Italia

COMPLIANCE

with IEC EN 61508:2010

Certificate No.: C-IS-722160171 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-722160171) according to IEC EN 61508:2010 - Route 2H, 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-722160171**

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

Reference Standard **IEC EN 61508:2010**

Sesto San Giovanni, October, 14th 2022

TÜV ITALIA Srl

TÜV ITALIA Srl
Industry Service Division
Managing Director

Alberto Carelli

TÜV Italia Srl Industrie Service Italia

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SUMMARY TABLE
T-IS-722160171

	ITEM NAME HARDWARE	ITEM NAME SOFTWARE	REPORT CODE	FINAL RESULTS					
				System type	PFD_{avg}	T_{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
1.	D5254S	PRG054A into ADUC7061 processor + PRG053A into MK12DX128VLH processor	R-IS-722160171-03 Rev.1	Type B	9.38E-04	10 years	Passive input and analog current output	SIL2*	SIL3
					1.88E-03	20 years		SIL2**	
					9.37E-04	10 years	Active input and analog current output	SIL2*	
					1.87E-03	20 years		SIL2**	

Configuration	Safe Detected Failure λ_{SD}	Safe Undetected Failure λ_{SU}	Dangerous Detected Failure λ_{DD}	Dangerous Undetected Failure λ_{DU}	Diagnostic Coverage DC	Safe Failure Fraction SFF	No Effect Failure λ_{NE}	Not Part Failure λ_{NP}
Passive input and analog current output	0.00 FIT	142.31 FIT	168.00 FIT	21.08 FIT	88.85%	93.64%	329.11 FIT	262.00 FIT
Active input and analog current output	0.00 FIT	142.31 FIT	163.29 FIT	21.05 FIT	88.58%	93.56%	320.65 FIT	275.20 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 ISM0315_r2.

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	ITEM NAME HARDWARE	ITEM NAME SOFTWARE	REPORT CODE	FINAL RESULTS					
				System type	PFD_{avg}	T_{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
1.	D5254S	PRG054A into ADUC7061 processor + PRG053A into MK12DX128VLH processor	R-IS-722160171-03 Rev.1	Type B	9.37E-04	5 years	Passive input and single relay output	SIL2*	SIL3
					3.74E-03	20 years		SIL2**	
					9.35E-04	5 years	Active input and single relay output	SIL2*	
					3.74E-03	20 years		SIL2**	

Configuration	Safe Detected Failure λ_{SD}	Safe Undetected Failure λ_{SU}	Dangerous Detected Failure λ_{DD}	Dangerous Undetected Failure λ_{DU}	Diagnostic Coverage DC	Safe Failure Fraction SFF	No Effect Failure λ_{NE}	Not Part Failure λ_{NP}
Passive input and single relay output	0.00 FIT	192.29 FIT	108.41 FIT	42.46 FIT	71.86%	87.63%	256.69 FIT	322.65FIT
Active input and single relay output	0.00 FIT	192.29 FIT	103.70 FIT	42.43 FIT	70.96%	87.46%	248.23 FIT	335.85 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 ISM0315_r2.

	ITEM NAME HARDWARE	ITEM NAME SOFTWARE	REPORT CODE	FINAL RESULTS					
				System type	PFD_{avg}	T_{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
1.	D5254S	PRG054A into ADUC7061 processor + PRG053A into MK12DX128VLH processor	R-IS-722160171-03 Rev.1	Type B	9.78E-04	20 years	Passive input and 1oo2 architecture relay output	SIL2*	SIL3
					9.75E-04	20 years	Active input and 1oo2 architecture relay output	SIL2*	

Configuration	Safe Detected Failure λ_{SD}	Safe Undetected Failure λ_{SU}	Dangerous Detected Failure λ_{DD}	Dangerous Undetected Failure λ_{DU}	Diagnostic Coverage DC	Safe Failure Fraction SFF	No Effect Failure λ_{NE}	Not Part Failure λ_{NP}
Passive input and 1oo2 architecture relay output	0.00 FIT	162.27 FIT	108.41 FIT	10.95 FIT	90.83%	96.11%	403.17 FIT	237.70 FIT
Active input and 1oo2 architecture relay output	0.00 FIT	162.27 FIT	103.70 FIT	10.92 FIT	90.47%	96.06%	394.71 FIT	250.90 FIT

(*)Considering the products do not contribute more than 10% of total SIF dangerous failure.
Please, for more Functional Safety information see Safety Manual ISM0315_r2.

	ITEM NAME HARDWARE	ITEM NAME SOFTWARE	REPORT CODE	FINAL RESULTS					
				System type	PFD_{avg}	T_{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
2.	D6254S	PRG054A into ADUC7061 processor + PRG053A into MK12DX128VLH processor	R-IS-722134640-02 Rev.3	Type B	9.38E-04	10 years	Passive input and analog current output	SIL2*	SIL3
					1.88E-03	20 years		SIL2**	
					9.37E-04	10 years	Active input and analog current output	SIL2*	
					1.87E-03	20 years		SIL2**	

Configuration	Safe Detected Failure λ_{SD}	Safe Undetected Failure λ_{SU}	Dangerous Detected Failure λ_{DD}	Dangerous Undetected Failure λ_{DU}	Diagnostic Coverage DC	Safe Failure Fraction SFF	No Effect Failure λ_{NE}	Not Part Failure λ_{NP}
Passive input and analog current output	0.00 FIT	142.31 FIT	168.00 FIT	21.08 FIT	88.85%	93.64%	329.11 FIT	262.00 FIT
Active input and analog current output	0.00 FIT	142.31 FIT	163.29 FIT	21.05 FIT	88.58%	93.56%	320.65 FIT	275.20 FIT

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(**)Considering the products contribute more than 10% of total SIF dangerous failure.
Please, for more Functional Safety information see Safety Manual ISM0424_r0.

