



Certificate / Certificat Zertifikat / 合格証

BIF 1610005 C002

exida hereby confirms that the:

PSV5A / PSV5E Flowline Pilot Valves

Bifold Fluidpower Ltd.

Chadderton, Greater Manchester, UK

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, Route 2_H Device

**PFH/PFDavg and Architecture Constraints
must be verified for each application**

Revision 2.0 November 26, 2019

Surveillance Audit Due

November 1, 2022

Safety Function:

The Valve will move to the designed safe position per the valve configuration within the specified safety time.

Application Restrictions:

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



Evaluating Assessor

Certifying Assessor

BIF 1610005 C002

Systematic Capability: SC 3 (SIL 3 Capable)

Random Capability: Type A, Route 2_H Device

**PFH/PFDavg 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.

IEC 61508 Failure Rates in FIT*

| Application | λ_{SD} | λ_{SU} | λ_{DD} | λ_{DU} |
|--------------------------------|----------------|----------------|----------------|----------------|
| Single, Low (falling) Trip, NO | 0 | 43 | 0 | 308 |
| Single, High (rising) Trip, NO | 0 | 178 | 0 | 173 |
| Single, Low (falling) Trip, NC | 0 | 118 | 0 | 233 |
| Single, High (rising) Trip, NC | 0 | 68 | 0 | 283 |
| Twin | 0 | 393 | 0 | 394 |

* 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/PFDavg 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: BIF 16/10-005 R003 V2, R1 (or later)

Safety Manual: SIL – SM.017 Rev 1

