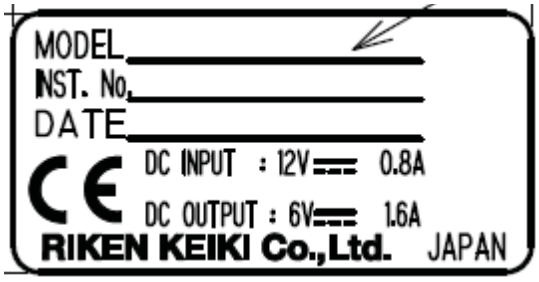
This investigation is valid for both IECEx and ATEX certification which is handled by Presafe AS. The Ex codes for both ATEX and IECEx certification may appear in associated test reports.

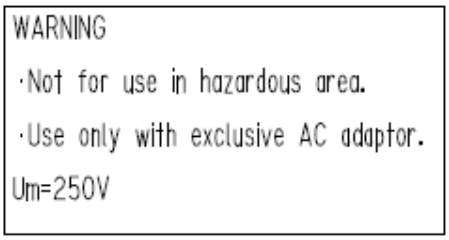
Copy of Marking Plate:





Charger's markings





General product information:

Equipment under test hereby referred to as EUT is a portable gas monitor model GX-6000 manufactured by Riken Keiki Co., Ltd . EUT is used for measuring flammable gas concentration in hazardous location. EUT is build up in major by approximately same parts of similar models (e.g. models GX-2012GT, GX-2009 or GX-8000 which all are manufactured by Riken Keiki) and has same Ex protection concept (intrinsic safe). These similar models are separately Ex certified devices. This investigation is therefore based on former evaluation of the used parts. Test results and safety info are extracted from respective test reports of similar models and are documented in this report package. Additional evaluation are performed for relevant requirements which may not be covered by these certifications.

EUT is an battery-operated handheld portable device and is built up by plastic enclosure with minor metal parts such as assembly screws. The display is located in front/top of EUT. At the bottom/rear side is the battery unit. Two alternative battery units may be used with EUT. BUD-6000 is the alkaline dry battery unit and BUL-6000 is the Li-ion battery unit. Replacement or charging of battery unit can be performed by end-users and is only allowed in non-hazardous areas. More technical details of design is explained in Appendix A.1 of the associated IEC60079-11 test report. See also Photos below.

Several safety instructions are found in attached manual. Specific safe instructions are also marked on labels. See Copy of marking plate in addition.

・Warning: ”Do not charge in hazardous location”

・Warning: ”Do not charge it except by genuine charger

. Warning: “Do not replace battery unit in hazardous location”

・Warning: ”Do not replace dry batteries in hazardous location

・Warning: “Do Not attempt to disassemble or alter the instrument”

・Use only battery unit type BUD-6000 with three series connected Alkaline Manganese AA batteries, type LR6 manufactured by Toshiba, or use chargeable battery unit type BUL-6000.

EUT is consisting of a main part and a battery unit (BUL-6000 or BUD-6000). No tools is needed to remove battery units from the main part. The BUL-6000 battery unit is an encapsulated device. The enclosure used anti-electrostatic material with minor smaller parts of other regular plastic material. Small accessible metal parts are built-in to the anti-electrostatic material and therefore are not considered to be isolated. Inside the main part is electronics including small internal pump RP-12, DC vibration motor and piezoelectric device BZ-9K. These devices are used in similar models which have been separately certified with regards to Ex requirements. The majority of this investigation is based on test reports and associated appendix with inter alia Test report no. NL/KEM/ExTR11.0038 & NL/DEK/ExTR13.0075/00. However report reference to extracted test results will be detailed in associated test reports of this certification.
The charger modules BC-6000 & SDM-6000 are assessed and included in this investigation but not the AC/DC power adapter. Electronic design concept of charger modules are identically. The difference between the two charger modules made no impact to the type of protection. Assessment of module BC-6000 is representative for module SDM-6000 as well.
Included in this certification are following parts which comprise EUT:

- GX-6000: Portable Gas Monitor
- BUL-6000: Rechargeable Li-ion battery unit
- BUD-6000: Alkaline battery unit. Only type Toshiba LR6 AA size is allowed.
- BC-6000: Charge module
- SDM-6000: Charge module
- NC-6264A: Combustible gas sensor
- Toxic gas sensor
- Oxygen sensor
- Smart sensor type DES
- Smart sensor type ESS
- Smart sensor type PIS
- Smart sensor type OSS

Photos. GX-6000 main unit & Battery units

Sensors

Details of change (applicable only when revising an existing ExTR package):

The changes concerned:

- Changed layout of DES sensor PCB in order to change the optical path length. The infrared sensor is then able to measure additional gas type.
- Minor changes of non-safety components on charger module SDM-6000

This report is used in conjunction with all former test reports which are associated to Presafe project no. D0001494 (ExTR Reference No. NO/PRE/ExTR15.0012 including all associated Addendum report).