	ITEM NAME HARDWARE	ITEM NAME SOFTWARE	REPORT CODE	FINAL RESULTS					
				System type	PFD_{avg}	T_{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
2.	D6254S	PRG054A into ADUC7061 processor + PRG053A into MK12DX128VLH processor	R-IS-722134640-02 Rev.3	Type B	9.37E-04	5 years	Passive input and single relay output	SIL2*	SIL3
					3.74E-03	20 years		SIL2**	
					9.35E-04	5 years	Active input and single relay output	SIL2*	
					3.74E-03	20 years		SIL2**	

Configuration	Safe Detected Failure λ_{SD}	Safe Undetected Failure λ_{SU}	Dangerous Detected Failure λ_{DD}	Dangerous Undetected Failure λ_{DU}	Diagnostic Coverage DC	Safe Failure Fraction SFF	No Effect Failure λ_{NE}	Not Part Failure λ_{NP}
Passive input and single relay output	0.00 FIT	192.29 FIT	108.41 FIT	42.46 FIT	71.86%	87.63%	256.69 FIT	322.65FIT
Active input and single relay output	0.00 FIT	192.29 FIT	103.70 FIT	42.43 FIT	70.96%	87.46%	248.23 FIT	335.85 FIT

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(**)Considering the products contribute more than 10% of total SIF dangerous failure.
Please, for more Functional Safety information see Safety Manual ISM0424_r0.

	ITEM NAME HARDWARE	ITEM NAME SOFTWARE	REPORT CODE	FINAL RESULTS					
				System type	PFD_{avg}	T_{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
2.	D6254S	PRG054A into ADUC7061 processor + PRG053A into MK12DX128VLH processor	R-IS-722134640-02 Rev.3	Type B	9.78E-04	20 years	Passive input and 1oo2 architecture relay output	SIL2*	SIL3
					9.75E-04	20 years	Active input and 1oo2 architecture relay output	SIL2*	

Configuration	Safe Detected Failure λ_{SD}	Safe Undetected Failure λ_{SU}	Dangerous Detected Failure λ_{DD}	Dangerous Undetected Failure λ_{DU}	Diagnostic Coverage DC	Safe Failure Fraction SFF	No Effect Failure λ_{NE}	Not Part Failure λ_{NP}
Passive input and 1oo2 architecture relay output	0.00 FIT	162.27 FIT	108.41 FIT	10.95 FIT	90.83%	96.11%	403.17 FIT	237.70 FIT
Active input and 1oo2 architecture relay output	0.00 FIT	162.27 FIT	103.70 FIT	10.92 FIT	90.47%	96.06%	394.71 FIT	250.90 FIT

(*)Considering the products do not contribute more than 10% of total SIF dangerous failure.
Please, for more Functional Safety information see Safety Manual ISM0424_r0.

	ITEM NAME HARDWARE	ITEM NAME SOFTWARE	REPORT CODE	FINAL RESULTS					
				System type	PFD_{avg}	T_{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
3.	D5293S	PRG036C into ADUC7061 processor + PRG038C into MK12DX128VLH5 processor	R-IS-722188598-04 Rev.1	Type B	8.70E-04	5 years	Diagnostic circuits with fault relay outputs	SIL2*	SIL3
					3.48E-03	20 years		SIL1*	
					1.91E-03	11 years		SIL2**	

Configuration	Safe Detected Failure λ_{SD}	Safe Undetected Failure λ_{SU}	Dangerous Detected Failure λ_{DD}	Dangerous Undetected Failure λ_{DU}	Diagnostic Coverage DC	Safe Failure Fraction SFF	No Effect Failure λ_{NE}	Not Part Failure λ_{NP}
Diagnostic circuits with fault relay outputs	0.00 FIT	161.70 FIT	59.59 FIT	39.54 FIT	60.11%	84.84%	105.26 FIT	318.70 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 ISM0441_r0.

	ITEM NAME HARDWARE	ITEM NAME SOFTWARE	REPORT CODE	FINAL RESULTS					
				System type	PFD_{avg}	T_{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
4.	D5294S	PRG036C into ADUC7061 processor + PRG038C into MK12DX128VLH5 processor	R-IS-722188598-04 Rev.1	Type B	8.95E-04	4 years	Diagnostic circuits with fault relay outputs	SIL2*	SIL3
					4.47E-03	20 years		SIL1*	
					1.79E-03	8 years		SIL2**	

Configuration	Safe Detected Failure λ_{SD}	Safe Undetected Failure λ_{SU}	Dangerous Detected Failure λ_{DD}	Dangerous Undetected Failure λ_{DU}	Diagnostic Coverage DC	Safe Failure Fraction SFF	No Effect Failure λ_{NE}	Not Part Failure λ_{NP}
Diagnostic circuits with fault relay outputs	0.00 FIT	163.12 FIT	161.28 FIT	50.69 FIT	76.09%	86.49%	219.16 FIT	553.30 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 ISM0442_r0.

	ITEM NAME HARDWARE	ITEM NAME SOFTWARE	REPORT CODE	FINAL RESULTS					
				System type	PFD_{avg}	T_{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
5.	D5295S	PRG036C into ADUC7061 processor + PRG038C into MK12DX128VLH5 processor	R-IS-722188598-04 Rev.1	Type B	8.95E-04	4 years	Diagnostic circuits with fault relay outputs	SIL2*	SIL3
					4.47E-03	20 years		SIL1*	
					1.79E-03	8 years		SIL2**	

Configuration	Safe Detected Failure λ_{SD}	Safe Undetected Failure λ_{SU}	Dangerous Detected Failure λ_{DD}	Dangerous Undetected Failure λ_{DU}	Diagnostic Coverage DC	Safe Failure Fraction SFF	No Effect Failure λ_{NE}	Not Part Failure λ_{NP}
Diagnostic circuits with fault relay outputs	0.00 FIT	163.19 FIT	161.28 FIT	50.69 FIT	76.09%	86.49%	220.75 FIT	545.34 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 ISM0443_r0.

	ITEM NAME HARDWARE	ITEM NAME SOFTWARE	REPORT CODE	FINAL RESULTS					
				System type	PFD_{avg}	T_{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
6.	D5096S	PRG055A into MK02FN64VFM10 processor	R-IS-722202852-03 Rev.2	Type B	3.24E-04	20 years	Fault relay output contact externally wired in series to input loop of Safety PLC DO and used for F&G / ND loads with bipolar load interruption	SIL2*	SIL3

Configuration	Safe Detected Failure λ_{SD}	Safe Undetected Failure λ_{SU}	Dangerous Detected Failure λ_{DD}	Dangerous Undetected Failure λ_{DU}	Diagnostic Coverage DC	Safe Failure Fraction SFF	No Effect Failure λ_{NE}	Not Part Failure λ_{NP}
Fault relay output contact externally wired in series to input loop of Safety PLC DO and used for F&G / ND loads with bipolar load interruption	0.00 FIT	133.80 FIT	181.55 FIT	3.35 FIT	98.19%	98.95%	468.70 FIT	105.20 FIT

(*)Considering the products do not contribute more than 10% of total SIF dangerous failure.
Please, for more Functional Safety information see Safety Manual ISM0308_r1.

