



Certificate / Certificat Zertifikat / 合格証

MP 2101042 C001

exida hereby confirms that the:

Trunnion Mounted Ball 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_H Device

**PFH/PFD_{avg} 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
June 15, 2027



Evaluating Assessor

Certifying Assessor

MP 2101042 C001

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 Type	Bore Sizes	Pressure Class
Trunnion Mounted Ball Valve – 2 pc	2" to 16"	150#
Trunnion Mounted Ball Valve – 3 pc	2" to 10"	150# to 600#

IEC 61508 Failure Rates in FIT*

Static Application – Clean Service	λ_{SD}	λ_{SU}	λ_{DD}	λ_{DU}
Full Stroke	0	0	0	474
Tight Shut-Off	0	0	0	1010
Open on Trip	0	102	0	372

* 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: MP 21/01-042 R003 V2R1 (or later)

Safety Manual: SM-03 R0 (or later)



80 N Main St
Sellersville, PA 18960

Trunnion Mounted Ball
Valve