Certificate / Certificat
Zertifikat / 合格証

MAR 1612002 C001

exida hereby confirms that the:

Series 30M
3-Way Ball Valves

Mars Valve Co., Ltd.
Taichung, Taiwan, R.O.C.

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

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 4.0 September 26, 2024
Surveillance Audit Due
October 1, 2027

ANAB
ANSI National Accreditation Board
ACCREDITED
ISO/IEC 17065
PRODUCT CERTIFICATION BODY
#1004

exida Certification

Jack Gao
Evaluating Assessor

Desmond Lee
Certifying Assessor

Certificate / Certificat / Zertifikat / 合格証

MAR 1612002 C001

Systematic Capability: SC 3 (SIL 3 Capable)

Random Capability: Type A, Route 2_H Device

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

Series 30M
3-Way Ball Valves

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.

IEC 61508 Failure Rates in FIT*

Application	λ_{SD}	λ_{SU}	λ_{DD}	λ_{DU}
Full Stroke, Clean Service	0	0	0	471
Tight Shut-Off, Clean Service	0	0	0	980
Open on Trip, Clean Service	0	97	0	374
Full Stroke, Severe Service	0	0	0	890
Tight Shut-Off, Severe Service	0	0	0	1901
Open on Trip, Severe Service	0	193	0	697

* FIT = 1 failure / 10^9 hours

SIL Verification:

The Safety Integrity Level (SIL) of an entire Safety Instrumented Function (SIF) must be verified via a calculation of 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: MAR Q091051 R004 V6 R1 (or later)

Safety Manual: 250407-Safety Manual 3-Way Ball Valves Rev.5

80 N Main St
Sellersville, PA 18960