	ITEM NAME HARDWARE	ITEM NAME SOFTWARE	REPORT CODE	FINAL RESULTS					
				System type	PFD_{avg}	T_{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
7.	D5096S-100	PRG055A into MK02FN64VFM10 processor	R-IS-722202852-03 Rev.2	Type B	3.23E-04	20 years	Universal fault mirroring to Safety PLC DO and used for F&G / ND loads with bipolar load interruption	SIL2*	SIL3

Configuration	Safe Detected Failure λ_{SD}	Safe Undetected Failure λ_{SU}	Dangerous Detected Failure λ_{DD}	Dangerous Undetected Failure λ_{DU}	Diagnostic Coverage DC	Safe Failure Fraction SFF	No Effect Failure λ_{NE}	Not Part Failure λ_{NP}
Universal fault mirroring to Safety PLC DO and used for F&G / ND loads with bipolar load interruption	0.00 FIT	133.80 FIT	180.28 FIT	3.35 FIT	98.17%	98.94%	464.77 FIT	110.40 FIT

(*)Considering the products do not contribute more than 10% of total SIF dangerous failure.
Please, for more Functional Safety information see Safety Manual ISM0435_r1.

	ITEM NAME HARDWARE	ITEM NAME SOFTWARE	REPORT CODE	FINAL RESULTS					
				System type	PFD_{avg}	T_{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
8.	D5072S	PRG040E into MK12DX128VLH5 processor + PRG041E into ADUC7061 processor	R-IS-722202851-03 Rev.1	Type B	9.93E-04	10 years	Analog output	SIL2*	SIL3
					1.99E-03	20 years		SIL2**	
					9.13E-04	9 years	Alarm output	SIL2*	
					2.03E-03	20 years		SIL2**	

Configuration	Safe Detected Failure λ_{SD}	Safe Undetected Failure λ_{SU}	Dangerous Detected Failure λ_{DD}	Dangerous Undetected Failure λ_{DU}	Diagnostic Coverage DC	Safe Failure Fraction SFF	No Effect Failure λ_{NE}	Not Part Failure λ_{NP}
Analog output	0.00 FIT	107.70 FIT	153.16 FIT	22.35 FIT	87.26%	92.11%	198.39 FIT	86.30 FIT
Alarm output	0.00 FIT	128.53 FIT	114.44 FIT	22.89 FIT	84.88%	91.39%	187.94 FIT	114.10 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 ISM0390_r0.

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	ITEM NAME HARDWARE	ITEM NAME SOFTWARE	REPORT CODE	FINAL RESULTS					
				System type	PFD_{avg}	T_{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
9.	D5072D	PRG040E into MK12DX128VLH5 processor + PRG041E into ADUC7061 processor	R-IS-722202851-03 Rev.1	Type B	9.95E-04	10 years	Analog output	SIL2*	SIL3
					1.99E-03	20 years		SIL2**	
					9.54E-04	9 years	Alarm output	SIL2*	
					2.12E-03	20 years		SIL2**	

Configuration	Safe Detected Failure λ_{SD}	Safe Undetected Failure λ_{SU}	Dangerous Detected Failure λ_{DD}	Dangerous Undetected Failure λ_{DU}	Diagnostic Coverage DC	Safe Failure Fraction SFF	No Effect Failure λ_{NE}	Not Part Failure λ_{NP}
Analog output	0.00 FIT	121.35 FIT	173.30 FIT	22.35 FIT	88.58%	92.95%	238.80 FIT	242.80 FIT
Alarm output	0.00 FIT	146.81 FIT	134.58 FIT	23.89 FIT	84.92%	92.17%	235.12 FIT	258.20 FIT

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Please, for more Functional Safety information see Safety Manual ISM0390_r0.

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	ITEM NAME HARDWARE	ITEM NAME SOFTWARE	REPORT CODE	FINAL RESULTS					
				System type	PFD_{avg}	T_{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
10.	D5072S-099	PRG040E into MK12DX128VLH5 processor + PRG041E into ADUC7061 processor	R-IS-722202851-03 Rev.1	Type B	9.93E-04	10 years	Analog output	SIL2*	SIL3
					1.99E-03	20 years		SIL2**	
					9.13E-04	9 years	Alarm output	SIL2*	
					2.03E-03	20 years		SIL2**	

Configuration	Safe Detected Failure λ_{SD}	Safe Undetected Failure λ_{SU}	Dangerous Detected Failure λ_{DD}	Dangerous Undetected Failure λ_{DU}	Diagnostic Coverage DC	Safe Failure Fraction SFF	No Effect Failure λ_{NE}	Not Part Failure λ_{NP}
Analog output	0.00 FIT	107.70 FIT	153.16 FIT	22.35 FIT	87.26%	92.11%	198.39 FIT	86.30 FIT
Alarm output	0.00 FIT	128.53 FIT	114.44 FIT	22.89 FIT	84.88%	91.39%	187.94 FIT	114.10 FIT

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	ITEM NAME HARDWARE	ITEM NAME SOFTWARE	REPORT CODE	FINAL RESULTS					
				System type	PFD_{avg}	T_{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
11.	D5072D-099	PRG040E into MK12DX128VLH5 processor + PRG041E into ADUC7061 processor	R-IS-722202851-03 Rev.1	Type B	9.95E-04	10 years	Analog output	SIL2*	SIL3
					1.99E-03	20 years		SIL2**	
					9.54E-04	9 years	Alarm output	SIL2*	
					2.12E-03	20 years		SIL2**	

Configuration	Safe Detected Failure λ_{SD}	Safe Undetected Failure λ_{SU}	Dangerous Detected Failure λ_{DD}	Dangerous Undetected Failure λ_{DU}	Diagnostic Coverage DC	Safe Failure Fraction SFF	No Effect Failure λ_{NE}	Not Part Failure λ_{NP}
Analog output	0.00 FIT	121.35 FIT	173.30 FIT	22.35 FIT	88.58%	92.95%	238.80 FIT	242.80 FIT
Alarm output	0.00 FIT	146.81 FIT	134.58 FIT	23.89 FIT	84.92%	92.17%	235.12 FIT	258.20 FIT

(*)Considering the products do not contribute more than 10% of total SIF dangerous failure.
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	ITEM NAME HARDWARE	ITEM NAME SOFTWARE	REPORT CODE	FINAL RESULTS					
				System type	PFD_{avg}	T_{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
12.	D5072S-087	PRG040E into MK12DX128VLH5 processor + PRG041E into ADUC7061 processor	R-IS-722202851-03 Rev.1	Type B	9.22E-04	9 years	NA	SIL2*	SIL3
					2.05E-03	20 years		SIL2**	

Configuration	Safe Detected Failure λ_{SD}	Safe Undetected Failure λ_{SU}	Dangerous Detected Failure λ_{DD}	Dangerous Undetected Failure λ_{DU}	Diagnostic Coverage DC	Safe Failure Fraction SFF	No Effect Failure λ_{NE}	Not Part Failure λ_{NP}
NA	0.00 FIT	121.54 FIT	142.26 FIT	23.09 FIT	86.03%	91.95%	216.91 FIT	30.70 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 ISM0360_r1.

