



Italia

COMPLIANCE

with IEC EN 61508:2010

Certificate No.: C-IS-722134640-01 Rev.2

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-722134640-01) 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-722134640-01

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-722134640-01**

	ITEM NAME	REPORT CODE	FINAL RESULTS					
			System type	PFD _{avg}	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
1.	D6011S_D6011D	R-IS-722134640-01 Rev.1	Type A	6.01E-5	1 year	D6011S with Passive Input	SIL3*	SIL3
				6.01E-4	10 years		SIL3**	
				9.62E-4	16 years		SIL2*	
				1.20E-3	20 years	SIL2**		
				6.03E-5	1 year	D6011D with Passive Inputs	SIL3*	
				6.03E-4	10 years		SIL3**	
				9.65E-4	16 years		SIL2*	
				1.21E-3	20 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}
D6011S with Passive Input	0.00 FIT	0.00 FIT	131.47 FIT	13.46 FIT	90.71 %	194.87 FIT	4.20 FIT
D6011D with Passive Inputs	0.00 FIT	0.00 FIT	155.47 FIT	13.46 FIT	92.03 %	227.87 FIT	193.00 FIT

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

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

Please, for more Functional Safety information see Safety Manual ISM0399_r0.

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NOTE: The present table is integral part of the Document: C-IS-722134640-01 Rev.2

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	ITEM NAME	REPORT CODE	FINAL RESULTS					
			System type	PFD _{avg}	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
2.	D6014S_D6014D	R-IS-722134640-01 Rev.1	Type A	6.69E-5	1 year	Active Input	SIL3*	SIL3
				6.69E-4	10 years		SIL3**	
				9.37E-4	14 years		SIL2*	
				1.34E-3	20 years		SIL2**	
				6.36E-5	1 year	Passive Input	SIL3*	
				6.36E-4	10 years		SIL3**	
				9.54E-4	15 years		SIL2*	
				1.27E-3	20 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}
Active Input	0.00 FIT	0.00 FIT	146.72 FIT	14.97 FIT	90.74 %	205.11 FIT	4.80 FIT
Passive Input	0.00 FIT	0.00 FIT	135.30 FIT	14.25 FIT	90.47 %	201.25 FIT	20.80 FIT

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

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

Please, for more Functional Safety information see Safety Manual ISM0400_r0.



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	ITEM NAME	REPORT CODE	FINAL RESULTS					
			System type	PFD _{avg}	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
3.	D6014D	R-IS-722134640-01 Rev.1	Type A	6.69E-5	1 year	Duplicator with Input loop on two active inputs	SIL3*	SIL3
				6.69E-4	10 years		SIL3**	
				9.37E-4	14 years		SIL2*	
				1.34E-3	20 years		SIL2**	
				6.36E-5	1 year	Duplicator with Input loop on a passive input and an active input (Channel A with passive input)	SIL3*	
				6.36E-4	10 years		SIL3**	
				9.54E-4	15 years		SIL2*	
				1.27E-3	20 years		SIL2**	
				9.72E-5	1 year	Duplicator with Input loop on a passive input and an active input (Channel B with active input)	SIL3*	
				4.86E-4	5 years		SIL3**	
				9.72E-4	10 years		SIL2*	
				9.72E-3	20 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}
Duplicator with Input loop on two active inputs	0.00 FIT	0.00 FIT	146.96 FIT	14.97 FIT	90.76 %	205.11 FIT	376.16 FIT
Duplicator with Input loop on a passive input and an active input (Channel A with passive input)	0.00 FIT	0.00 FIT	135.54 FIT	14.25 FIT	90.49 %	201.25 FIT	392.16 FIT
Duplicator with Input loop on a passive input and an active input (Channel B with active input)	0.00 FIT	0.00 FIT	257.76 FIT	21.69 FIT	92.24 %	339.15 FIT	124.60 FIT

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

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

Please, for more Functional Safety information see Safety Manual ISM0400_r0.

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	ITEM NAME	REPORT CODE	FINAL RESULTS					
			System type	PFD _{avg}	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
4.	D6034S_D6034D	R-IS-722134640-01 Rev.1	Type A	5.65E-5	1 year	NA	SIL3*	SIL3
				5.65E-4	10 years		SIL3**	
				9.61E-4	17 years		SIL2*	
				1.13E-3	20 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	125.63 FIT	12.64 FIT	90.86 %	182.53 FIT	4.80 FIT

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

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

Please, for more Functional Safety information see Safety Manual ISM0401_r0.

