



Certificate / Certificat Zertifikat / 合格証

ASC 1205106 C001

exida hereby confirms that the:

Redundant Control System

ASCO Valve, Inc.

Florham Park, NJ - USA

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 Redundant Control System will move to the safe state, normally open or normally closed, within the specified safety time when de-energized.

Application Restrictions:

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

The manufacturer may use the mark:



Valid until July 1, 2018
Revision 1.1 June 26, 2015



ANSI Accredited Program
PRODUCT CERTIFICATION
#1004



Evaluating Assessor

Certifying Assessor

ASC 1205106 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.

IEC 61508 Failure Rates in FIT*

Failure Rates Redundant Control System with Automated Diagnostic Tests

Device	λ_{sd}	λ_{su}	λ_{dd}	λ_{du}
Solenoid Valve	594 FIT	261 FIT	502 FIT	10 FIT
Bypass Valve	57 FIT	88 FIT	7 FIT	0 FIT
Pressure Switch	444 FIT	5 FIT	0 FIT	0 FIT

Failure Rates Redundant Control System with Manually Initiated Diagnostic Tests

Device	λ_{sd}	λ_{su}	λ_{dd}	λ_{du}
Solenoid Valve	0 FIT	855 FIT	0 FIT	512 FIT
Bypass Valve	0 FIT	145 FIT	0 FIT	7 FIT
Pressure Switch	0 FIT	449 FIT	0 FIT	0 FIT

* FIT = 1 failure / 10⁹ hours

† PVST = Partial Valve Stroke Test of a final element Device

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 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 12-05-106 R001 V1R3

Safety Manual: SM V9535; R2; 02/11

Redundant Control System



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Sellersville, PA 18960