

The manufacturer
may use the mark:



Reports:

BET 03-08-24 R007 V2 R1
Assessment Report

BET 02-08-01 R001 V3 R1
FMEDA Report

Validity:

This assessment is valid for
the G Series Scotch Yoke
Actuators

This assessment is valid until
February 28, 2013.

Revision 1.0 December 16, 2009



Certificate / Certificat Zertifikat / 合格証

BET 090460 C002

exida hereby confirms that the:

G Series Scotch Yoke Actuators

**Bettis Corporation
Waller, TX, USA**

Has been assessed per the relevant requirements of:

IEC 61508 Parts 1, 2

and meets requirements providing a level of integrity to:

Systematic Integrity: SIL 3 Capable

Random Integrity: Type A 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.



Product Assessor

Auditor

BET 090460 C002

Systematic Integrity: SIL 3 Capable

Random Integrity: Type A Device

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

G Series Scotch Yoke Actuators

**Bettis Corporation
Waller, TX , USA**

SIL 2 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 without "prior use" justification by end user or diverse technology redundancy in the design.

IEC 61508 Failure Rates in FIT*

Device	λ_{sd}	λ_{su}	λ_{dd}	λ_{du}	SFF
Pneumatic G Series actuators, SR	0 FIT	2286 FIT	0 FIT	633 FIT	-
Pneumatic G Series actuators, DA	0 FIT	1365 FIT	0 FIT	1211 FIT	-
Pneumatic G Series actuators, SR with PVST	766 FIT	1520 FIT	418 FIT	215 FIT	-
Pneumatic G Series actuators, DA with PVST	0 FIT	1365 FIT	762 FIT	449 FIT	-
Hydraulic G Series actuators, SR	0 FIT	1688 FIT	0 FIT	664 FIT	-
Hydraulic G Series actuators, DA - SP	0 FIT	806 FIT	0 FIT	971 FIT	-
Hydraulic G Series actuators, DA – SP, HO	0 FIT	2067 FIT	0 FIT	1229 FIT	-
Hydraulic G Series actuators, DA - DP	0 FIT	1498 FIT	0 FIT	1828 FIT	-
Hydraulic G Series actuators, SR with PVST	643 FIT	1045 FIT	411 FIT	253 FIT	-
Hydraulic G Series actuators, DA - SP with PVST	0 FIT	806 FIT	606 FIT	365 FIT	-
Hydraulic G Series actuators, DA – SP, HO with PVST	0 FIT	2067 FIT	768 FIT	461 FIT	-
Hydraulic G Series actuators, DA - DP with PVST	0 FIT	1498 FIT	1121 FIT	707 FIT	-

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 subsystem must be checked to assure compliance with minimum hardware fault tolerance (HFT) requirements.

* FIT = 1 failure / 10⁹ hours



Form	Version	Date
C61508	2.20	Feb 2010