

CERTIFICATE

by conformity with following standards of the product

This is to certify that the product mentioned below has been verified and fulfills the relevant requirements of the following standards:

IEC 61508:2010 Part 1 & Part 2

Company name	: POWERFLOW CONTROL(ZHEJIANG) CO, LTD.
Address	: Room 201-1, Floor 2, Block F, Building 3, No.8, Xiyuan 9th Road, Xihu District, Hangzhou City, Zhejiang Province, P. R. China
Product	: Intelligent Valve Positioner
Type designation	: IP6000 Series, IP6000d Series
Systematic Capability	: SC 3
Safety Integrity Level	: Type A Element/ SIL 2 Capability in 1oo1 configuration HFT=0 SIL 3 Capability in 1oo2 configuration HFT=1; Route 2H It is suitable to be used in safety function loop according to the description defined in safety manual and appendix 1
Remark	: To evaluate the function safety of the whole system, all the requirements of IEC 61508:2010 must be considered.

This certificate only applies to the design of the above mentioned product and to the corresponding technical file. It does not imply an assessment of the production of the product, and it does not permit the use of a mark of conformity or of a safety mark of TÜV Thüringen.

Date of Issue : August 17, 2023

Date of Expiry : May 18, 2028

Authorized Signatory



Signed for and on behalf of
TUV Thuringen (Shanghai) Co., Ltd.
a member of TÜV Thüringen Group

APPENDIX 1

Certificate No.:QT-PS-SH100077/2022

The use of the product must obey the required rules to maintain the SIL Capable properties. These rules are stated in the Assessment Report reference RPT-PS-SH100077/2022.

The product models for the assessment are the following:

Product	Reference
Intelligent Valve Positioner	IP6000 Series (Ref. No.: IP6000-0); IP6000d Series (Ref. No.: gb-00)

Assessed documents for the present certification are defined in the Appendix 1 of the Assessment Report reference to RPT-PS-SH100077/2022.

Acceptable environmental constraints and design lifetime for the product are stated in the Safety Manual (Ref.: BL-SC-01-2019, BL-SC-02-2021).

The Safety Function(s) of the product(s) is/are the following:

- When power is lost (upon de-energising), the positioner maintains the existing position or releases the air source pressure to drive the actuator and move the valve to a safe position.

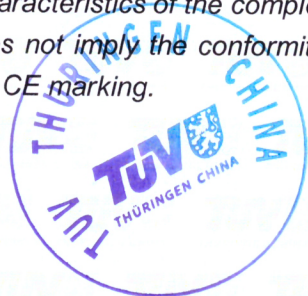
Hypothesis used for mode of operation is the following:

- The mode of operation is "Low demand", which means less than 1 trip demand each year;

Component architecture		Tests intervals	Safe failure rate λ_s (FIT)	Undetected dangerous failure rate λ_{du} (FIT)	Detected dangerous failure rate λ_{dd} (FIT)	SIL Capability	Probability of Failure on Demand
Single-acting mode	1oo1 configuration	12months	0.0	233.6	0.0	SIL 2	1.02E-03
	1oo2 configuration	12months	0.0	233.6	0.0	SIL 3	1.04E-04
Double-acting mode	1oo1 configuration	12months	0.0	270.0	0.0	SIL 2	1.18E-03
	1oo2 configuration	12months	0.0	270.0	0.0	SIL 3	1.20E-04

The Safety Integrity Level of the safety function using the product(s) have been calculated as taking into account the characteristics of the complete system supporting the safety function.

This certificate does not imply the conformity of this product(s) to the related European Directive(s), and does not allow CE marking.



TÜV®

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