	ITEM NAME HARDWARE	ITEM NAME SOFTWARE	REPORT CODE	FINAL RESULTS					
				System type	PFD_{avg}	T_{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
13.	D5072D-087	PRG040E into MK12DX128VLH5 processor + PRG041E into ADUC7061 processor	R-IS-722202851-03 Rev.1	Type B	9.27E-04	9 years	NA	SIL2*	SIL3
					2.06E-03	20 years		SIL2**	

Configuration	Safe Detected Failure λ_{SD}	Safe Undetected Failure λ_{SU}	Dangerous Detected Failure λ_{DD}	Dangerous Undetected Failure λ_{DU}	Diagnostic Coverage DC	Safe Failure Fraction SFF	No Effect Failure λ_{NE}	Not Part Failure λ_{NP}
NA	0.00 FIT	138.87 FIT	162.40 FIT	23.09 FIT	87.55%	92.88%	258.04 FIT	206.40 FIT

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	ITEM NAME HARDWARE	ITEM NAME SOFTWARE	REPORT CODE	FINAL RESULTS					
				System type	PFD_{avg}	T_{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
14.	D5072S-096	PRG040E into MK12DX128VLH5 processor + PRG041E into ADUC7061 processor	R-IS-722202851-03 Rev.1	Type B	9.12E-04	2 years	NA	SIL2*	SIL3
					9.12E-03	20 years		SIL1*	
					2.28E-03	5 years		SIL2**	
					9.12E-03	20 years		SIL1**	

Configuration	Safe Detected Failure λ_{SD}	Safe Undetected Failure λ_{SU}	Dangerous Detected Failure λ_{DD}	Dangerous Undetected Failure λ_{DU}	Diagnostic Coverage DC	Safe Failure Fraction SFF	No Effect Failure λ_{NE}	Not Part Failure λ_{NP}
NA	0.00 FIT	15.67 FIT	171.16 FIT	103.62 FIT	62.29%	64.32%	211.95 FIT	30.90 FIT

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Please, for more Functional Safety information see Safety Manual ISM0391_r0.

	ITEM NAME HARDWARE	ITEM NAME SOFTWARE	REPORT CODE	FINAL RESULTS					
				System type	PFD_{avg}	T_{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
15.	D5072D-096	PRG040E into MK12DX128VLH5 processor + PRG041E into ADUC7061 processor	R-IS-722202851-03 Rev.1	Type B	9.52E-04	2 years	NA	SIL2*	SIL3
					9.52E-03	20 years		SIL1*	
					2.38E-03	5 years		SIL2**	
					9.52E-03	20 years		SIL1**	

Configuration	Safe Detected Failure λ_{SD}	Safe Undetected Failure λ_{SU}	Dangerous Detected Failure λ_{DD}	Dangerous Undetected Failure λ_{DU}	Diagnostic Coverage DC	Safe Failure Fraction SFF	No Effect Failure λ_{NE}	Not Part Failure λ_{NP}
NA	0.00 FIT	15.67 FIT	191.28 FIT	108.12 FIT	63.89%	65.68%	237.93 FIT	236.40 FIT

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	ITEM NAME HARDWARE	ITEM NAME SOFTWARE	REPORT CODE	FINAL RESULTS					
				System type	PFD_{avg}	T_{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
16.	D6072S	PRG040E into MK12DX128VLH5 processor + PRG041E into ADUC7061 processor	R-IS-722202851-03 Rev.1	Type B	9.93E-04	10 years	Analog output	SIL2*	SIL3
					1.99E-03	20 years		SIL2**	
					9.13E-04	9 years	Alarm output	SIL2*	
					2.03E-03	20 years		SIL2**	

Configuration	Safe Detected Failure λ_{SD}	Safe Undetected Failure λ_{SU}	Dangerous Detected Failure λ_{DD}	Dangerous Undetected Failure λ_{DU}	Diagnostic Coverage DC	Safe Failure Fraction SFF	No Effect Failure λ_{NE}	Not Part Failure λ_{NP}
Analog output	0.00 FIT	107.70 FIT	153.16 FIT	22.35 FIT	87.26%	92.11%	198.39 FIT	86.30 FIT
Alarm output	0.00 FIT	128.53 FIT	114.44 FIT	22.89 FIT	84.88%	91.39%	187.94 FIT	114.10 FIT

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Please, for more Functional Safety information see Safety Manual ISM0419_r1.

	ITEM NAME HARDWARE	ITEM NAME SOFTWARE	REPORT CODE	FINAL RESULTS					
				System type	PFD_{avg}	T_{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
17.	D6072D	PRG040E into MK12DX128VLH5 processor + PRG041E into ADUC7061 processor	R-IS-722202851-03 Rev.1	Type B	9.95E-04	10 years	Analog output	SIL2*	SIL3
					1.99E-03	20 years		SIL2**	
					9.54E-04	9 years	Alarm output	SIL2*	
					2.12E-03	20 years		SIL2**	

Configuration	Safe Detected Failure λ_{SD}	Safe Undetected Failure λ_{SU}	Dangerous Detected Failure λ_{DD}	Dangerous Undetected Failure λ_{DU}	Diagnostic Coverage DC	Safe Failure Fraction SFF	No Effect Failure λ_{NE}	Not Part Failure λ_{NP}
Analog output	0.00 FIT	121.35 FIT	173.30 FIT	22.35 FIT	88.58%	92.95%	238.80 FIT	242.80 FIT
Alarm output	0.00 FIT	146.81 FIT	134.58 FIT	23.89 FIT	84.92%	92.17%	235.12 FIT	258.20 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 ISM0419_r1.

