



Certificate / Certificat Zertifikat / 合格証

BIS 1404017 C001

exida hereby confirms that the:

**Series 2B20*, 3B20*, 2B25*, 3B25*, 3B37*,
and 3B50* Directional Control Valves**

**BiS Valves Ltd.
Wimborne, Dorset - UK**

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, Route 2_H Device

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

Safety Function:

The Directional Control 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 3.1 March 2, 2021
Surveillance Audit Due
March 1, 2024



Evaluating Assessor

Certifying Assessor

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:

These products have 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. These devices meet *exida* criteria for Route 2_H.

Versions:

Models
2B20*, 3B20*, 2B25*, 3B25*, 3B37*, and 3B50* Valves with either a Hydraulic Actuator (H0, H1, H3 or H4) or Pneumatic Actuator (A3, A4, or A5)

IEC 61508 Failure Rates in FIT¹

Valve Type and Application	λ_{SD}	λ_{SU}	λ_{DD}	λ_{DU}
2B*/3B* DCV with H/A Actuator - Opt 1 DTT Port C Vented (includes MR option)	0	208	0	172
2B*/3B* DCV with H/A Actuator - Opt 2 DTT Port C Pressurized (includes MR option)	0	89	0	292
2B*/3B* DCV with H/A Actuator - Opt 3 ETT Port C Pressurized	0	8	0	366
2B*/3B* DCV with H/A Actuator - Opt 4 ETT Port C Vented	0	132	0	242

¹ 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: BIS 14/04-017 R002 V4R2 (or later)

Safety Manual: I.0300.00.0060 Iss 2 (or later)



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2B25*, 3B25*, 3B37*,
and 3B50* Directional
Control Valves