IECEx TEST REPORT COVER

ExTR Reference Number..... :	NO/DNV/ExTR21.0088/00
ExTR Free Reference Number ..... :	PRJN-313142-2021-PA-NOR
Compiled by + signature (ExTL) .... :	Gunnar Nielsen
Reviewed by + signature (ExTL).... :	Bjørn Spongsveen
Endorsed by + signature (ExCB) ... :	Asle Kaastad
Date of issue ..... :	2022-07-04
Ex Testing Laboratory (ExTL) ..... :	DNV
Address ..... :	DNV Product Assurance AS Veritasveien 1, 1363 Høvik, Norway
Ex Certification Body (ExCB) ..... :	DNV
Address ..... :	DNV Product Assurance AS Veritasveien 1, 1363 Høvik, Norway
Applicant's name..... :	RIKEN KEIKI Co., Ltd.
Address ..... :	2-7-6, Azusawa, Itabashi-Ku, Tokyo, 174-8744, Japan
Standards associated with this ExTR package ..... :	IEC 60079-0:2017 ed. 7 IEC 60079-1:2014 ed. 7 IEC 60079-11:2011 ed. 6
Clauses considered ..... :	All clauses considered
Test Report Form Number ..... :	ExTR Cover_9 (released 2021-09)
Related Amendments, Corrigenda or ISHs ..... :	IEC 60079-28 ISH1:2019
Test item description..... :	Portable gas detector
Model/type reference ..... :	GX-Force Three different gas sensors are used: Model ESR-A1DP: measures CO/H_2S (electrochemical principle) Model ESR-X13P: measures O_2 (electrochemical principle) Model NCR-6309: measures flammables (catalytic)
Code (e.g. Ex __ II__ T__)..... :	Ex da ia IIC T4 Ga (Including flammable sensor.) Ex ia IIC T4 Ga (Not including flammable sensor.)
Rating..... :	Battery powered, single secondary cell Panasonic type NCR18650GA. Nominal voltage: 3,6V Maximum open circuit voltage: 4,2V The charging terminal is USB TYPE C, and only a use of a charger exclusively specified for it, IEC60950-certified SELV power supply, or IEC62368-1-certified ES1 power supply is approved for charging. Charging method is CCCV. (Charging only in non-hazardous area.) Charging terminal, Um: 6V

ExTR Package Contents
Assembled ExTR documents and Additional reference material:
IECEx Test Report Cover
IECEx Test Report: IEC 60079-0, Edition 7
IECEx Test Report: IEC 60079-1, Edition 7
IECEx Test Report: IEC 60079-11, Edition 6

Manufacturer's name .....:	RIKEN KEIKI Co., Ltd.
Address .....:	2-7-6, Azusawa, Itabashi-Ku, Tokyo, 174-8744, Japan
Trademark .....:	RIKEN KEIKI Co., Ltd.
Certificate No. (optional) .....:	IECEx DNV 22.0029X
QAR Reference No. (optional) .....:	NO/PRE/QAR19.0018/03

Particulars: Test item vs. Test requirements

Classification of installation and use ..... : Hand-held

Ingress protection .....: IP20

Rated ambient temperature range (°C).....: T_{amb} : -20°C to +60°C

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

Use of uncertainty of measurement for decisions on conformity (Decision rule):

No decision rule is specified by the standards associated with this ExTR package, when comparing the measurement result with the applicable limit according to the specification in these standards. The decisions on conformity are made without applying the measurement uncertainty as described in IECEx OD 012 (i.e. "simple acceptance" decision rule, previously known as "accuracy method").

General product information:

GX-Force is a portable suction type gas detector which can measure 4 kinds of gases. For gas sensors, electrochemical type and catalytic type are used. For the battery, one cell of 18650 type lithium ion secondary battery is used, which must be charged in a non-hazardous location. Users will never have to replace the battery.

