



# Certificate / Certificat Zertifikat / 合格証

FLO 1905142 C003

*exida* hereby confirms that the:

## PMV WS/WM Series UltraSwitch Switch box

### PMV Automation AB Solna, Sweden

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 A, Route 2<sub>H</sub> Device**

**PFD<sub>avg</sub> and Architecture Constraints  
must be verified for each application**

#### Safety Function:

The Switchbox Sensor/Switch Output will change when the attached Valve moves to the Switchbox's preset position.

#### Application Restrictions:

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

The manufacturer  
may use the mark:



Revision 1.1 November 20, 2019

Surveillance Audit Due  
October 1, 2022



ISO/IEC 17065  
PRODUCT CERTIFICATION BODY  
#1004



Evaluating Assessor

Certifying Assessor

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**Systematic Capability: SC 3 (SIL 3 Capable)**

**Random Capability: Type A, Route 2<sub>H</sub> Device**

**PFD<sub>avg</sub> and Architecture Constraints must be verified for each application**

**Systematic Capability :**

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

A Safety Instrumented Function (SIF) designed with this product must not be used at a SIL level higher than stated.

**Random Capability:**

The SIL limit imposed by the Architectural Constraints must be met for each element. This device meets *exida* criteria for Route 2<sub>H</sub>.

**Versions:**

Group	Description / Application	Applicable Switch Codes
Group 1	Namur Proximity Sensors	N3, N4, N8, NG, NM, NP, NQ, NW, & NY
	MicroSwitches and Proximity Reed Switches, rated up to 3 Amps and external Current Limiting / Protection	MG, P5, PE, PP, & PT
Group 2	MicroSwitches (Applications with Switches rated up to 15 Amps)	M1

**IEC 61508 Failure Rates in FIT<sup>1</sup>**

Application/Device/Configuration	$\lambda_{SD}$	$\lambda_{SU}$	$\lambda_{DD}$	$\lambda_{DU}$
Group 1 – NAMUR Proximity Sensors, MicroSwitches <sup>2</sup> , or Proximity Reed Switches <sup>2</sup>	0	16	0	89
Group 2 – MicroSwitches (Applications with Switches rated up to 15 Amps)	0	18	0	119

<sup>1</sup> FIT = 1 failure / 10<sup>9</sup> hours

<sup>2</sup> Failure rates listed are only applicable if the switch contacts current is limited to 60% of the switches rated capacity and the end user has added external transient protection if being used with non-resistive loads.

**SIL Verification:**

The Safety Integrity Level (SIL) of an entire Safety Instrumented Function (SIF) must be verified via a calculation of PFD<sub>avg</sub> 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 element must be checked to assure compliance with minimum hardware fault tolerance (HFT) requirements.

The following documents are a mandatory part of certification:

**Assessment Report:** FLO 19/05-142 R005 V1R1 (or later)

**Safety Manual:** Ultra-Switch Safety Manual \_ V1R2 (or later)



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