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

SIL

Functional Safety Certificate

No. 0P250401.MPMUW57

Test Report / Technical Construction File no. WUX20250207101804946S03

Certificate's Holder: Misumi (CHINA) Precision Machinery Trading Co., Ltd.
1058 Diling Road, Fengxian District, Shanghai, China

Product: Guard Lock Safety Door Switch

Logo: MiSUMi

Model(s): E-MSM2 series, E-MSMD6 series

Standard: Has been assessed per the relevant requirements of:
IEC 61508:2010 Parts 1-7, EN IEC 60947-1:2021, EN 60947-5-1:2017

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

* Safety function:
The safety door lock switch is used in industrial and commercial environments. The built-in sensor of the safety door lock switch will detect the status of the door in real time, ensuring that the door remains locked when closed and unlocks smoothly when needed
It consists of sensors, mechanical switches, and other components. When the door is closed, the sensor will immediately capture this state change and send a locking signal to the control circuit. The function of this signal is to inform the control circuit that the door has been locked and trigger the door lock to perform a locking action.
The control circuit usually contains an electromagnetic lock, which is a key component for implementing the door lock function. An electromagnetic lock consists of a coil and an iron core. When powered, the magnetic field generated by the coil attracts the iron core to the lock body, ensuring that the door is securely locked.
When the door needs to be opened, the switch will trigger the control circuit to send an unlock signal. At this point, the control circuit will stop supplying power to the electromagnetic lock, the magnetic field will disappear, the iron core will lose its attraction, and the door can be opened smoothly.
* Is suitable to be safety function according to the description and the configuration defined in Annex I.

Verification Mark: SIL VERIFIED – Compliance Approved

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 2**. 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 01 April 2025

Expiry date 31 March 2030

For online check:

Approver
Ente Certificazione Macchine
Legal Representative
Luca Bedonni

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Annex I

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1. The use of the product must obey the required rules to conservation of SIL2 properties, These rules are recalled in the §6 of the Assessment Report reference: [SIL Capability assessment report].

2. The product version of hardware components used for validation and type tests are the following:

Product Type:	Guard Lock Safety Door Switch
Model(s):	E-MSM2 series, E-MSMD6 series

3. Acceptable environmental constraints for the system are recalled in the safety Manual. These elements must be checked for each integration operation of the product.

4. The SIL 2 capable certified Safety Instrumented Function of the product is the following:
   - SF1: To Close on demand.
   - SF2: To Open on demand.

5. Hypothesis used for calculations are presented here under:
   - the mode of operation is Low demand, which means less than 1 trip demand each year;

Device	λ_{SD}	λ_{SU}	λ_{DD}	λ_{DU}	SFF
E-MSM2 series, E-MSMD6 series	0 FIT	165	368	24	89.8%

Safety function	Failure rate	Undetected dangerous failure rate	Tests intervals	MTTR
SF1	4.46E-05	4.50E-07	12months	48h
SF2	4.85E-05	4.64E-07	12months	48h

6. The Safety Integrated Level of the safety function using the product shall be calculated taking into account the characteristics of the whole system.

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