

CERTIFICAT

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СЕРТИФИКАТ

認證證書

CERTIFICATE

ZERTIFIKAT



Italia

COMPLIANCE

with IEC EN 61508:2010

Certificate No.: C-IS-236198-03 Rev.3

CERTIFICATE OWNER: G.M. International s.r.l.
Via G. Mameli, 53-55
I-20852 Villasanta (MB) – ITALY

**WE HEREWITH CONFIRM THAT
THE MODULES IN THE TABLE ENCLOSED TO THE PRESENT DOCUMENT
MEET THE REQUIREMENTS OF IEC EN 61508:2010
(LOW DEMAND MODE OF OPERATION)**

Examination result: The above described Modules were found to meet the standard defined requirements of the safety levels detailed in the following table (T-IS-236198-03) according to IEC EN 61508:2010, under fulfillment of the conditions listed in the related Reports, mentioned in the same table, in their currently valid version, on which this Certificate is based

Examination parameters: Functional characteristics, reliability and availability parameters and functional safety management

Official Summary Table No.: T-IS-236198-03

IT IS TO BE INTENDED THAT THE ABOVE OFFICIAL SUMMARY TABLE IS AN INTEGRAL PART OF THIS DOCUMENT

Reference Standard IEC EN 61508:2010 Part 1, 2, 4, 6, 7

Sesto San Giovanni, October, 14th 2022

TÜV ITALIA Srl

TÜV ITALIA Srl
Industry Service Division
Managing Director



Alberto Carelli



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**SUMMARY TABLE
T-IS-236198-03**

	ITEM NAME	REPORT CODE	FINAL RESULTS					
			System type	PFD _{avg}	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
1.	D1093S	R-IS-236198-15 Rev.1	Type A	9.83E-5	14 years	NE load	SIL3*	SIL3
				1.40E-4	20 years		SIL3**	
				9.27E-5	9 years	ND load	SIL3*	
				2.06E-4	20 years		SIL3**	

Configuration	Safe Detected Failure λ _{SD}	Safe Undetected Failure λ _{SU}	Dangerous Detected Failure λ _{DD}	Dangerous Undetected Failure λ _{DU}	Safe Failure Fraction SFF	No Effect Failure λ _{NE}	Not Part Failure λ _{NP}
NE load	0.00 FIT	162.99 FIT	0.00 FIT	1.60 FIT	99.03 %	165.61 FIT	301.40 FIT
ND load	0.00 FIT	96.00 FIT	0.00 FIT	2.35 FIT	97.61 %	231.85 FIT	301.40 FIT

	ITEM NAME	REPORT CODE	FINAL RESULTS					
			System type	PFD _{avg}	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
2.	D1092S_D1092D	R-IS-236198-16 Rev.1	Type A	9.83E-5	14 years	NE load	SIL3*	SIL3
				1.40E-4	20 years		SIL3**	
				9.27E-5	9 years	ND load	SIL3*	
				2.06E-4	20 years		SIL3**	

Configuration	Safe Detected Failure λ _{SD}	Safe Undetected Failure λ _{SU}	Dangerous Detected Failure λ _{DD}	Dangerous Undetected Failure λ _{DU}	Safe Failure Fraction SFF	No Effect Failure λ _{NE}	Not Part Failure λ _{NP}
NE load	0.00 FIT	162.99 FIT	0.00 FIT	1.60 FIT	99.03 %	152.01 FIT	0.00 FIT
ND load	0.00 FIT	96.00 FIT	0.00 FIT	2.35 FIT	97.61 %	218.25 FIT	0.00 FIT

(*)Considering the products not contribute more than 10% of total SIF dangerous failure.

(**)Considering the products contribute more than 10% of total SIF dangerous failure.

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NOTE: The present table is integral part of the Document: C-IS-236198-03 Rev.3

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	ITEM NAME	REPORT CODE	FINAL RESULTS					
			System type	PFD _{avg}	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
3.	D1092S-069 and D1092D-069	R-IS-236198-17 Rev.1	Type A	9.83E-5	14 years	NO contacts in series or NC contacts in parallel	SIL3*	SIL3
				1.40E-4	20 years		SIL3**	

Configuration	Safe Detected Failure λ _{SD}	Safe Undetected Failure λ _{SU}	Dangerous Detected Failure λ _{DD}	Dangerous Undetected Failure λ _{DU}	Safe Failure Fraction SFF	No Effect Failure λ _{NE}	Not Part Failure λ _{NP}
NO contacts in series or NC contacts in parallel	0.00 FIT	156.99 FIT	0.00 FIT	1.60 FIT	98.99 %	128.01 FIT	0.00 FIT

	ITEM NAME	REPORT CODE	FINAL RESULTS					
			System type	PFD _{avg}	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
4.	D1014S_D1014D	R-IS-236198-19 Rev.1	Type A	9.47E-4	9 years	NA	SIL2*	SIL3
				1.05E-3	10 years		SIL2**	

Safe Detected Failure λ _{SD}	Safe Undetected Failure λ _{SU}	Dangerous Detected Failure λ _{DD}	Dangerous Undetected Failure λ _{DU}	Safe Failure Fraction SFF	No Effect Failure λ _{NE}	Not Part Failure λ _{NP}
0.00 FIT	0.00 FIT	158.64 FIT	23.69 FIT	87.01 %	165.77 FIT	15.90 FIT

(*)Considering the products not contribute more than 10% of total SIF dangerous failure.

