

# Certificate



**No.: 968/V 1234.00/21**

**Product tested** Air Volume Booster **Certificate holder** Power-Genex, Ltd.  
99, Eunbong-ro  
Namdong-gu  
Incheon, 21639  
Republic of Korea

**Type designation** AVB-1xxx, AVB-2xxx, AVB-3xxx,

**Codes and standards** IEC 61508 Parts 1-2 and 4-7:2010

**Intended application** Safety Function:  
Close on demand and depressurize attached pressure line (e.g. actuator)

The volume boosters are suitable for use in a safety instrumented system up to SIL 2 (low demand mode). Under consideration of the minimum required hardware fault tolerance HFT = 1 the devices may be used in a redundant architecture up to SIL 3.

**Specific requirements** The instructions of the associated Installation, Operating and Safety Manual shall be considered.

Summary of test results see back side of this certificate.


Valid until 2026-05-19

The issue of this certificate is based upon an evaluation in accordance with the Certification Program CERT FSP1 V1.0:2017 in its actual version, whose results are documented in Report No. 968/V 1234.00/21 dated 2021-05-18. This certificate is valid only for products, which are identical with the product tested.

**TÜV Rheinland Industrie Service GmbH**  
Bereich Automation  
Funktionale Sicherheit

Köln, 2021-05-19

Certification Body Safety & Security for Automation & Grid

  
Dipl.-Ing. (FH) Wolf Rückwart

**Holder:** POWER-GENEX LTD.  
99, Eunbong-ro  
Namdong-gu, Incheon, 21639  
Republic of Korea

**Product tested:** Air Volume Booster  
AVB-1xxx, AVB-2xxx, AVB-3xxx

**Results of Assessment**

Route of Assessment		2 <sub>H</sub> / 1 <sub>S</sub>
Type of Sub-system		Type A
Mode of Operation		Low Demand Mode
Hardware Fault Tolerance	HFT	0
Systematic Capability		<b>SC 3</b>

**Closing on Demand**

Dangerous Failure Rate	$\lambda_D$	6.70 E-08 / h	<b>67 FIT</b>
Average Probability of Failure on Demand 1oo1	$PFD_{avg}(T_1)$	2.98 E-04	
Average Probability of Failure on Demand 1oo2	$PFD_{avg}(T_1)$	2.99 E-05	

Assumptions for the calculations above: DC = 0 %, T<sub>1</sub> = 1 year, MRT = 72 h, β<sub>1oo2</sub> = 10 %

**Origin of failure rates**

The stated failure rates for low demand are the result of an FMEDA with tailored failure rates for the design and manufacturing process.

Furthermore the results have been verified by field-feedback data.

Failure rates include failures that occur at a random point in time and are due to degradation mechanisms such as ageing.

The stated failure rates do not release the end-user from collecting and evaluating application-specific reliability data.

**Periodic Tests and Maintenance**

The given values require periodic tests and maintenance as described in the Safety Manual.

The operator is responsible for the consideration of specific external conditions (e.g. ensuring of required quality of media, max. temperature, time of impact), and adequate test cycles.