	ITEM NAME HARDWARE	ITEM NAME SOFTWARE	REPORT CODE	FINAL RESULTS					
				System type	PFD_{avg}	T_{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
18.	D6072S-099	PRG040E into MK12DX128VLH5 processor + PRG041E into ADUC7061 processor	R-IS-722202851-03 Rev.1	Type B	9.93E-04	10 years	Analog output	SIL2*	SIL3
					1.99E-03	20 years		SIL2**	
					9.13E-04	9 years	Alarm output	SIL2*	
					2.03E-03	20 years		SIL2**	

Configuration	Safe Detected Failure λ_{SD}	Safe Undetected Failure λ_{SU}	Dangerous Detected Failure λ_{DD}	Dangerous Undetected Failure λ_{DU}	Diagnostic Coverage DC	Safe Failure Fraction SFF	No Effect Failure λ_{NE}	Not Part Failure λ_{NP}
Analog output	0.00 FIT	107.70 FIT	153.16 FIT	22.35 FIT	87.26%	92.11%	198.39 FIT	86.30 FIT
Alarm output	0.00 FIT	128.53 FIT	114.44 FIT	22.89 FIT	84.88%	91.39%	187.94 FIT	114.10 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 ISM0419_r1.

	ITEM NAME HARDWARE	ITEM NAME SOFTWARE	REPORT CODE	FINAL RESULTS					
				System type	PFD_{avg}	T_{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
19.	D6072D-099	PRG040E into MK12DX128VLH5 processor + PRG041E into ADUC7061 processor	R-IS-722202851-03 Rev.1	Type B	9.95E-04	10 years	Analog output	SIL2*	SIL3
					1.99E-03	20 years		SIL2**	
					9.54E-04	9 years	Alarm output	SIL2*	
					2.12E-03	20 years		SIL2**	

Configuration	Safe Detected Failure λ_{SD}	Safe Undetected Failure λ_{SU}	Dangerous Detected Failure λ_{DD}	Dangerous Undetected Failure λ_{DU}	Diagnostic Coverage DC	Safe Failure Fraction SFF	No Effect Failure λ_{NE}	Not Part Failure λ_{NP}
Analog output	0.00 FIT	121.35 FIT	173.30 FIT	22.35 FIT	88.58%	92.95%	238.80 FIT	242.80 FIT
Alarm output	0.00 FIT	146.81 FIT	134.58 FIT	23.89 FIT	84.92%	92.17%	235.12 FIT	258.20 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 ISM0419_r1.

	ITEM NAME HARDWARE	ITEM NAME SOFTWARE	REPORT CODE	FINAL RESULTS					
				System type	PFD_{avg}	T_{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
20.	D6072S-087	PRG040E into MK12DX128VLH5 processor + PRG041E into ADUC7061 processor	R-IS-722202851-03 Rev.1	Type B	9.22E-04	9 years	NA	SIL2*	SIL3
					2.05E-03	20 years		SIL2**	

Configuration	Safe Detected Failure λ_{SD}	Safe Undetected Failure λ_{SU}	Dangerous Detected Failure λ_{DD}	Dangerous Undetected Failure λ_{DU}	Diagnostic Coverage DC	Safe Failure Fraction SFF	No Effect Failure λ_{NE}	Not Part Failure λ_{NP}
NA	0.00 FIT	121.54 FIT	142.26 FIT	23.09 FIT	86.03%	91.95%	216.91 FIT	30.70 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 ISM0422_r1.

	ITEM NAME HARDWARE	ITEM NAME SOFTWARE	REPORT CODE	FINAL RESULTS					
				System type	PFD_{avg}	T_{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
21.	D6072D-087	PRG040E into MK12DX128VLH5 processor + PRG041E into ADUC7061 processor	R-IS-722202851-03 Rev.1	Type B	9.27E-04	9 years	NA	SIL2*	SIL3
					2.06E-03	20 years		SIL2**	

Configuration	Safe Detected Failure λ_{SD}	Safe Undetected Failure λ_{SU}	Dangerous Detected Failure λ_{DD}	Dangerous Undetected Failure λ_{DU}	Diagnostic Coverage DC	Safe Failure Fraction SFF	No Effect Failure λ_{NE}	Not Part Failure λ_{NP}
NA	0.00 FIT	138.87 FIT	162.40 FIT	23.09 FIT	87.55%	92.88%	258.04 FIT	206.40 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 ISM0422_r1.

	ITEM NAME HARDWARE	ITEM NAME SOFTWARE	REPORT CODE	FINAL RESULTS					
				System type	PFD_{avg}	T_{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
22.	D6072S-096	PRG040E into MK12DX128VLH5 processor + PRG041E into ADUC7061 processor	R-IS-722202851-03 Rev.1	Type B	9.12E-04	2 years	NA	SIL2*	SIL3
					9.12E-03	20 years		SIL1*	
					2.28E-03	5 years		SIL2**	
					9.12E-03	20 years		SIL1**	

Configuration	Safe Detected Failure λ_{SD}	Safe Undetected Failure λ_{SU}	Dangerous Detected Failure λ_{DD}	Dangerous Undetected Failure λ_{DU}	Diagnostic Coverage DC	Safe Failure Fraction SFF	No Effect Failure λ_{NE}	Not Part Failure λ_{NP}
NA	0.00 FIT	15.67 FIT	171.16 FIT	103.62 FIT	62.29%	64.32%	211.95 FIT	30.90 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 ISM0444_r0.

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	ITEM NAME HARDWARE	ITEM NAME SOFTWARE	REPORT CODE	FINAL RESULTS					
				System type	PFD_{avg}	T_{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
23.	D6072D-096	PRG040E into MK12DX128VLH5 processor + PRG041E into ADUC7061 processor	R-IS-722202851-03 Rev.1	Type B	9.52E-04	2 years	NA	SIL2*	SIL3
					9.52E-03	20 years		SIL1*	
					2.38E-03	5 years		SIL2**	
					9.52E-03	20 years		SIL1**	

Configuration	Safe Detected Failure λ_{SD}	Safe Undetected Failure λ_{SU}	Dangerous Detected Failure λ_{DD}	Dangerous Undetected Failure λ_{DU}	Diagnostic Coverage DC	Safe Failure Fraction SFF	No Effect Failure λ_{NE}	Not Part Failure λ_{NP}
NA	0.00 FIT	15.67 FIT	191.28 FIT	108.12 FIT	63.89%	65.68%	237.93 FIT	236.40 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 ISM0444_r0.