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	ITEM NAME	REPORT CODE	FINAL RESULTS					
			System type	PFD _{avg}	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
5.	D6030S_D6030D	R-IS-722134640-01 Rev.1	Type A	8.60E-4	5 years	Independent channel and maximum relay contact current is 4 A	SIL2*	SIL3
				3.44E-3	20 years		SIL2**	
				9.84E-5	2 years	Independent channel and maximum relay contact current is 100 mA	SIL3*	
				4.92E-4	10 years		SIL3**	
				9.84E-4	20 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}
Independent channel and maximum relay contact current is 4 A	0.00 FIT	143.62 FIT	0.00 FIT	39.22 FIT	78.55 %	202.96 FIT	6.20 FIT
Independent channel and maximum relay contact current is 100 mA	0.00 FIT	101.62 FIT	0.00 FIT	11.22 FIT	90.06 %	202.96 FIT	6.20 FIT

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

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Please, for more Functional Safety information see Safety Manual ISM0403_r0.

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	ITEM NAME	REPORT CODE	FINAL RESULTS					
			System type	PFD _{avg}	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
6.	D6030D	R-IS-722134640-01 Rev.1	Type A	8.62E-4	5 years	Used as Duplicator or as Fault indicator (only Out 1) and maximum relay contact current is 4 A	SIL2*	SIL3
				3.45E-3	20 years		SIL2**	
				9.92E-5	2 years	Used as Duplicator or as Fault indicator (only Out 1) and max. relay contact current is 100 mA	SIL3*	
				4.96E-4	10 years		SIL3**	
				9.92E-4	20 years		SIL2*	
				8.47E-4	5 years	Used as Fault indicator (only Out 2) and maximum relay contact current is 4 A	SIL2*	
				3.39E-3	20 years		SIL2**	
				9.32E-5	2 years	Used as Fault indicator (only Out 2) and max. relay contact current is 100 mA	SIL3*	
				4.66E-4	10 years		SIL3**	
				9.32E-4	20 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}
Used as Duplicator or as Fault indicator (only Out 1) and maximum relay contact current is 4 A	0.00 FIT	195.95 FIT	0.00 FIT	39.30 FIT	83.30 %	398.15 FIT	136.00 FIT
Used as Duplicator or as Fault indicator (only Out 1) and max. relay contact current is 100 mA	0.00 FIT	153.95 FIT	0.00 FIT	11.30 FIT	93.16 %	398.15 FIT	66.00 FIT
Used as Fault indicator (only Out 2) and maximum relay contact current is 4 A	0.00 FIT	195.41 FIT	0.00 FIT	38.62 FIT	83.50 %	399.38 FIT	136.00 FIT
Used as Fault indicator (only Out 2) and max. relay contact current is 100 mA	0.00 FIT	153.41 FIT	0.00 FIT	10.62 FIT	93.53 %	399.38 FIT	66.00 FIT

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

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Please, for more Functional Safety information see Safety Manual ISM0403_r0.

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	ITEM NAME	REPORT CODE	FINAL RESULTS								
			System type	PFD _{avg}	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL			
7.	D6031S_D6031D	R-IS-722134640-01 Rev.1	Type A	9.82E-5	2 years	Independent channel	SIL3*	SIL3			
				4.91E-4	10 years		SIL3**				
				9.82E-4	20 years		SIL2*				
8.	D6031D			R-IS-722134640-01 Rev.1	Type A	9.90E-5	2 years		Used as Duplicator or as Fault indicator (only Out 1)	SIL3*	SIL3
						4.95E-4	10 years			SIL3**	
						9.90E-4	20 years			SIL2*	
						Used as Fault indicator (only Out 2)	9.09E-5		2 years	SIL3*	
							4.55E-4		10 years	SIL3**	
							9.09E-4		20 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}
Independent channel	0.00 FIT	117.46 FIT	0.00 FIT	11.20 FIT	91.29 %	214.34 FIT	0.20 FIT
Used as Duplicator or as Fault indicator (only Out 1)	0.00 FIT	169.79 FIT	0.00 FIT	11.28 FIT	93.77 %	409.53 FIT	93.20 FIT
Used as Fault indicator (only Out 2)	0.00 FIT	169.25 FIT	0.00 FIT	10.36 FIT	94.23 %	410.99 FIT	93.20 FIT

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

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

Please, for more Functional Safety information see Safety Manual ISM0404_r0.

