



Certificate no. TAI-FS-C-24-0071

WE HEREBY CERTIFY THAT

Product description

**FINAL ELEMENT SUBSYSTEMS WITH ACTUATOR
SERIES GIGS, GIG**

Models

GIGS_LR (typical scheme with local-remote control group)
GIGS_ESD_P (typical scheme with pneumatic ESD control group)
GIGS_ESD_E (typical scheme with electric ESD control group)
GIGS_LB_P (typical scheme with pneumatic line-break control group)
GIG_LR (typical scheme with local-remote control group)
GIG_ESD_P (typical scheme with pneumatic ESD control group)
GIG_ESD_E (typical scheme with electric ESD control group)
GIG_LB_P (typical scheme with pneumatic line-break control group)

Manufacturer

BIFFI ITALIA S.r.l.
Strada Biffi 165
I-29017 Fiorenzuola d'Arda (PC)

IS IN COMPLIANCE WITH THE REQUIREMENTS OF THE STANDARDS

IEC 61508 Parts 1–7:2010

AS RESULT OF THE ASSESSMENT ACCORDING TO THE PROVISION
SET OUT IN THE ABOVE-MENTIONED STANDARDS

Evaluation Report no. TAI-FS-R-24-0140

Expiry date 08.08.2027

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TUV AUSTRIA ITALIA
09.08.2024, Monte Roberto (AN)

Ing. Crescenzo Di Fratta

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Annex to certificate no. TAI-FS-C-24-0071

Type	A
HFT	0
Safety functions	<p><u>With spring return actuators series GIGS:</u></p> <p>1. Delivery of a full stroke driven by the spring, with power fluid exhausted from the cylinder through the control system</p> <p><u>With double acting actuators series GIG:</u></p> <p>1. Delivery of a full stroke driven by the piston of cylinder, powered by the specified medium working pressure</p>
Mode of operation	Low Demand Mode

Random failure rates				
Configuration	Safety function	λ_{DU} [1/h]	$\lambda_{DD(PS)}$ [1/h]	PFD _{AVG} (TI=12 m, MRT=24 h)
GIGS_LR	1	1,97E-08	1,84E-08	8,69E-05
GIGS_ESD_P	1	2,57E-08	--	1,13E-04
GIGS_ESD_E	1	2,70E-08	2,57E-08	1,19E-04
GIGS_LB_P	1	2,29E-08	--	1,01E-04
GIG_LR	1	4,00E-08	3,83E-08	1,76E-04
GIG_ESD_P	1	2,73E-08	--	1,20E-04
GIG_ESD_E	1	5,75E-08	5,57E-08	2,53E-04
GIG_LB_P	1	2,67E-08	--	1,18E-04

Systematic capability	3 (Route 1s applied)			
Architectural constraints	Route 1H:	Applied	Route 2H:	Applied
	<p>The maximum SIL according to architectural constraints is:</p> <ul style="list-style-type: none"> • GIGS_LR: SIL 3 • GIGS_ESD_P: SIL 2 • GIGS_ESD_E: SIL 2 without external diagnostic tests, SIL 3 considering external diagnostic tests • GIGS_LB_P: SIL 2 • GIG_LR: SIL 2 without external diagnostic tests, SIL 3 considering external diagnostic tests 3 • GIG_ESD_P: SIL 2 • GIG_ESD_E: SIL 2 without external diagnostic tests, SIL 3 considering external diagnostic tests • GIG_LB_P: SIL 2 			

Remarks:

- Schemes are representatives of all the possible variants performing the related function: modifications of the schemes, which do not involve the safety function, do not impair the validity of the present certificate
- The Partial Stroke Test is not effective for all the elements in configurations GIGS_ESD_P, GIGS_LB_P, GIG_ESD_P, GIG_LB_P: for this reason, its effect is not considered
- The above values of PFD_{AVG} are calculated for MRT=24 h and Proof Test Coverage=100%. For other values of MRT, TI, TI_{PS} and/or non-perfect Proof Test, the PFD_{AVG} values must be re-calculated

END OF CERTIFICATE



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