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	ITEM NAME HARDWARE	ITEM NAME SOFTWARE	REPORT CODE	FINAL RESULTS					
				System type	PFD_{avg}	T_{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
24.	D5273S	PRG040E into MK12DX128VLH5 processor + PRG041E into ADUC7061 processor	R-IS-722222028-03 Rev.1	Type B	9.92E-04	10 years	Analog current output	SIL2*	SIL3
					1.98E-03	20 years		SIL2**	

Configuration	Safe Detected Failure λ_{SD}	Safe Undetected Failure λ_{SU}	Dangerous Detected Failure λ_{DD}	Dangerous Undetected Failure λ_{DU}	Diagnostic Coverage DC	Safe Failure Fraction SFF	No Effect Failure λ_{NE}	Not Part Failure λ_{NP}
Analog current output	0.00 FIT	107.88 FIT	153.16 FIT	22.33 FIT	87.28%	92.12%	207.13 FIT	211.10 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 ISM0426_r0.

	ITEM NAME HARDWARE	ITEM NAME SOFTWARE	REPORT CODE	FINAL RESULTS					
				System type	PFD_{avg}	T_{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
25.	D5273S	PRG040E into MK12DX128VLH5 processor + PRG041E into ADUC7061 processor	R-IS-722222028-03 Rev.1	Type B	9.80E-04	5 years	Single relay output	SIL2*	SIL3
					3.92E-03	20 years		SIL2**	

Configuration	Safe Detected Failure λ_{SD}	Safe Undetected Failure λ_{SU}	Dangerous Detected Failure λ_{DD}	Dangerous Undetected Failure λ_{DU}	Diagnostic Coverage DC	Safe Failure Fraction SFF	No Effect Failure λ_{NE}	Not Part Failure λ_{NP}
Single relay output	0.00 FIT	154.76 FIT	114.44 FIT	44.38 FIT	72.06%	85.85%	184.77 FIT	203.25 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 ISM0426_r0.

	ITEM NAME HARDWARE	ITEM NAME SOFTWARE	REPORT CODE	FINAL RESULTS					
				System type	PFD_{avg}	T_{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
26.	D5273S	PRG040E into MK12DX128VLH5 processor + PRG041E into ADUC7061 processor	R-IS-722222028-03 Rev.1	Type B	9.52E-04	17 years	1oo2 architecture relay output	SIL2*	SIL3
					1.12E-03	20 years		SIL2**	

Configuration	Safe Detected Failure λ_{SD}	Safe Undetected Failure λ_{SU}	Dangerous Detected Failure λ_{DD}	Dangerous Undetected Failure λ_{DU}	Diagnostic Coverage DC	Safe Failure Fraction SFF	No Effect Failure λ_{NE}	Not Part Failure λ_{NP}
1oo2 architecture relay output	0.00 FIT	140.95 FIT	114.44 FIT	12.55 FIT	90.12%	95.32%	315.96 FIT	117.70 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 ISM0426_r0.

	ITEM NAME HARDWARE	ITEM NAME SOFTWARE	REPORT CODE	FINAL RESULTS					
				System type	PFD_{avg}	T_{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
27.	D6273S	PRG040E into MK12DX128VLH5 processor + PRG041E into ADUC7061 processor	R-IS-722222028-03 Rev.1	Type B	9.92E-04	10 years	Analog current output	SIL2*	SIL3
					1.98E-03	20 years		SIL2**	

Configuration	Safe Detected Failure λ_{SD}	Safe Undetected Failure λ_{SU}	Dangerous Detected Failure λ_{DD}	Dangerous Undetected Failure λ_{DU}	Diagnostic Coverage DC	Safe Failure Fraction SFF	No Effect Failure λ_{NE}	Not Part Failure λ_{NP}
Analog current output	0.00 FIT	107.88 FIT	153.16 FIT	22.33 FIT	87.28%	92.12%	207.13 FIT	211.10 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 ISM0420_r1.

	ITEM NAME HARDWARE	ITEM NAME SOFTWARE	REPORT CODE	FINAL RESULTS					
				System type	PFD_{avg}	T_{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
28.	D6273S	PRG040E into MK12DX128VLH5 processor + PRG041E into ADUC7061 processor	R-IS-722222028-03 Rev.1	Type B	9.80E-04	5 years	Single relay output	SIL2*	SIL3
					3.92E-03	20 years		SIL2**	

Configuration	Safe Detected Failure λ_{SD}	Safe Undetected Failure λ_{SU}	Dangerous Detected Failure λ_{DD}	Dangerous Undetected Failure λ_{DU}	Diagnostic Coverage DC	Safe Failure Fraction SFF	No Effect Failure λ_{NE}	Not Part Failure λ_{NP}
Single relay output	0.00 FIT	154.76 FIT	114.44 FIT	44.38 FIT	72.06%	85.85%	184.77 FIT	203.25 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 ISM0420_r1.

	ITEM NAME HARDWARE	ITEM NAME SOFTWARE	REPORT CODE	FINAL RESULTS					
				System type	PFD_{avg}	T_{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
29.	D6273S	PRG040E into MK12DX128VLH5 processor + PRG041E into ADUC7061 processor	R-IS-722222028-03 Rev.1	Type B	9.52E-04	17 years	1oo2 architecture relay output	SIL2*	SIL3
					1.12E-03	20 years		SIL2**	

Configuration	Safe Detected Failure λ_{SD}	Safe Undetected Failure λ_{SU}	Dangerous Detected Failure λ_{DD}	Dangerous Undetected Failure λ_{DU}	Diagnostic Coverage DC	Safe Failure Fraction SFF	No Effect Failure λ_{NE}	Not Part Failure λ_{NP}
1oo2 architecture relay output	0.00 FIT	140.95 FIT	114.44 FIT	12.55 FIT	90.12%	95.32%	315.96 FIT	117.70 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 ISM0420_r1.

	ITEM NAME HARDWARE	ITEM NAME SOFTWARE	REPORT CODE	FINAL RESULTS					
				System type	PFD_{avg}	T_{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
30.	D5231E	PRG042A into LM3S3749 processor + PRG043A into PIC16F690 processor	R-IS-722238328-03 Rev.1	Type B	9.39E-04	7 years	For each channel	SIL2*	SIL3
					2.68E-03	20 years		SIL2**	

Configuration	Safe Detected Failure λ_{SD}	Safe Undetected Failure λ_{SU}	Dangerous Detected Failure λ_{DD}	Dangerous Undetected Failure λ_{DU}	Diagnostic Coverage DC	Safe Failure Fraction SFF	No Effect Failure λ_{NE}	Not Part Failure λ_{NP}
For each channel	0.00 FIT	137.58 FIT	77.11 FIT	30.44 FIT	71.70%	87.58%	225.97 FIT	389.90 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 ISM0527_r0.

