



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 FMG 22.0011X**

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Certificate history:

Status: **Current**

Issue No: 6

Issue 5 (2026-02-17)

Issue 4 (2024-12-13)

Issue 3 (2024-06-19)

Issue 2 (2024-01-22)

Issue 1 (2023-07-18)

Issue 0 (2022-11-11)

Date of Issue: 2026-04-13

Applicant: **RIKEN KEIKI Co., Ltd.**
2-7-6, Azusawa, Itabashi-ku,
Tokyo, 174-8744,
Japan

Equipment: **GD-3 and SD-3 Series Gas Detectors. See Annex for model codes**

Optional accessory: See Annex

Type of Protection: **Performance testing for flammable gas detectors; Performance testing for toxic gas detectors, Type SM**

Marking: See Annex

Approved for issue on behalf of the IECEx
Certification Body:

J. E. Marquedant

Position:

VP, Manager - Electrical Systems

Signature:
(for printed version)

Date:
(for printed version)

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One Technology Way
Norwood MA 02062
United States of America

FM Approvals



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Manufacturer: **RIKEN KEIKI Co., Ltd.**
2-7-6, Azusawa, Itabashi-ku,
Tokyo, 174-8744,
Japan

Manufacturing
locations: **RIKEN KEIKI Co., Ltd.**
2-3, Minamisakae-cho,
Kasukabe-shi,
Saitama, 344-0057,
Japan

RIKEN KEIKI NARA MFG. Co., Ltd.
49-1, Abe, Sakurai-shi,
Nara, 633-0054,
Japan

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 60079-29-1:2020 Explosive atmospheres – Part 29-1: Gas detectors – Performance requirements of detectors for flammable gases
Edition:2.1

IEC 62990-1:2019 Workplace atmospheres - Part 1: Gas detectors - Performance requirements of detectors for toxic gases
Edition:1.0

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:

US/FMG/ExTR22.0009/00
US/FMG/ExTR22.0009/03
US/FMG/ExTR22.0009/06

US/FMG/ExTR22.0009/01
US/FMG/ExTR22.0009/04

US/FMG/ExTR22.0009/02
US/FMG/ExTR22.0009/05

Quality Assessment Reports:

NL/DEK/QAR23.0010/02

NL/DEK/QAR23.0011/01



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EQUIPMENT:

Equipment and systems covered by this Certificate are as follows:

See Annex

SPECIFIC CONDITIONS OF USE: YES as shown below:

The GD-3 Series remote gas detectors are only for use with the SD-3SC transmitter.



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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)

Flammable sensors IRF-1303, IRF-1320, IRF-1334, IRF-1383, IRF-1388, and NCF-6318 (C3H8 specification) are added for performance. The firmware is updated from revision 2.3 to 3.0. There are no hardware changes to the detector. The additional sensors are identical in hardware to previously certified sensors.



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Additional information:

Performance Testing certificate

Annex:

[IECEx FMG 22.0011X 06 Annex_1.pdf](#)

Annex to: IECEx FMG 22.0011X Issue 6

Applicant: RIKEN KEIKI Co., Ltd.

Apparatus: GD-3 and SD-3 Series Gas Detectors

Marking:

60079-29-1
EN/IEC 62990-1 SM

Description of Equipment:

The SD-3 and GD-3 Series Gas Detectors are stand-alone transmitter and sensors designed for the detection of gas-in-air atmospheres. The SD-3 Series are the integral versions of the transmitter and sensor combination, with model number SD-3SC being the standalone transmitter. The GD-3 Series are the remote detectors with sensors. See IECEx Certificate DEK 24.0015X for certifications pertaining to explosive atmospheres.

Model Code Options:

SD-3ab Series Gas Detectors

a = D (Suction Type) or blank (Diffusion Type)

b = RI (Infra-red sensor), NC (Ceramic sensor), EC (Electrochemical sensor with metal and Teflon flame arrester), ECS (Electrochemical sensor with sintered metal flame arrester), or SC (Transmitter only)

GD-3ab Series Remote Gas Detectors

a = blank (Diffusion Type)

b = RI (Infra-red sensor), NC (ceramic sensor), EC (Electrochemical sensor with metal and Teflon flame arrester), or ECS (Electrochemical sensor with sintered metal flame arrester)

a-b Gas Sensors

a = Sensor Type: IRF (Infra-red sensor), NCF (Ceramic sensor), or ESF (Electrochemical sensor)

b = Model Code: See Sensor Table

Sensor Table:

