



EPIL SIL Certificate of Compliance

1. Certificate number: **EPILSIL24002**
2. Product: **UV/IR Flame detector**
3. Type/series: **SFD-1000-U**
4. Manufacturer: **Simin Gaman Aria**
Address: **Unit 16, No. 23, Karimkhan Street, Tehran, Iran**
5. This equipment and any acceptable variation thereto are specified in the annex to this certificate and the documents therein referred to.
6. Tests & Assessment Reports: A sample (s) of the equipment listed has successfully met the examination and test requirements as recorded in:

Assessment Report No: **IR\EPIL\SILAR020041**
Functional Safety Management Report: **IR\EPIL\COC020041**

7. Compliance with Requirement, except for those listed at item 14 of the annex, has been assured by compliance with the requirements of the following standard:

IEC 61508 : 2010 Parts 1-7

8. Systematic Capability: **SC 2 (SIL 2 Capable- Route 1_s applied)**
The product has designed and manufactured to meet a **Safety Integrity Level (SIL) 2 rating**. This means they are built to effectively prevent systematic errors from impacting their performance. A Safety Instrumented Function (SIF) designed with this product must not be used at a SIL level higher than stated.
9. Random Capability: **Type B Element**
SIL 2 @ HFT=0; Route 1_H
PFD_{avg} and Architecture Constraints must be verified for each application
10. A sample (s) of the equipment listed has successfully met the examination and test requirements as recorded in (The following document is a mandatory part of this certification): **IR\EPIL\SILAR020041**
11. This Certificate of Compliance relates to the design and construction of the product. Further requirements of the industrial standards are not covered by this certificate.
12. This document is composed of 3 pages including 1 annex.

ISSUE DATE: 2024.11.09

EXPIRY DATE: 2027.11.09

**B.U. PRODUCT CONFORMITY ASSESSMENT
CERTIFICATION BODY- MANAGER
SEYED MOHSEN MIRSA DRI**

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ANNEX 1

Certificate number: **EPILSIL24002**

13. Description of product:

The Flame Detector will sense the presence of flame via different methods as fast as possible, based on flame wavelength and are mostly in different models of UV/IR and signal the 4-20 mA to indicate a potentially dangerous condition.

13.1. Application Restrictions:

The unit must be properly incorporated into a Safety Instrumented Function in accordance with the requirements outlined in the Safety Manual.

The Safety Integrity Level (SIL) of a complete Safety Instrumented Function (SIF) must be validated through a PFD_{AVG} calculation. This calculation should take into account redundant architectures, proof test intervals, proof test effectiveness, any automatic diagnostics, average repair time, and the specific failure rates of all components within the SIF. Additionally, each subsystem must be evaluated to ensure it meets the minimum hardware fault tolerance (HFT) requirements.

14. Conformity with the documentation

The manufacturer shall carry out the verifications or tests necessary to ensure that the product complies with the documentation.

The manufacturer attests on his own responsibility that:

- The equipment has been constructed in accordance with the applicable requirements of the relevant standards in safety matters;
- The routine verifications and routine tests in Safety Manual (As far as applicable) have been successfully completed with positive results.

14.1. Installation conditions:

Installation is well described into the Instruction document SFD-1000-Installation and Operation manual

Installation and use in atmospheric and environmental conditions that are out of above-mentioned intervals request special considerations and additional measures by the side of installer or user.

These should be specified to the manufacturer by the user;

It is not a required by applicable standard listed in [7] that the certification body confirm suitability for the adverse conditions.

Installation electrical of equipment has to proceed according to applicable standard listed in [7] if any.

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15. SIL specification:

Type	B
HFT	HFT=0
Safety Function	The Safety Function of the flame detector series SFD-1000 is defined by detect flames in which carbon dioxide (CO₂) is produced in combustion process and announces this over 4-20 mA analog output.
Mode of Operation	Low demand mode

Random failure rates in FIT				
Product	λ_{SD}	λ_{SU}	λ_{DD}	λ_{DU}
UV/IR Flame detector (SFD-1000-U)	230.14	6688.43	5586.31	314.70

FIT = 1 failure / 10⁹ hours

Systematic capability	2 (Route 1s applied)			
	Route 1H:	Applied	Route 2H:	Not applied
Architectural constraints	The product can be used in configuration: up to SIL 2			

16. For additional information on topics such as environmental conditions, limitation of use, lifetime, mean repair times, common cause factors and systematic capability constraint, make reference to Safety Manual: MU-SC-01-02

17. Certification Validity Conditions:

The use of this Certificate is subject to the Certification Scheme (CBP-701-01) and to the Regulation applicable to holders of EPIL Certificates. The validity of this certificate is subject to both Assessment report [6] validity status and the condition that the manufacturer complies with the results of the document review and of the pertinent requirement if any included, recorded in the relevant copy of documentation as per [15]. One copy of the mentioned documentation is kept in EPIL file.

18. Variations

1st Issue.

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