	ITEM NAME HARDWARE	ITEM NAME SOFTWARE	REPORT CODE	FINAL RESULTS					
				System type	PFD_{avg}	T_{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
31.	D6231E	PRG042A into LM3S3749 processor + PRG043A into PIC16F690 processor	R-IS-722238328-03 Rev.1	Type B	9.39E-04	7 years	For each channel	SIL2*	SIL3
					2.68E-03	20 years		SIL2**	

Configuration	Safe Detected Failure λ_{SD}	Safe Undetected Failure λ_{SU}	Dangerous Detected Failure λ_{DD}	Dangerous Undetected Failure λ_{DU}	Diagnostic Coverage DC	Safe Failure Fraction SFF	No Effect Failure λ_{NE}	Not Part Failure λ_{NP}
For each channel	0.00 FIT	137.58 FIT	77.11 FIT	30.44 FIT	71.70%	87.58%	225.97 FIT	389.90 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 ISM0423_r1.

	ITEM NAME HARDWARE	ITEM NAME SOFTWARE	REPORT CODE	FINAL RESULTS					
				System type	PFD_{avg}	T_{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
32.	D5263S	PRG0048_R5 into MK12DX128VLH5 processor + PRG0049_R5 into PIC16F690 processor	R-IS-722160171-06 Rev.1	Type B	9.00E-04	5 years	Single channel	SIL2*	SIL3
					3.60E-03	20 years		SIL2**	

Configuration	Safe Detected Failure λ_{SD}	Safe Undetected Failure λ_{SU}	Dangerous Detected Failure λ_{DD}	Dangerous Undetected Failure λ_{DU}	Diagnostic Coverage DC	Safe Failure Fraction SFF	No Effect Failure λ_{NE}	Not Part Failure λ_{NP}
Single channel	0.00 FIT	97.08 FIT	185.89 FIT	40.61 FIT	82.07%	87.45%	242.72 FIT	11.30 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 ISM0449_r1.

	ITEM NAME HARDWARE	ITEM NAME SOFTWARE	REPORT CODE	FINAL RESULTS					
				System type	PFD_{avg}	T_{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
33.	D5264S	PRG0048_R5 into MK12DX128VLH5 processor + PRG0049_R5 into PIC16F690 processor	R-IS-722160171-06 Rev.1	Type B	8.48E-04	4 years	with 4-20 mA current source (or sink) output	SIL2*	SIL3
					4.24E-03	20 years		SIL2**	

Configuration	Safe Detected Failure λ_{SD}	Safe Undetected Failure λ_{SU}	Dangerous Detected Failure λ_{DD}	Dangerous Undetected Failure λ_{DU}	Diagnostic Coverage DC	Safe Failure Fraction SFF	No Effect Failure λ_{NE}	Not Part Failure λ_{NP}
with 4-20 mA current source (or sink) output	0.00 FIT	100.11 FIT	188.85 FIT	47.98 FIT	79.74%	85.76%	254.16 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 ISM0448_r1.

	ITEM NAME HARDWARE	ITEM NAME SOFTWARE	REPORT CODE	FINAL RESULTS					
				System type	PFD_{avg}	T_{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
34.	D5264S	PRG0048_R5 into MK12DX128VLH5 processor + PRG0049_R5 into PIC16F690 processor	R-IS-722160171-06 Rev.1	Type B	8.88E-04	4 years	Alarm output	SIL2*	SIL3
					4.44E-03	20 years		SIL2**	

Configuration	Safe Detected Failure λ_{SD}	Safe Undetected Failure λ_{SU}	Dangerous Detected Failure λ_{DD}	Dangerous Undetected Failure λ_{DU}	Diagnostic Coverage DC	Safe Failure Fraction SFF	No Effect Failure λ_{NE}	Not Part Failure λ_{NP}
Alarm output	0.00 FIT	138.60 FIT	124.15 FIT	50.39 FIT	71.13%	83.91%	225.06 FIT	118.60 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 ISM0448_r1.

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	ITEM NAME HARDWARE	ITEM NAME SOFTWARE	REPORT CODE	FINAL RESULTS					
				System type	PFD_{avg}	T_{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
35.	D6263S	PRG0048_R5 into MK12DX128VLH5 processor + PRG0049_R5 into PIC16F690 processor	R-IS-722160171-06 Rev.1	Type B	9.00E-04	5 years	Single channel	SIL2*	SIL3
					3.60E-03	20 years		SIL2**	

Configuration	Safe Detected Failure λ_{SD}	Safe Undetected Failure λ_{SU}	Dangerous Detected Failure λ_{DD}	Dangerous Undetected Failure λ_{DU}	Diagnostic Coverage DC	Safe Failure Fraction SFF	No Effect Failure λ_{NE}	Not Part Failure λ_{NP}
Single channel	0.00 FIT	97.08 FIT	185.89 FIT	40.61 FIT	82.07%	87.45%	242.72 FIT	11.30 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 ISM0475_r0.

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	ITEM NAME HARDWARE	ITEM NAME SOFTWARE	REPORT CODE	FINAL RESULTS					
				System type	PFD_{avg}	T_{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
36.	D6264S	PRG0048_R5 into MK12DX128VLH5 processor + PRG0049_R5 into PIC16F690 processor	R-IS-722160171-06 Rev.1	Type B	8.48E-04	4 years	with 4-20 mA current source (or sink) output	SIL2*	SIL3
					4.24E-03	20 years		SIL2**	

Configuration	Safe Detected Failure λ_{SD}	Safe Undetected Failure λ_{SU}	Dangerous Detected Failure λ_{DD}	Dangerous Undetected Failure λ_{DU}	Diagnostic Coverage DC	Safe Failure Fraction SFF	No Effect Failure λ_{NE}	Not Part Failure λ_{NP}
with 4-20 mA current source (or sink) output	0.00 FIT	100.11 FIT	188.85 FIT	47.98 FIT	79.74%	85.76%	254.16 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 ISM0476_r0.

	ITEM NAME HARDWARE	ITEM NAME SOFTWARE	REPORT CODE	FINAL RESULTS					
				System type	PFD_{avg}	T_{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
37.	D6264S	PRG0048_R5 into MK12DX128VLH5 processor + PRG0049_R5 into PIC16F690 processor	R-IS-722160171-06 Rev.1	Type B	8.88E-04	4 years	Alarm output	SIL2*	SIL3
					4.44E-03	20 years		SIL2**	

Configuration	Safe Detected Failure λ_{SD}	Safe Undetected Failure λ_{SU}	Dangerous Detected Failure λ_{DD}	Dangerous Undetected Failure λ_{DU}	Diagnostic Coverage DC	Safe Failure Fraction SFF	No Effect Failure λ_{NE}	Not Part Failure λ_{NP}
Alarm output	0.00 FIT	138.60 FIT	124.15 FIT	50.39 FIT	71.13%	83.91%	225.06 FIT	118.60 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 ISM0476_r0.

