



# Certificate / Certificat Zertifikat / 合格証

EPM 1509073 C001

*exida* hereby confirms that the:

## D-ESD Valve Controller 3<sup>rd</sup> Party Solenoid

**Topworx, Inc.**

**Louisville, KY - USA**

Has been assessed per the relevant requirements of:

**IEC 61508 : 2010 Parts 1-2**

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**

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

### Safety Function:

The Valve Controller will move the associated actuator and valve to the designed safe position per the final element design within the specified safety time.

### 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 4.2 March 28, 2023  
Surveillance Audit Due  
April 1, 2026



Evaluating Assessor

Certifying Assessor

EPM 1509073 C001

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

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

**PFH/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>.

This certificate is only applicable to the following Model Designation:

Model Designation	Description
DXP/S-ESXXXXX000YX	3 <sup>rd</sup> Party Solenoid
DXP/S-ESXXXXX000YXZZZZ	3 <sup>rd</sup> Party Solenoid

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

Application	λ <sub>SD</sub>	λ <sub>SU</sub>	λ <sub>DD</sub>	λ <sub>DU</sub>
Spring return actuator	0	30	0	1
Spring return actuator w/PVST <sup>2</sup>	30	0	0	1

**Note:** The failure rates for the 3<sup>rd</sup> party solenoid design included do not include the failure rates of the integrated solenoid.

3<sup>rd</sup> party solenoids selected for use as part of a safety instrumented system for SIL 1 to SIL 3 applications shall meet the requirements of IEC 61511, 1st Edition, paragraph 11.5.2.

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

<sup>2</sup> PVST = Partial Valve Stroke Test

**SIL Verification:**

The Safety Integrity Level (SIL) of an entire Safety Instrumented Function (SIF) must be verified via a calculation of PFH/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:** EPM 13/08-108 R002 V5 R1 (or later)

**Safety Manual:** ES-05481-1 R1 (or later)

D-ESD Valve Controller  
3<sup>rd</sup> Party Solenoid