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	ITEM NAME	REPORT CODE	FINAL RESULTS					
			System type	PFD _{avg}	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
5.	D1010S	R-IS-236198-20 Rev.1	Type A	9.11E-4	7 years	Active input	SIL2*	SIL3
				1.30E-3	10 years		SIL2**	
				8.80E-4	6 years	Passive input	SIL2*	
				1.47E-3	10 years		SIL2**	
	D1010D			9.12E-4	7 years	Active input	SIL2*	
				1.30E-3	10 years		SIL2**	
				8.81E-4	6 years	Passive input	SIL2*	
				1.47E-3	10 years		SIL2**	

Configuration	Safe Detected Failure λ_{SD}	Safe Undetected Failure λ_{SU}	Dangerous Detected Failure λ_{DD}	Dangerous Undetected Failure λ_{DU}	Safe Failure Fraction SFF	No Effect Failure λ_{NE}	Not Part Failure λ_{NP}
D1010S: Active input	0.00 FIT	0.00 FIT	121.58 FIT	29.43 FIT	80.51 %	192.59 FIT	65.00 FIT
D1010S: Passive input	0.00 FIT	0.00 FIT	139.73 FIT	33.18 FIT	80.81 %	219.69 FIT	16.00 FIT
D1010D: Active input	0.00 FIT	0.00 FIT	125.60 FIT	29.46 FIT	81.00 %	196.04 FIT	399.90 FIT
D1010D: Passive input	0.00 FIT	0.00 FIT	143.75 FIT	33.21 FIT	81.23 %	223.14 FIT	350.90 FIT

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	ITEM NAME	REPORT CODE	FINAL RESULTS					
			System type	PFD _{avg}	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
6.	D1010S-046	R-IS-236198-20 Rev.1	Type A	9.11E-4	7 years	Active input	SIL2*	SIL3
				1.30E-3	10 years		SIL2**	
				8.80E-4	6 years	Passive input	SIL2*	
				1.47E-3	10 years		SIL2**	
	D1010D-046			9.12E-4	7 years	Active input	SIL2*	
				1.30E-3	10 years		SIL2**	
				8.81E-4	6 years	Passive input	SIL2*	
				1.47E-3	10 years		SIL2**	

Configuration	Safe Detected Failure λ_{SD}	Safe Undetected Failure λ_{SU}	Dangerous Detected Failure λ_{DD}	Dangerous Undetected Failure λ_{DU}	Safe Failure Fraction SFF	No Effect Failure λ_{NE}	Not Part Failure λ_{NP}
D1010S-046: Active input	0.00 FIT	0.00 FIT	121.58 FIT	29.43 FIT	80.51 %	192.59 FIT	65.00 FIT
D1010S-046: Passive input	0.00 FIT	0.00 FIT	139.73 FIT	33.18 FIT	80.81 %	219.69 FIT	16.00 FIT
D1010D-046: Active input	0.00 FIT	0.00 FIT	125.60 FIT	29.46 FIT	81.00 %	196.04 FIT	399.90 FIT
D1010D.046: Passive input	0.00 FIT	0.00 FIT	143.75 FIT	33.21 FIT	81.23 %	223.14 FIT	350.90 FIT

(*)Considering the products not contribute more than 10% of total SIF dangerous failure.

(**)Considering the products contribute more than 10% of total SIF dangerous failure.

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	ITEM NAME	REPORT CODE	FINAL RESULTS					
			System type	PFD _{avg}	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
7.	D1020S_D1020D	R-IS-236198-21 Rev.1	Type A	7.80E-4	3 years	NA	SIL2*	SIL3
				1.82E-3	7 years		SIL2**	
				2.60E-3	10 years		SIL2**	

Safe Detected Failure λ_{SD}	Safe Undetected Failure λ_{SU}	Dangerous Detected Failure λ_{DD}	Dangerous Undetected Failure λ_{DU}	Safe Failure Fraction SFF	No Effect Failure λ_{NE}	Not Part Failure λ_{NP}
0.00 FIT	96.85 FIT	0.00 FIT	59.27 FIT	62.04 %	238.29 FIT	10.80 FIT

	ITEM NAME	REPORT CODE	FINAL RESULTS					
			System type	PFD _{avg}	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
8.	D1032D_D1032Q	R-IS-236198-22 Rev.1	Type A	7.65E-4	3 years	NA	SIL2*	SIL3
				1.79E-3	7 years		SIL2**	
				2.55E-3	10 years		SIL2**	
9.	D1033D_D1033Q			9.23E-4	6 years		SIL2*	
				1.54E-3	10 years		SIL2**	

Configuration	Safe Detected Failure λ_{SD}	Safe Undetected Failure λ_{SU}	Dangerous Detected Failure λ_{DD}	Dangerous Undetected Failure λ_{DU}	Safe Failure Fraction SFF	No Effect Failure λ_{NE}	Not Part Failure λ_{NP}
D1032D	0.00 FIT	144.00 FIT	0.00 FIT	58.13 FIT	71.24 %	131.37 FIT	154.30 FIT
D1032Q	0.00 FIT	149.34 FIT	0.00 FIT	58.13 FIT	71.98 %	151.43 FIT	296.50 FIT
D1033D	0.00 FIT	107.54 FIT	0.00 FIT	35.07 FIT	75.41 %	116.69 FIT	218.50 FIT
D1033Q	0.00 FIT	111.88 FIT	0.00 FIT	35.07 FIT	76.13 %	127.75 FIT	370.70 FIT

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FUNCTIONAL SAFETY ASSESSMENTS		
	REPORT CODE	FINAL RESULT
1	R TUV IT 22 SIL 0087	Compliant to the standard for the following parts: <ul style="list-style-type: none">- Documentation (IEC EN 61508:2010 Part 1 Chapter 5)- Management of functional safety (IEC EN 61508:2010 Part 1 Chapter 6)- Functional safety assessment (IEC EN 61508:2010 Part 1 Chapter 8)- Realization: E/E/PES safety lifecycle from 10.1 to 10.6 (IEC EN 61508:2010 Part 2) for all safety related modules object of this certificate.

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