Due to the similarity with previously tested equipment, only the evaluation in Addendum report was considered necessary for the changes concerned.

In accordance with OD 024, testing not fully performed by ExTL staff at the above ExTL address:
The majority of test results presented in this ExTR package are extracted from the test reports which are associated to separate IECEx certification.

National differences considered as part of this evaluation, if any:

No national differences included.

"Specific Conditions of Use" for Ex Equipment or "Schedule of Limitations" for Ex Components, if any:

No 'Specific condition of use' are claimed.

Routine tests, if any:

No routine tests are required by the applicable requirements

Manufacturer's Documents

Title:	Drawing No.:	Rev. Level:	Date:
Index GX-6000	E3-6991-5470-70-01K	3	2015-06-12

Revision History

Issue No.	Date of revision	Description
0	2015-04-21	Origin report
1	2015-06-16	- Changed layout of DES sensor PCB in order to change the optical path length. The infrared sensor is then able to measure additional gas type. - Minor changes of non-safety components on charger module SDM-6000
Supplementary information:		

IECEx TEST REPORT ADDENDUM

ExTR Reference Number ..... :	NO/PRE/ExTR15.0012/01
ExTR Free Reference Number ..... :	D0001494-01
Compiled by + signature (ExTL) .... :	Hien Van Le Thanh
Reviewed by + signature (ExTL) ... :	Arne Hortman
Date of issue ..... :	2015-06-16
Ex Testing Laboratory (ExTL) ..... :	Presafe AS
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Standards ..... :	IEC 60079-0: 2011 6th Edition IEC 60079-11: 2011 6th Edition IEC 60079-26: 2006 2nd Edition
Test procedure ..... :	IECEx System
Test Report Form Number ..... :	ExTR Addendum_2 (released 2010-08)

Instructions for Intended Use of ExTR Addendum:
An ExTR Addendum is to supplement a previously issued ExTR package. Only those clauses applicable to the supplemental issue being addressed are to be tabulated and remarked upon as part of this document. An ExTR of National Differences may also supplement this document. An ExTR Addendum is to be compiled and reviewed by the ExTL. The Issuing ExCB indicates final approval of the ExTR Addendum as part of the overall ExTR package on the associated ExTR Cover.

Possible test case verdicts:

- test case does not apply to the test item ..... :	**N/A**	Not applicable
- test item does meet the requirement ..... :	**P**	Pass

General remarks:
The test results presented in this ExTR Addendum relate only to the item or product tested, and are only valid when considered together with the related Ex Test Report that was previously issued, along with any previously issued ExTR Addendums for the same item or product.

Only clauses and manufacturer's documents impacted by this document are detailed.

- "See Attachment #" refers to additional information appended to this document.
- "See appended table" refers to a table appended to this document.
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The technical content of this ExTR Addendum shall not be reproduced except in full without the written approval of the Issuing ExCB and ExTL.

Measurement Section, including Additional Narrative Remarks (as deemed applicable)

APPENDIX A: Description of product

A.1 General Technical description

The changes concerned:

- Changed layout of DES sensor PCB in order to change the optical path length. The infrared sensor is then able to measure additional gas type.
- Minor changes of non-safety components on charger module SDM-6000

Due to the similarity with previously tested equipment, only the evaluation in Addendum report was considered necessary for the changes concerned.

A.3 Thermal ignition considerations.

Non-safety component C4 on charger module SDM-6000 is changed from 0.1µF to 0.22µF. The charger module is intended to be used in non-hazardous zone. Other minor non-safety changes are documented. The changes make no impact on the type of protection. The changes are reviewed and recognized.

B.6.3 Evaluation & test of sensors:

Layout of DES sensor PCB is changed. No safety components are used on DES sensor PCB, thereof no safety distances/connections are required. The layout was checked and is considered to make no contribution to temperature rise of equipment. The change with regards to thermal aspects is negligible. The change is reviewed and recognized.