



# Certificate / Certificat Zertifikat / 合格証

ASC 1501030 C001

*exida* hereby confirms that the:

## Series 364 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 2.1 July 25, 2018  
Surveillance Audit Due  
May 1, 2019

### Safety Function:

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

### Application Restrictions:

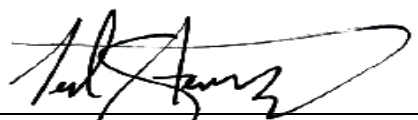
The unit must be properly designed into a Safety Instrumented Function per the Safety Manual requirements.



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



  
\_\_\_\_\_  
Evaluating Assessor

  
\_\_\_\_\_  
Certifying Assessor

ASC 1501030 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 :**

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>.

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

| Type  | Function and Safe Mode Considered                        | Configuration |     | No Diagnostics  |                 | Automated PVST <sup>2</sup> Diagnostics |                 |                 |                 |
|---|--|---------------|-----|-----------------|-----------------|---|-----------------|-----------------|-----------------|
|   |  | NC            | NO  | λ <sub>SU</sub> | λ <sub>DU</sub> | λ <sub>SD</sub>                         | λ <sub>SU</sub> | λ <sub>DD</sub> | λ <sub>DU</sub> |
| SOV   | Single Solenoid Valve, DTT                               | ✓             | ✓   | 568             | 354             | 552                                     | 16              | 313             | 41              |
|   | Single Solenoid Valve, ETT                               | ✓             | ✓   | 32              | 555             | 21                                      | 11              | 512             | 43              |
|   | Double Solenoid Valve, ETT                               | User Config.  |     | 37              | 816             | 26                                      | 11              | 745             | 71              |
|   | Latching Palm Button, Single Solenoid Valve, DTT         | ✓             | N/A | 644             | 380             | 637                                     | 7               | 340             | 40              |
|   | Adder for >16 Watt Coils - DTT                           | ✓             | ✓   | 405             | 0               | 401                                     | 4               | 0               | 0               |
|   | Adder for >16 Watt Coils - ETT <sup>3</sup>              | ✓             | ✓   | 0               | 85              | 0                                       | 0               | 84              | 1               |
| Non-SOV   | Pilot Operated / Spring Return, DTT                      | ✓             | ✓   | 143             | 237             | 130                                     | 13              | 210             | 27              |
|   | Pilot Operated / Spring Return, ETT                      | ✓             | ✓   | 27              | 356             | 16                                      | 11              | 326             | 30              |
|   | Double Pilot, Air Operated (with Detent), ETT            | User Config.  |     | 27              | 521             | 16                                      | 11              | 474             | 47              |
|   | Palm Operated / Air Return, ETT                          | ✓             | N/A | 18              | 442             |   |                 |                 |                 |
|   | Palm Operated / Air Return, Manual Trip (MT)             | ✓             | N/A | 18              | 360             |   |                 |                 |                 |
|   | Pilot Operated / Spring Return, Latching, DTT            | ✓             | N/A | 200             | 283             | 195                                     | 5               | 255             | 28              |
|   | Pilot Operated / Spring Return, Latching, ETT            | ✓             | N/A | 30              | 466             | 19                                      | 11              | 430             | 36              |
|   | Remote Pilot, Latching Non Indicating, DTT               | ✓             | N/A | 226             | 342             | 221                                     | 5               | 308             | 34              |
|   | Remote Pilot, Latching Non Indicating, Remote Pilot Trip | ✓             | N/A | 20              | 559             | 18                                      | 2               | 494             | 65              |
|   | Specialized Application: NON Latching Indicating, DTT    | ✓             | N/A | 235             | 251             |   |                 |                 |                 |
| Button Operated / Spring Return, Manual Trip (MT) | ✓  | ✓             | 28  | 206             |                 |   |                 |                 |                 |

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

<sup>2</sup> PVST = Partial Valve Stroke Test of a final element Device

<sup>3</sup> Only one adder is used for ETT Double Solenoid Valves

**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 15/01-030 R001 V1 R2 (or later)

**Safety Manual:** V9629R8 (or later)

Series 364 Solenoid Valves



80 N Main St  
Sellersville, PA 18960