



# Certificate / Certificat Zertifikat / 合格証

ASC 1605108 C001

*exida* hereby confirms that the:

## 381 3-Way NC Solenoid Valves

**ASCO, L.P.**

**Florham Park, NJ - USA**

The manufacturer  
may use the mark:



Have 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**

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

Revision 1.4 July, 29, 2022  
Surveillance Audit Due  
October 1, 2022

### Safety Function:

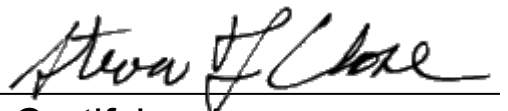
The Valve will move to the designed safe position when de-energized / energized within the specified safety time.

### Application Restrictions:

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



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

These products have 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 these products 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:**

Valve Type	Description and Application
381 DTT	Series 381 3-Way NC Solenoid Valve, De-energized to Trip (DTT)
381 ETT	Series 381 3-Way NC Solenoid Valve, Energized to Trip (ETT)
Options	Optional JS2D Junction Box and Coils

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

Device	$\lambda_{SD}$	$\lambda_{SU}$	$\lambda_{DD}$	$\lambda_{DU}$
381 3-Way NC, DTT, Low Power Coil	0	209	0	220
381 3-Way NC, ETT, Low Power Coil	0	31	0	346
381 3-Way NC, DTT, 9-16W Coil	0	508	0	220
381 3-Way NC, ETT, 9-16W Coil	0	31	0	424
381 3-Way NC, DTT, Class H 16-30W Coil	0	938	0	220
381 3-Way NC, ETT, Class F or H 16-30W Coil	0	31	0	517

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

**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:** ASC 13/01-001 R001 V3R2 (or later)

**Safety Manual:** V9629R9 (or later)

381 3-Way NC  
Solenoid Valves

80 N Main St  
Sellersville, PA 18960