



# 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:



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 Element**

**SIL 2 @ HFT=0; SIL 3 @ HFT = 1; Route 2<sub>H</sub>**

**PFDAVG and Architecture Constraints  
must be verified for each application**

Valid until January 1, 2018  
Revision 3.2 December 9, 2014

#### Safety Function:

The Slam Shut Valve will move to the designed safe position within the specified safety time.

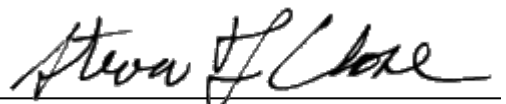
#### Application Restrictions:

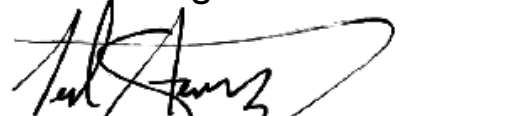
The unit must be properly designed into a Safety Instrumented Function per the Safety Manual requirements.



ANSI Accredited Program  
PRODUCT CERTIFICATION  
#1004



  
Evaluating Assessor

  
Certifying Assessor

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**Systematic Capability: SC 3 (SIL 3 Capable)**

**Random Capability: Type A Element**

**SIL 2 @ HFT=0; SIL 3 @ HFT = 1; Route 2<sub>H</sub>**

**PFD<sub>AVG</sub> 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<sub>H</sub>.

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)
100		OS/88X (Piston)
150		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 (FIT = 1 failure / 10<sup>9</sup> hours)

BM5/BM5A Failure Rates	$\lambda_s$	$\lambda_D$
Valve	22	460
Piston Controllers - OPSO	157	111
Piston Controllers - UPSO	133	121
Piston Controllers - OUPSO	157	121
Diaphragm Controllers - OPSO	188	117
Diaphragm Controllers - UPSO	163	137
Diaphragm Controllers - OUPSO	188	137

SIL Verification:

The Safety Integrity Level (SIL) of an entire Safety Instrumented Function (SIF) must be verified via a calculation of 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 subsystem must be checked to assure compliance with minimum hardware fault tolerance (HFT) requirements.

The following documents are a mandatory part of certification:

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

Assessment Report: ERD 10/12-069 R003 V2, R1

## BM5/BM5A Series Slam Shut Valve



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Sellersville, PA 18960