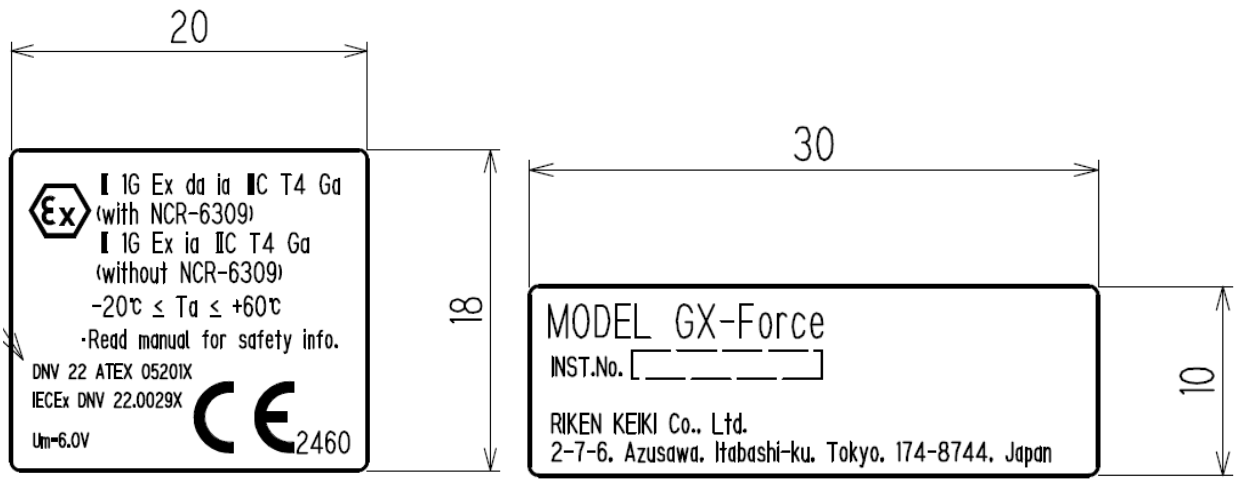
This unit contains 2 buttons, LCD display screen, and LEDs for alarm on both sides and top. Internally, one each pump, buzzer, and vibration motor are mounted. When the power is supplied, the pump will be activated for suction, and the unit starts gas detection. Gas concentration is always displayed on the LCD screen. When a gas is detected, the indicator value on the LCD screen goes up, and when it reaches to the alarm level, LED buzzer, vibration motor will be activated and notify the user that the gas was detected.

The sensors to be mounted are electrochemical type and catalytic type. The electrochemical type sensor detects CO (carbon monoxide), H_2S (hydrogen sulfide), and O2 (oxygen). The catalytic type sensor

detects flammable gases. It uses catalyst, and therefore needs to apply with “da”.

Charging shall be done in a non-hazardous location. The charging terminal is USB TYPE C, and only a use of a charger exclusively specified for it, IEC60950-certified SELV power supply, or IEC62368-1-certified ES1 power supply is approved for charging. Charging method is CCCV, and a control is performed by a dedicated IC. Rechargeable temperature range is between +10°C and +40°C.

Copy of Marking Plate:



Details regarding ‘trade agent’ / ‘local assembler’ application in accordance with OD 203:

N / A

Testing not fully performed by ExTL staff at the above ExTL address:

- Pump, Riken Keiki RP-12, is already certified in IECEx PRE 17.0070/Presafe 17ATEX11584.
- Battery, Panasonic NCR18650GA, is already tested in NO/PRE/ExTR20.0043.
- Vibration motor, LEXIN LE4A3GS1G4, is already certified in IECEx DEK 17.0050X/DEKRA 17ATEX0103X.

Enclosure materials:

- PC L-1225Z100M: is already certified in IECEx DEK 17.0050X/ DEKRA 17 ATEX0103X.
- TPE LSB9959R: is already certified in IECEx DEK 11.0045/DEKRA 11 ATEX0123.
- PET PE84-0.125t: is already certified in IECEx PRE 17.0020/ Presafe 17 ATEX9760.

National differences considered as part of this evaluation:

N / A

“Specific Conditions of Use” / “Schedule of Limitations”:

Charging terminal, Um: 6,0.

