



Certificate / Certificat Zertifikat / 合格証

EPM 1308108 C001

exida hereby confirms that the:

D-ESD Valve Controller

Topworx, Inc.

Louisville, KY - USA

The manufacturer
may use the mark:



Revision 3.0 March 31, 2017
Surveillance Audit Due
April 1, 2020

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_H Device

**PFD_{AVG} 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.



ANSI Accredited Program
ISO/IEC 17065
PRODUCT CERTIFICATION BODY
#1004



Evaluating Assessor

Certifying Assessor

EPM 1308108 C001

Systematic Capability: SC 3 (SIL 3 Capable)

Random Capability: Type A, Route 2_H Device

PFD_{AVG} 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_H.

This certificate covers the following Model Designations:

Model Designation	Description
DXP/S-ESXXXXXXXXXX	Integrated Solenoid
DXP/S-ESXXXXXXXXXXZZZ	Integrated Solenoid

IEC 61508 Failure Rates in FIT¹

Application	λ _{SD}	λ _{SU}	λ _{DD}	λ _{DU}
Single Acting Actuator	0	284	0	217
Single Acting Actuator w/PVST ²	281	3	201	16

¹ FIT = 1 failure / 10⁹ hours

² 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 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.

The following documents are a mandatory part of certification:

Assessment Report: EPM 13/08-108 R002 V3 R1

Safety Manual: ES-05481-1

