

CERTIFICATE OF CONFORMITY

1. HAZARDOUS (CLASSIFIED) LOCATION ELECTRICAL EQUIPMENT PER US REQUIREMENTS

2. Certificate No: FM18US0151X
3. Equipment:
(Type Reference and Name) FLS-02EC and FLS-02EC-H2
Photoelectric Smoke Detectors
4. Name of Listing Company: Fenwal Controls of Japan Ltd
5. Address of Listing Company: 232 Tobuki-Cho, Hachioji-Shi Tokyo 192-0001, Japan
6. The examination and test results are recorded in confidential report number:

3057977 dated 3rd June 2020

7. FM Approvals LLC, certifies that the equipment described has been found to comply with the following Approval standards and other documents:

FM 3230:2023, FM 3600:2022, FM 3615:2022, ANSI/ISA 60079-0:2005, ANSI/ISA 60079-0:2013, EN 60079-1:2014

8. If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to specific conditions of use specified in the schedule to this certificate.
9. This certificate relates to the design, examination and testing of the products specified herein. The FM Approvals surveillance audit program has further determined that the manufacturing processes and quality control procedures in place are satisfactory to manufacture the product as examined, tested and Approved.

10. Equipment Ratings:

FLS-02EC

Explosionproof for Class I, Division 1, Groups C and D T6; Flameproof for Class I, Zone 1, AEx db IIB T6 Gb hazardous (classified) locations, with an ambient temperature rating of 0°C to +50°C.

FLS-02EC-H2

Explosionproof for Class I, Division 1, Groups B, C and D T6; Flameproof for Class I, Zone 1, AEx db IIB+H2 T6 Gb hazardous (classified) with an ambient temperature rating of 0°C to +50°C.

Certificate issued by:



J.E. Marquedant
VP, Manager - Electrical Systems

26 November 2024

Date

To verify the availability of the Approved product, please refer to www.approvalguide.com

THIS CERTIFICATE MAY ONLY BE REPRODUCED IN ITS ENTIRETY AND WITHOUT CHANGE

FM Approvals LLC. One Technology Way, Norwood, MA 02062 USA
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11. The marking of the equipment shall include:

FLS-02EC

Class I, Division 1, Groups C, D T6 Ta = 0°C to +50°C

Class I, Zone 1, AEx db IIB T6 Gb Ta = 0°C to +50°C

FLS-02EC-H2

Class I, Division 1, Groups B, C, D T6 Ta = 0°C to +50°C

Class I, Zone 1, AEx db IIB+H2 T6 Gb Ta = 0°C to +50°C

12. Description of Equipment:

General - FLS-02EC and FLS-02EC-H2 detect smoke using the scattered light, detecting the scattering of the light reflected by the smoke. There are light emitter (Infrared LED) and the detector (photo-diode) inside, the former emits the light through the lens, and the latter detects the light scattered by smoke to detect the smoke in the hazardous area. This detector outputs include a localized LED, and relays. The installation locations could be battery rooms, combustible engine storage facilities, chemical plants, etc. FLS-02EC is suitable for Group IIB, while FLS-02EC-H2 is suitable for Group IIB+H2.

Construction - The construction consists of a single flameproof box, composed of a base and cover, with three M20 or ½"NPT entries. The base and the cover are constructed of ADC12 Aluminium Alloy. The approximate weight of the flame detectors is 3 kg. The construction includes internal and external ground, along with a cable tie insertion slot on the outside.

Ratings - FLS-02EC and FLS-02EC-H2 are rated for 24VDC ±10%, 10 mA (standby) and 20 mA (alarm), with an ambient temperature range of 0°C to +50°C.

FLS-02EC-a

a = Entries m or n

FLS-02EC-H2-a

a = Entries m or n

13. Specific Conditions of Use:

1. The FLS-02EC and FLS-02EC-H2 include flameproof joints, consult Fenwal Controls of Japan, Ltd. if repair of the flameproof joints is necessary.

2. Consult with Fenwal Controls of Japan, Ltd. for genuine replacement cover fasteners: M6X20 hexagon bolts of A2-70 strength class SUS304 stainless steel or better are acceptable alternatives.

