



Certificate / Certificat Zertifikat / 合格証

AVC 2105173 C005

exida hereby confirms that the:

Solenoid Valves

**Series 9210B, 9327U, 9350B, 9352B, 9350U,
9354B, 9358B & R356**

**Avcon Controls Pvt. Ltd.
Maharashtra - India**

Has been assessed per the relevant requirements of:

IEC 61508 : 2010 Parts 1-2

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 solenoid 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 1.0 March 26, 2024
Surveillance Audit Due
April 1, 2027



Evaluating Assessor

Certifying Assessor

AVC 2105173 C005

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

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.

Versions:

Valve Group	Valve Type Series	Coil Type
9210B	¼", ½", 3/8" (F), 2 Way Direct Acting, Normally Close	M45 / M50
9327U	¼", ½" (F), 3/2 Way Poppet Type, Universal	M45
9350B	¼" (F), 3/2 Way Direct Acting, Normally Close	M45 / M50
9352B	¼" (F), 3/2 Way Direct Acting, Normally Open	M45
9350U	¼" (F), 3/2 Way Direct Acting, Universal	M45
9354B	¼" (M), 3/2 Way Direct Acting, Normally Close	M45
9358B	¼" (M), 3/2 Way Direct Acting, Normally Close	M22
R356	¼" (M), 3/2 Way Direct Acting, Normally Close	M36

IEC 61508 Failure Rates in FIT*

Valve Group	Trip Configuration	λ _{SD}	λ _{SU}	λ _{DD}	λ _{DU}
9210B	De-Energize to Trip	0	782	0	57
	Energize to Trip	0	18	0	161
9327U	De-Energize to Trip, NC, (Out to Vent)	0	313	0	97
	De-Energize to Trip, NO, (Supply to Out)	0	260	0	150
	Energize to Trip, NC, (Out to Vent)	0	28	0	217
	Energize to Trip, NO, (Supply to Out)	0	82	0	164
9350B, 9352B, 9350U, 9354B, 9358B, R356	De-Energize to Trip, NC, (Out to Vent)	0	294	0	59
	De-Energize to Trip, NO, (Supply to Out)	0	259	0	104
	Energize to Trip, NC, (Out to Vent)	0	24	0	164
	Energize to Trip, NO, (Supply to Out)	0	69	0	129

* FIT = 1 failure / 10⁹ hours

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: AVC 21/05-173 R006 V1R2 (or later)

Safety Manual: SM-SVRS-DRG-002 V1R0 (or later)



80 N Main St
Sellersville, PA 18960

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