Certificate / Certificat

Zertifikat / 合格証

ASC 1501030 C002

exida hereby confirms that the:

Series 362 3-Way & 562 4-Way Spool Valves
Sizes: ¼", ⅜", ½", ¾" and 1"

ASCO, L.P.
Florham Park, NJ - USA

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_H Device

PFH/PFD_{avg} and Architecture Constraints must be verified for each application

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.

The manufacturer may use the mark:

Revision 2.2 July 10, 2018
Surveillance Audit Due
May 1, 2019

exida Certification

Evaluating Assessor

Certifying Assessor

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

Certificate / Certificat / Zertifikat / 合格証

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Systematic Capability: SC 3 (SIL 3 Capable)

Random Capability: Type A, Route 2_H Device

PFH/PFD_{avg} and Architecture Constraints must be verified for each application

Series 362 3-Way & 562 4-Way Spool Valves

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_H.

IEC 61508 Failure Rates in FIT[1]

Type	Function and Safe Mode Considered	Series	No Diagnostics		Automated PVST[2] Diagnostics			
			λ_{SU}	λ_{DU}	λ_{SD}	λ_{SU}	λ_{DD}	λ_{DU}
SOV	Single Solenoid Valve, Spring Return, NC or NO, DTT	362	624	389	607	17	344	45
	Single Solenoid Valve, Spring Return, 4 Way , DTT	562	626	680	617	9	624	56
	Single Solenoid Valve, Spring Return, NC or NO, ETT	362	35	610	23	12	563	47
	Single Solenoid Valve, Spring Return, 4 Way, ETT	562	47	890	43	4	837	53
	Single Solenoid Valve, Spring Return, Latching, 4 Way, DTT	562	627	592				
	Single Solenoid Valve, SR, Latching, 4 Way, Manual Trip (MT)	562	297	447				
	Double Solenoid Valve, ETT	362	41	898	28	13	820	78
	Double Solenoid Valve, 4 Way, ETT	562	41	928	37	4	860	68
	Adder for >16 Watt Coils - DTT	All	446	0	442	4	0	0
	Adder for >16 Watt Coils - ETT[3]	All	0	94	0	0	93	1
Non-SOV	Pilot Operated, Spring Return, NC or NO, DTT	362	158	261	143	15	231	30
	Pilot Operated, Spring Return, 4 Way, DTT	562	155	581	151	4	535	46
	Pilot Operated, Spring Return, NC or NO, ETT	362	30	391	18	12	359	32
	Pilot Operated, Spring Return, 4 Way, ETT	562	30	683	27	3	638	45
	Pilot Operated, Spring Return, 4 Way, Manual Trip (MT)	562	297	487				
	Double Pilot Operated, Detent, ETT	362	30	573	18	12	521	52
	Double Pilot Operated, Detent, 4 Way, ETT	562	30	638	27	3	587	51
	Pilot Operated, Spring Return, Latching, DTT	362	220	312	215	5	281	31
	Pilot Operated, Spring Return, Latching, 4 Way, DTT	562	158	488				
	Pilot Operated, SR, Latching, 4 Way, Manual Trip (MT)	562	30	440				

[1] FIT = 1 failure / 10^9 hours

[2] PVST = Partial Valve Stroke Test of a final element Device

[3] 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_{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 15/01-030 R002 V2 R2 (or later)

Safety Manual: V9629R8 (or later)

80 N Main St
Sellersville, PA 18960