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14. Test and Assessment Procedure and Conditions:

This Certificate has been issued in accordance with FM Approvals US Certification Requirements.

15. Schedule Drawings

A copy of the technical documentation has been kept by FM Approvals.

16. Certificate History

Details of the supplements to this certificate are described below:

Date	Description
3 June 2020	Original Issue.
26 November 2024	<u>Supplement 1:</u> Report Reference: RR242936 dated 26 November 2024. Description of the Change(s): combine all 3057977 associated product listings to this certificate

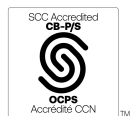
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ANNEX

FLS-02EC-a

Description of Equipment:

Smoke detector. FLS-02EC-a

a = Entries m or n

Specifics Conditions of Use

1. The FLS-02EC includes flameproof joints, consult Fenwal Controls of Japan, Ltd. if repair of the flameproof joints is necessary.
2. Consult with Fenwal Controls of Japan, Ltd. for genuine replacement cover fasteners: M6X20 hexagon bolts of A2-70 strength class SUS304 stainless steel or better are acceptable alternatives.

FLS-02EC-H2-a

Description of Equipment:

Smoke detector. FLS-02EC-H2-a

a = Entries m or n

Specifics Conditions of Use

1. The FLS-02EC-H2 includes flameproof joints, consult Fenwal Controls of Japan, Ltd. if repair of the flameproof joints is necessary.
2. Consult with Fenwal Controls of Japan, Ltd. for genuine replacement cover fasteners: M6X20 hexagon bolts of A2-70 strength class SUS304 stainless steel or better are acceptable alternatives.

FLS-02EC-H2-M (or N) Smoke Detector

Description of Equipment:

FLS-02EC-H2-M (or N) Smoke Detector	
Description	Photoelectric, spot-type, for use with Approved control units providing separate circuits for power and alarm initiation (Four-wire) Intended for use in Hydrogen, H ₂ , atmospheres
Outputs	Red Status LED; Output relays (Alarm & Trouble)
Operating voltage range	Nominal 24 V dc
Operating temperature range	0° to 50° C (32 to 122 ° F)

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Power consumption	Standby: 5 mA Alarm: 10 mA
Conduit entries	-M, Metric M20 threads -N, 1/2 inch NPT threads
Enclosure Hazardous Locations Suitability	Class I, Division 1, Groups B, C, D T6 Ta = 0°C to +50°C Class I, Zone 1, AEx db IIB+H2 T6 Gb Ta = 0°C to +50°C
Specific Conditions of Use (relevant to HazLoc)	<u>Specifics Conditions of Use</u> 1. The FLS-02EC-H2 includes flameproof joints, consult Fenwal Controls of Japan, Ltd. if repair of the flameproof joints is necessary. 2. Consult with Fenwal Controls of Japan, Ltd. for genuine replacement cover fasteners: M6X20 hexagon bolts of A2-70 strength class SUS304 stainless steel or better are acceptable alternatives.

FLS-02EC-M (or N) Smoke Detector

Description of Equipment:

FLS-02EC-M (or N) Smoke Detector	
Description	Photoelectric, spot-type, for use with Approved control units providing separate circuits for power and alarm initiation (Four-wire)
Outputs	Red Status LED; Output relays (Alarm & Trouble)
Operating voltage range	Nominal 24 V dc
Operating temperature range	0° to 50° C (32 to 122 ° F)
Power consumption	Standby: 5 mA Alarm: 10 mA
Conduit entries	-M, Metric M20 threads -N, 1/2 inch NPT threads
Enclosure Hazardous Locations Suitability	Class I, Division 1, Groups C, D T6 Ta = 0°C to +50°C Class I, Zone 1, AEx db IIB T6 Gb Ta = 0°C to +50°C
Specific Conditions of Use (relevant to HazLoc)	1. The FLS-02EC includes flameproof joints, consult Fenwal Controls of Japan, Ltd. if repair of the flameproof joints is necessary. 2. Consult with Fenwal Controls of Japan, Ltd. for genuine replacement cover fasteners: M6X20 hexagon bolts of A2-70 strength class SUS304 stainless steel or better are acceptable alternatives.

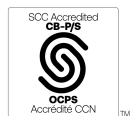
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