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			System type	PFD _{avg}	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL		
9.	D6032S_D6032D	R-IS-722134640-01 Rev.1	Type A	9.84E-5	2 years	Independent channel and maximum relay contact current is 100 mA	SIL3*	SIL3		
				4.92E-4	10 years		SIL3**			
				9.84E-4	20 years		SIL2*			
10.	D6032D			Type A	9.92E-5	2 years	Used as Duplicator or as Fault indicator (only Out 1) and maximum relay contact current is 100 mA		SIL3*	SIL3
					4.96E-4	10 years			SIL3**	
					9.92E-4	20 years			SIL2*	
					9.32E-5	2 years	Used as Fault indicator (only Out 2) and maximum relay contact current is 100 mA		SIL3*	
					4.66E-4	10 years			SIL3**	
					9.32E-4	20 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}
Independent channel and max. relay contact current is 100 mA	0.00 FIT	101.62 FIT	0.00 FIT	11.22 FIT	90.06 %	202.96 FIT	6.20 FIT
Used as Duplicator or as Fault indicator (only Out 1) and max. relay contact current is 100 mA	0.00 FIT	153.95 FIT	0.00 FIT	11.30 FIT	93.16 %	398.15 FIT	66.00 FIT
Used as Fault indicator (only Out 2) and max. relay contact current is 100 mA	0.00 FIT	153.41 FIT	0.00 FIT	10.62 FIT	93.53 %	399.38 FIT	66.00 FIT

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

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

Please, for more Functional Safety information see Safety Manual ISM0406_r0.

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	ITEM NAME	REPORT CODE	FINAL RESULTS					
			System type	PFD _{avg}	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
11.	D6020S_D6020D	R-IS-722134640-01 Rev.1	Type A	9.33E-4	10 years	NA	SIL2*	SIL3
				1.87E-3	20 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	136.38 FIT	21.00 FIT	86.65 %	255.92 FIT	65.70 FIT

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

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

Please, for more Functional Safety information see Safety Manual ISM0402_r0.

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	ITEM NAME	REPORT CODE	FINAL RESULTS					
			System type	PFD _{avg}	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
12.	D6036S	R-IS-722134640-01 Rev.1	Type A	8.99E-4	4 years	NA	SIL2*	SIL3
				4.50E-3	20 years		SIL2**	
13.	D6036D			8.99E-4	4 years		SIL2*	
				4.50E-3	20 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}
D6036S	0.00 FIT	124.62 FIT	0.00 FIT	51.22 FIT	70.87 %	128.26 FIT	23.50 FIT
D6036D	0.00 FIT	130.16 FIT	0.00 FIT	51.22 FIT	71.76 %	138.62 FIT	200.20 FIT

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

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

Please, for more Functional Safety information see Safety Manual ISM0408_r0.

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	ITEM NAME	REPORT CODE	FINAL RESULTS					
			System type	PFD _{avg}	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
14.	D6037S	R-IS-722134640-01 Rev.1	Type A	9.65E-4	8 years	NA	SIL2*	SIL3
				2.41E-3	20 years		SIL2**	
15.	D6037D			9.65E-4	8 years		SIL2*	
				2.41E-3	20 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}
D6037S	0.00 FIT	92.76 FIT	0.00 FIT	27.48 FIT	77.15 %	132.06 FIT	17.50 FIT
D6037D	0.00 FIT	98.30 FIT	0.00 FIT	27.48 FIT	78.15 %	142.42 FIT	148.40 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.

Please, for more Functional Safety information see Safety Manual ISM0410_r0.

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	ITEM NAME	REPORT CODE	FINAL RESULTS					
			System type	PFD _{avg}	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
16.	D6062S	R-IS-722134640-01 Rev.1	Type A	9.46E-4	3 years	3 wires powered transducer input	SIL2*	SIL3
				6.31E-3	20 years		SIL2**	
				9.51E-4	3 years	2 wires unpowered transducer input	SIL2*	
				6.34E-3	20 years		SIL2**	
				1.00E-3	3 years	2 wires powered transducer input	SIL2*	
				6.69E-3	20 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}
3 wires powered transducer input	0.00 FIT	0.00 FIT	160.84 FIT	71.56 FIT	69.21 %	269.70 FIT	22.70 FIT
2 wires unpowered transducer input	0.00 FIT	0.00 FIT	160.84 FIT	71.96 FIT	69.09 %	269.70 FIT	22.70 FIT
2 wires powered transducer input	0.00 FIT	0.00 FIT	161.96 FIT	75.95 FIT	68.08 %	274.79 FIT	12.10 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.

Please, for more Functional Safety information see Safety Manual ISM0418_r0.

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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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