



General Monitors Inc.
an MSA Company
16782 Von Karmon Ave, Unit 14
Irvine, CA 92606
United States



Certificate of Compliance to IEC 61508

FM Approvals

Certifies herewith that the following:

- 1) UV/IR Flame Detector Model FL3100H, FL3101H (Safety Manual [MANFL31SAFETY])
- 2) Multi-Spectral Infrared Flame Detector Model FL4000H (Safety Manual [MANFLSAFETY])
- 3) Intelligent Sensor for Combustible Gas Detection (European Apps.) Model S4100CH (Safety Manual [MANHCSAFETY])
- 4) Intelligent Toxic Gas Detection Model TS4000H (Safety Manual [MANTSSAFETY])

Complies with the relevant requirements of standards listed below:

Standards	Description	Compliance
IEC 61508-1: 2010	Functional Safety of Electrical/Electronic/Programmable Electronic Safety-Related Systems – General Requirements	Part 1
IEC 61508-2: 2010	Functional Safety of Electrical/Electronic/Programmable Electronic Safety-Related Systems	Part 2
IEC 61508-3: 2010	Functional Safety of Electrical/Electronic/Programmable Electronic Safety-Related Systems – Software Requirements	Part 3

And therefore

**IS DECLARED “FIT FOR USE” IN A SIL*
1oo1 Low Demand SAFETY APPLICATION**

Models	SIL*	HFT	SFF	PFD	λ_s	λ_{DD}	λ_{DU}
FL3100H	3, 2, 1	0	>99%	3.91×10^{-5}	3.92×10^{-6}	2.61×10^{-6}	2.65×10^{-8}
FL3101H	3, 2, 1	0	>99%	3.74×10^{-5}	3.72×10^{-6}	2.22×10^{-6}	2.64×10^{-8}
FL4000H	3, 2, 1	0	>99%	2.4×10^{-5}	2.41×10^{-6}	2.5×10^{-6}	1.28×10^{-8}
S4100CH	3, 2, 1	0	>99%	1.25×10^{-4}	1.5×10^{-5}	1.26×10^{-5}	6.79×10^{-8}
TS4000H	2, 1	0	>97%	1.44×10^{-4}	2.49×10^{-6}	2.15×10^{-6}	1.26×10^{-7}

Specific Conditions of Use: PFD_{avg} 1oo1 Low Demand Configuration; Assumes a 4-hour repair time, 90-day proof test interval; Installation and operation per manufacturer's Safety Manual. *For Analog Output only.

*This certificate is subject to conditions of use presented in FM Approval Report
Project ID 3037588 Dated 17th April 2009*

James E. Marquedant
VP Manager - Electrical Systems
FM Approvals
One Technology Way,
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28 May 2024

Date



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Certificate Supplement History

Date	Description
17 th April 2009	Original Issue for 3037588.
18 th May 2015	<u>Supplement 1:</u> Report Reference: – 3055292 Dated 18 th May 2015. Description of the Change: Addition of sensors to Model S4000C and S4000T and Clarification to gas Detection LEL.
28 th March 2022	<u>Supplement 2:</u> Report Reference: – RR230845 Dated 28 th March 2022. Description of the Change: Revised Company Address and certificate format. Added Certificate Supplement History table.
16 th May 2024	<u>Supplement 3:</u> Report Reference: – PR466864 Dated 16 th May 2024. Description of the Change: Updated FL4000H λ_{DU} value due to typo. Added 'Installation and operation per manufacturer's Safety Manual' and 'For Analog Output only' under Specific Conditions of Use.