Certificate – Сертификат – 證明書 – Certificat – 증명서 – شهادة

SIL

Functional Safety Certificate

No. 0P250226.SRC0N48

Certificate's Holder: Shanghai Rapidflame Combustion Equipment Co.,Ltd
Room 126, Block H 1st. Floor No.218 Wenxiang Road Songjiang District, Shanghai, China

Product: Rapidflame/Flame detector

Model(s): BFD1, BFD2, BFD3, BFD4 Series

Standard: Has been assessed per the relevant requirements of:
IEC 61508 parts 1-7:2010, IEC 61511-1:2003+Carr.1:2004

And meets requirements providing a level of integrity to:
Systematic Capability: SC 3 (SIL 3 Capable)
Random Capability: Type B Element
SIL 2 Capable@ HFT= 0, Route 1H
SIL 3 Capable@ HFT=1; Route 2H
PFD_{AVG} and Architecture Constraints must be verified each application.

* Safety Function:
Rapidflame/Flame detector considered Manual.

* Is suitable to be safety function according to the description and the configuration defined in Annex I.

Verification Mark:

The Verification Mark can be affixed on the product. It is NOT permitted to alter the Verification Mark in any way

Remark: This SIL Verification of Compliance has been issued on a voluntary basis. ECM confirms that a Test Report is existent for the above listed product(s) and found to meet the requirements of above standards for application in safety related system up to Safety Level of **SIL 3**. The unit must be properly designed into a Safety Instrument Function as per the requirements in the Safety Manual. The Verification Mark shown above can be affixed on the product. It is NOT permitted to alter the Verification Mark in any way. In addition the Verification's Holder is NOT allowed to transfer the Verification to third parties. This certificate can be checked for validity at www.entecerma.it

Date of issue 26 February 2025

Expiry date 25 February 2030

For online check:

Approver
Ente Certificazione Macchine
Legal Representative
Luca Bedonni

Ente Certificazione Macchine
Via Cà Bella, 243 - 40053 Valsamoggia Loc. Castello di Serravalle (Bo) Italy
☎ +39.0516705141 🖷 +39.0516705156 ✉ info@entecerma.it 🌐 www.entecerma.it

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Annex I

No. 0P250226.SRC0N48

1. Restrictions:
   The unit must be properly designed into a Safety Instrumented Function per the Safety Manual requirements.

2. SIL 3 Capability:
   The product has met manufacturer design process requirements of Safety Integrity Level (SIL). These are intended to achieve sufficient integrity against systematic errors of design by the manufacturer.

3. IEC 61508 Failure Rates:

Device	λSD	λSU	λDD	λDU	SFF
BFD1, BFD2, BFD3, BFD4 Series	0 FIT	281.61 FIT	184.81 FIT	51.38 FIT	90.08%

4. SIL Verification:
   The Safety Integrity Level (SIL) of an entire Safety Instrumented Function (SIF) must be verified via a calculation of PFD_{AVG} considering redundant architectures, proof test interval, proof test effectiveness, any automatic diagnostics, average repair time and the specific failure rates of all products included in the SIF. Each subsystem must be checked to assure compliance with minimum hardware fault tolerance (HFT) requirements.

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