



Certificate / Certificat Zertifikat / 合格証

ERD 1012069 C002

exida hereby confirms that the:

BM5/BM5A Series Slam Shut Valve

Emerson Process Management Regulator Technologies, Inc.

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 Element

SIL 2 @ HFT=0; SIL 3 @ HFT = 1; Route 2_H

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

Revision 4.0 Dec 6, 2017
Surveillance Audit Due
January 1, 2021

Safety Function:

The Slam Shut Valve will move to the designed safe position 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



Deymond Lee
Evaluating Assessor

Stevan J. Chase
Certifying Assessor

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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.

BODY SIZE (DN)	END CONNECTION STYLE	Slam Shut Controller
25	PN 16 PN 25 ANSI150 ANSI300 ANSI600	OS/80X-BP (Diaphragm)
40		OS/80X-BPA-D (Diaphragm)
50		OS/80X-MPA-D (Diaphragm)
65		OS/80X-APA-D (Diaphragm)
80		OS/84X (Piston)
80		OS/88X (Piston)
100		OS/80X-PN (Piston)
150		OS/84X-PN (Piston)

The BM5 DN150 is equipped with a reinforced version OS/80X-R

Options:

Proximity switch

Electrovalve for remote controlled closure (Not included in analysis)

IT/3V three-way valve for setting control(Pe max 50 bar) (Not included in analysis)

IEC 61508 Failure Rates in FIT*

Application/Device/Configuration	λ_s	λ_{DU}
Valve, Full Stroke, Clean Service	20	430
Valve, Tight Shut Off, Clean Service	20	1289
Valve, Full Stroke, Severe Service	38	721
Valve, Tight Shut Off, Severe Service	38	2182
Piston Controllers - OPSO	126	89
Piston Controllers - UPSO	102	99
Piston Controllers - OUPSO	126	99
Diaphragm Controllers - OPSO	181	94
Diaphragm Controllers - UPSO	156	115
Diaphragm Controllers - OUPSO	181	115

* 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: ERD 10/12-069 R003 V3,R1

Safety Manual: D103500X012 SIL Safety Manual for Type BM5/BM5A



80 N Main St
Sellersville, PA 18960

BM5/BM5A Series Slam Shut Valve