

SIL



Functional Safety Certificate

No. OP250401.MPMUW56

Test Report / Technical Construction File no. WUX20250207101804946S04

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

Product: Safety Light Curtains



Model(s): E-LV4SLC series

Standard: Has been assessed per the relevant requirements of:
IEC 61508:2010 Parts 1-7

And meets requirements providing a level of integrity to:
Systematic Capability: SC 3 (SIL 3 Capable)

Random Capability: Type B Element

SIL 2 @ HFT= 0; SIL 3@ HFT=1; Route 2_H

PFD_{AVG} and Architecture Constraints must be verified each application

* Safety function:

The safety light curtain is a photoelectric protection device.

It consists of sensors, controllers, transmission lines, and installation brackets; The safety light curtain consists of a light emitter and a light receiver.

The emitter generates an encoded infrared beam, and the receiver receives the corresponding beam; Create a rectangular protective area between the emitter and the receiver. When an opaque object enters this area, the corresponding light beam is blocked, and the emitter or receiver generates a shading signal to output to the controller (or directly outputs PNP or NPN transistor signals); The controller ultimately converts the shading signal into a relay output signal

Mainly used in industries such as mechanical processing and automation. Correctly installed in hazardous work areas such as punching machines, press machines, injection molding machines, robotic arms, paper cutting machinery, automation equipment, packaging equipment, etc., can effectively protect the personal safety of operators.

* 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 01 April 2025

Expiry date 31 March 2030



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



Annex I

No. OP250401.MPMUW56

Test Report / Technical Construction File no. WUX20250207101804946S04

1. The use of the product must obey the required rules to conservation of SIL3 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:	Safety Light Curtains
Model(s):	E-LV4SLC 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 3 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;

Component architecture	SIL Capability	Demand frequency	PFD
1oo1 configuration	SIL2	Low	8.29E-03
1oo2 configuration	SIL3	Low	1.98E-04

IEC 61508

Failure Rates

Failure Category	λ_{sd}	λ_{su}	λ_{dd}	λ_{du}	SFF	Certificate
Average	20	112	265	40	90.8%	SIL3

Safety function	Failure rate	Undetected dangerous failure rate	Tests intervals	MTTR
SF1	3.34E-07	4.27E-08	12months	48h
SF2	1.26E-07	1.03E-08	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.