Routine tests:

N / A

Date(s) of performance for all testing:

IEC 60079-0:

Test no.	Clause	Description	Date
1	26.14	Measurement of capacitance	2022/01/25
2	26.4.3	Drop test	2022/01/26
3	26.4.5	IP20	2022/01/26
4	26.5.1	Temperature measurement ref. report NL/DEK/ExTR17.0047/00-02	N / A
5	26.8 26.9	Thermal endurance	2022/01/07 to 2022/02/08

IEC 60079-1

Test no.	Clause	Description	Date
1	5	Flameproof joints	2022/03/20
2	15.2.3	Overpressure test	2022/03/16
3	15.3	Non-transmission of an Internal Ignition Test	2022/04/29 to 2022/05/17

IEC 60079-11

Test no.	Clause	Description	Date
1	6.3.4 & 6.3.8	Separation distances (creepage and clearance)	2022/02/03 & 2022/02/28
2	7.7 & 10.7	Piezo-electric device (buzzer)	2022/02/03
3	8.8.b.2	Measurement of infallible tracks	2022/06/21
4	8.8.b.3	Measurement of infallible vias	2022/06/21
5	10.5.2, 10.5.3.a & 10.5.3.b	Battery testing (IECEx TR NO/PRE/ExTR20.0043/00)	N / A
6	10.2	Temperature test of 0603 component	2022/03/09
7	10.2	Temperature test of L4 (part of IC16 / BLE module)	2022/05/19

Technical Documents			
Title:	Drawing No.:	Rev. Level:	Date:
* INDEX GX-Force	E4-6991-6235-70-01K	8	2022.06.16

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

		DRAWING NAME	DRAWING No.	REV	DATE
	1	BLOCK DIAGRAM GX-Force	E4-6991-6236-40-01K	0	2021.10.6
	2	DIAGRAM FOR I.S. KEEP GX-Force	E3-6991-6230-10-01K	2	2022.6.3
	3	OUTER STRUCTURE GX-Force	M2-4777-31-01K	3	2022.4.15
	4	DETAIL DRAWING 1 GX-Force	M3-4777-31-01K	2	2022.4.15
	5	DETAIL DRAWING 2 GX-Force	M3-4777-31-02K	1	2022.4.15
	6	SCHEMATIC MAIN PCB GX-Force	E3-6991-6237-10-01K	1	2022.1.14
	7	SCHEMATIC MAIN PCB GX-Force	E3-6991-6237-10-02K	0	2021.10.6
	8	SCHEMATIC MAIN PCB GX-Force	E3-6991-6237-10-03K	1	2022.1.14
	9	SCHEMATIC MAIN PCB GX-Force	E3-6991-6237-10-04K	1	2022.1.14
	10	PARTS LIST OF MAIN PCB GX-Force	PLT-6991-6237-10 (1/4)	2	2022.6.3
	11	PARTS LIST OF MAIN PCB GX-Force	PLT-6991-6237-10 (2/4)	0	2021.11.18
	12	PARTS LIST OF MAIN PCB GX-Force	PLT-6991-6237-10 (3/4)	1	2022.1.14
	13	PARTS LIST OF MAIN PCB GX-Force	PLT-6991-6237-10 (4/4)	1	2022.1.14
	14	MAIN PCB GX-Force	E3-6991-6237-10-01A	1	2022.1.17
	15	MAIN PCB GX-Force	E3-6991-6237-10-02A	1	2022.1.17
	16	BP-Force	M3-4777-31-03K	0	2021.11.26
	17	PROTECT PCB BP-Force	E3-6991-6238-90-01K	1	2022.1.24
	18	PUMP RP-12	M4-4181-61-03K	1	2022.2.3
	19	3EC SENSOR TYPE-ESR	M4-4482-02-01K	2	2018.3.29
	20	4EC SENSOR TYPE-ESR	M4-4488-19-01K	2	2018.3.29
*	21	COMBUSTIBLE GAS SENSOR NCR-6309	M3-4463-10-02K	7	2022.6.16
	22	LABEL GX-Force	M4-4777-31-01K	2	2022.3.24
	23	Safety information	-	3	2022.3.24

注記 NOTES 21.		改版担当者 REV. BY	改版日 REVISED	名称 NAME
改版回数 REV. 8	総頁数 PAGES 1	古舘優作	2022.6.16	INDEX GX-Force
承認 APPROVED	検討 CHECKED	製図 DRAWN	作成日 DATE	図番 DWG. NO.
北村正英	小野圭	古舘優作	2021.10.6	E4－6991－6235－70－01K

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