



DNV

CERTIFICATE OF CONFORMITY

Certificate Number:
C609118-PA-KOR-DNV

Rev: 0

Project No:
PRJN-550899

This Certificate consists of 3 pages including this page.

The product(s),

Valve Position Monitor

With name and/or type designation(s)

LSB-1, LSB-3

Manufactured by

Power-Genex LTD.

99, Eunbong-ro, Namdong-gu, Incheon Republic of Korea (21639)

has been assessed with respect to SIL 2 capable with 1oo1 configuration and found that the assessed items meet the requirements of

IEC 61508: 2010 Parts 1, 2, 6 and 7

To comply the hardware safety integrity requirement of

Safety Integrity Level (SIL) 2 Capable with HFT=0.

Safety Integrity Level (SIL) 3 Capable with HFT=1.

Further details of the product and conditions for approval are given overleaf.

Seoul, 2023-11-22
for **DNV Supply Chain & Product Assurance**

This Certificate is valid until
2028-11-21

DNV SCPA office:
Seoul

Jang Sup Lee
Area Manager Korea



This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.

Certificate history

Revision	Description	Assessment/Inspection Report No.	Issue Date
0	Original certificate	2023-9697, Rev.0	2023-11-08

Products covered by this Certificate

Category	Product Name
Valve Position Monitor	LSB-1, LSB-3

Technical documentation

Assessment report: 2023-9697, Rev.0

Verification covered by this Certificate

Hardware Element Type

- Type A Element

Safety Function

- providing a signal according to the safety position (set position) of the drive unit.

Assumptions

- 1) The unit of failure rate is FIT (Failures in time unit: 1×10^{-9} failures per hour). One FIT equals one failure per billion hours (once in about 114,155 years).
- 2) Hardware parts purchased from suppliers such as sensors and switches are excluded from this SIL assessment as they don't affect safety function violations.
- 3) MTTR = MRT = 24 h assumes that the time from detecting a dangerous failure is repaired.

Determination of SIL:

Classification		PFD _{AVG}	Proof test interval	Safe Failure Fraction (SFF)	Determination of SIL
LSB-1	Rotary	7.08579E-03	1 year (8760 h)	71.0 %	SIL 2 (HFT = 0) SIL 3 (HFT = 1)
	Linear	7.08579E-03	1 year (8760 h)	71.0 %	SIL 2 (HFT = 0) SIL 3 (HFT = 1)
LSB-3	Rotary	7.08579E-03	1 year (8760 h)	71.0 %	SIL 2 (HFT = 0) SIL 3 (HFT = 1)
	Linear	7.08579E-03	1 year (8760 h)	71.0 %	SIL 2 (HFT = 0) SIL 3 (HFT = 1)

Validity of Certificate

The Certificate holder is to keep DNV informed of any significant changes in its configuration management and requirement other conditions that may affect.

Renewal of Certificate

The Certificate holder is to apply for renewal of Certificate at least three (3) months before the period of validity expires.

Suspension/withdrawal of approval

If the certificate holder fails to fulfil the conditions of certification, DNV may suspend/withdraw the certificate at any time.

Terms and conditions

The certificate is subject to the following terms and conditions:

The Certificate is only valid for the assessed items listed above.

END OF CERTIFICATE

