



# Certificate / Certificat Zertifikat / 合格証

MPP 2207131 C001

*exida* hereby confirms that the:

## Flush Bottom Valve

**Micro Pneumatics 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<sub>H</sub> Device**

**PFH/PFD<sub>avg</sub> and Architecture Constraints  
must be verified for each application**

### Safety Function:

The ball valve will move to the designed safe position per the actuator design 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 2.0 Jun 05, 2024  
Surveillance Audit Due  
April 01, 2027



Evaluating Assessor

Certifying Assessor

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**Systematic Capability: SC 3 (SIL 3 Capable)****Random Capability: Type A, Route 2<sub>H</sub> Device****PFH/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>.

**Versions:**

| Valve Type                   | Bore Sizes       | Pressure Class |
|------------------------------|------------------|----------------|
| Flush Bottom Valve – 1P & 3P | 1/2"x1" to 6"x4" | 150# & 300#    |
| Flush Bottom Valve – 2P      | 8"x6" to 14"x12" | 150#           |

**IEC 61508 Failure Rates in FIT\***

| Static Application – Clean Service | $\lambda_{SD}$ | $\lambda_{SU}$ | $\lambda_{DD}$ | $\lambda_{DU}$ |
|------------------------------------|----------------|----------------|----------------|----------------|
| Full Stroke                        | 0              | 0              | 0              | 398            |
| Tight Shut-Off                     | 0              | 0              | 0              | 968            |
| Open on Trip                       | 0              | 124            | 0              | 274            |

\* FIT = 1 failure / 10<sup>9</sup> hours

**SIL Verification:**

The Safety Integrity Level (SIL) of an entire Safety Instrumented Function (SIF) must be verified via a calculation of PFH/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 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:** MPP 22/07-131 R002 V2R1 (or later)

**Safety Manual:** SM-05 R00 (or later)



80 N Main St  
Sellersville, PA 18960