Model Number	Primary Gas	Secondary Gas	Range
IRF-1301	Methane (CH ₄)	Ethylene (C ₂ H ₄)	0-100 %LFL
		Butadiene (C ₄ H ₆)	
IRF-1303	Isobutane (i-C ₄ H ₁₀)	-	0-100 %LFL
IRF-1315	Propane (C ₃ H ₈)	Isobutane (i-C ₄ H ₁₀)	0-100 %vol (H-HH alarm type)
		Isobutylene (i-C ₄ H ₈)	
IRF-1317	Propane (C ₃ H ₈)	Isobutane (i-C ₄ H ₁₀)	0-100 %LFL
		Isobutylene (i-C ₄ H ₈)	
IRF-1320	Isobutane (i-C ₄ H ₁₀)	-	0-100 %vol (H-HH alarm type)
IRF-1334	Methane (CH ₄)	-	0-100 %vol (H-HH alarm type)
IRF-1378	Propane (C ₃ H ₈)	Isobutane (i-C ₄ H ₁₀)	0-100 %vol (L-LL alarm type)
		Isobutylene (i-C ₄ H ₈)	

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Applicant: RIKEN KEIKI Co., Ltd.

Apparatus: GD-3 and SD-3 Series Gas Detectors

Model Number	Primary Gas	Secondary Gas	Range
IRF-1383	Methane (CH ₄)	-	0-100 %vol (L-LL alarm type)
IRF-1388	Isobutane (i-C ₄ H ₁₀)	-	0-100 %vol (L-LL alarm type)
NCF-6318	Methane (CH ₄)	Ethylene (C ₂ H ₄)	0-100 %LFL
		Isobutane (i-C ₄ H ₁₀)	
		Hydrogen (H ₂)	
NCF-6318	Propane (C ₃ H ₈)	-	0-100 %LFL
NCF-6320	Hydrogen (H ₂)	-	0-100 %LFL
ESF-A24R	Hydrogen Sulfide (H ₂ S)	-	0-100 ppm
ESF-A24R3	Hydrogen Sulfide (H ₂ S)	-	0-100 ppm

Specifications - The manufacturer's specifications are as follows:

Sensor Type:	See Sensor Table
Gases:	See Sensor Table
Range:	See Sensor Table
Accuracy:	IRF and NCF sensors: ±5% F.S. ESF sensors: ±10% of reading
Response Time:	IRF and NCF sensors: t(90) ≤ 60 sec ESF sensors: t(90) ≤ 60 sec
Operating Temperature:	For Performance: -40°C to +70°C See IECEx Certificate DEK 24.0015X for additional temperature ranges and temperature classes related to Explosive Atmospheres
Storage Temperature:	IRF and NCF sensors: -20°C to +60°C ESF sensors: -40°C to +60°C
Relative Humidity:	IRF and NCF sensors: 0 to 95% RH ESF sensors: 5% to 95% RH
Supply Parameters:	18-30Vdc, 3.8W (RI), 4.5W (NC), 2.8W (EC, ECS), 5W (SD-3SC with GD-3RI, -NC, -EC, or -ECS)
Measurement Signal:	Display, 4-20mA, HART, Relay, RS-485
Alarms:	LED, 4-20mA, HART, Relay, RS-485
Ingress Protection: (Verified for performance)	ESF-A24R sensor: IP44 ESF-A24R3 sensor: IP66, IP67, with or without splash guard IRF sensors: IP44 NCF sensors: IP67, with or without splash guard
Firmware:	3.0

Annex to: IECEx FMG 22.0011X Issue 6

Applicant: RIKEN KEIKI Co., Ltd.

Apparatus: GD-3 and SD-3 Series Gas Detectors

Accessories - The following accessories are included in the Approval:

4283 4008 50	Sensor Guard
4283 9011 00	Calibration Adapter (IRF sensor)
4283 9012 70	Calibration Adapter (NCF sensor)
4283 9013 40	Calibration Adapter (ESF sensor)
4283 9027 20	Suction Cap (ESF sensor)
4283 9028 00	Suction Cap (NCF sensor)
4283 9029 70	Suction Cap (IRF sensor)
4283 9077 80	Splash Guard (NCF sensor)
4283 9078 50	Splash Guard (ESF sensor)

Specific Conditions of Use:

1. The GD-3 Series remote gas detectors are only for use with the SD-3SC transmitter.
2. Refer to manual for ambient temperature.

Full Certificate change history

Issue 0

Issue 1 – Added EC and ECS models, as well as gas sensor model codes and table listing all approved gases and ranges.

Issue 2 – Updated the humidity range for the ESF sensors.

Issue 3 – Additional gases added to performance certification. Firmware update. Added IRF-1378 100% vol Propane sensor. Updated format of certificate to specify primary gas and secondary gases of each sensor.

Issue 4 – Added H2 Sensor NCF-6320 to Sensor Table.

Issue 5 – Added IEC 62990-1 performance certification of ESF sensors A24R and A24R3 for Hydrogen Sulfide.

Issue 6 – Added flammable sensors IRF-1303, IRF-1320, IRF-1334, IRF-1383, IRF-1388, and NCF-6318 (C₃H₈ specification). The firmware is updated from revision 2.3 to 3.0.