	ITEM NAME HARDWARE	ITEM NAME SOFTWARE	REPORT CODE	FINAL RESULTS					
				System type	PFD_{avg}	T_{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
38.	D6072S-109	PRG040E into MK12DX128VLH5 processor + PRG041E into ADUC7061 processor	R-IS-722283046 Rev.1	Type B	9.93E-04	10 years	Analog output	SIL2*	SIL3
					1.99E-03	20 years		SIL2**	
					9.13E-04	9 years	Alarm output	SIL2*	
					2.03E-03	20 years		SIL2**	

Configuration	Safe Detected Failure λ_{SD}	Safe Undetected Failure λ_{SU}	Dangerous Detected Failure λ_{DD}	Dangerous Undetected Failure λ_{DU}	Diagnostic Coverage DC	Safe Failure Fraction SFF	No Effect Failure λ_{NE}	Not Part Failure λ_{NP}
Analog output	0.00 FIT	107.70 FIT	153.16 FIT	22.35 FIT	87.26%	92.11%	198.39 FIT	86.30 FIT
Alarm output	0.00 FIT	128.53 FIT	114.44 FIT	22.89 FIT	84.88%	91.39%	187.94 FIT	114.10 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 ISM0567_r0.

	ITEM NAME HARDWARE	ITEM NAME SOFTWARE	REPORT CODE	FINAL RESULTS					
				System type	PFD_{avg}	T_{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
39.	D6072D-109	PRG040E into MK12DX128VLH5 processor + PRG041E into ADUC7061 processor	R-IS-722283046 Rev.1	Type B	9.95E-04	10 years	Analog output	SIL2*	SIL3
					1.99E-03	20 years		SIL2**	
					9.54E-04	9 years	Alarm output	SIL2*	
					2.12E-03	20 years		SIL2**	

Configuration	Safe Detected Failure λ_{SD}	Safe Undetected Failure λ_{SU}	Dangerous Detected Failure λ_{DD}	Dangerous Undetected Failure λ_{DU}	Diagnostic Coverage DC	Safe Failure Fraction SFF	No Effect Failure λ_{NE}	Not Part Failure λ_{NP}
Analog output	0.00 FIT	121.35 FIT	173.30 FIT	22.35 FIT	88.58%	92.95%	238.80 FIT	242.80 FIT
Alarm output	0.00 FIT	146.81 FIT	134.58 FIT	23.89 FIT	84.92%	92.17%	235.12 FIT	258.20 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 ISM0567_r0.

	ITEM NAME HARDWARE	ITEM NAME SOFTWARE	REPORT CODE	FINAL RESULTS					
				System type	PFD_{avg}	T_{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
40.	D5212Q	PRG0056_R0 into MK12DX128VLH5 Processor + PRG0057_R0 into MK02FN64VFM10 processor	R-IS-722222028-06 Rev.1	Type B	9.00E-04	6 years	Each channel with passive input and 4-20 mA analog current output	SIL2*	SIL3
					3.00E-03	20 years		SIL2**	

Configuration	Safe Detected Failure λ_{SD}	Safe Undetected Failure λ_{SU}	Dangerous Detected Failure λ_{DD}	Dangerous Undetected Failure λ_{DU}	Diagnostic Coverage DC	Safe Failure Fraction SFF	No Effect Failure λ_{NE}	Not Part Failure λ_{NP}
Each channel with passive input and 4-20 mA analog current output	0.00 FIT	112.13 FIT	175.91 FIT	33.83 FIT	83.87%	89.49%	368.62 FIT	201.30 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 ISM0468_r0.

Italia

	ITEM NAME HARDWARE	ITEM NAME SOFTWARE	REPORT CODE	FINAL RESULTS					
				System type	PFD_{avg}	T_{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
41.	D5212Q	PRG0056_R0 into MK12DX128VLH5 Processor + PRG0057_R0 into MK02FN64VFM10 processor	R-IS-722222028-06 Rev.1	Type B	9.52E-04	7 years	1st or 2nd input channel only with active input and 4-20 mA analog current output	SIL2*	SIL3
					2.72E-03	20 years		SIL2**	

Configuration	Safe Detected Failure λ_{SD}	Safe Undetected Failure λ_{SU}	Dangerous Detected Failure λ_{DD}	Dangerous Undetected Failure λ_{DU}	Diagnostic Coverage DC	Safe Failure Fraction SFF	No Effect Failure λ_{NE}	Not Part Failure λ_{NP}
1st or 2nd input channel only with active input and 4-20 mA analog current output	0.00 FIT	112.13 FIT	175.16 FIT	30.66 FIT	85.10%	90.36%	368.14 FIT	205.70 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 ISM0468_r0.

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	ITEM NAME HARDWARE	ITEM NAME SOFTWARE	REPORT CODE	FINAL RESULTS					
				System type	PFD_{avg}	T_{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
42.	D5212Q	PRG0056_R0 into MK12DX128VLH5 Processor + PRG0057_R0 into MK02FN64VFM10 processor	R-IS-722222028-06 Rev.1	Type B	8.60E-04	5 years	Each channel with passive input and alarm output	SIL2*	SIL3
					3.44E-03	20 years		SIL2**	

Configuration	Safe Detected Failure λ_{SD}	Safe Undetected Failure λ_{SU}	Dangerous Detected Failure λ_{DD}	Dangerous Undetected Failure λ_{DU}	Diagnostic Coverage DC	Safe Failure Fraction SFF	No Effect Failure λ_{NE}	Not Part Failure λ_{NP}
Each channel with passive input and alarm output	0.00 FIT	136.28 FIT	139.09 FIT	38.90 FIT	78.14%	87.62%	338.42 FIT	239.10 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 ISM0468_r0.

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	ITEM NAME HARDWARE	ITEM NAME SOFTWARE	REPORT CODE	FINAL RESULTS					
				System type	PFD_{avg}	T_{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
43.	D5212Q	PRG0056_R0 into MK12DX128VLH5 Processor + PRG0057_R0 into MK02FN64VFM10 processor	R-IS-722222028-06 Rev.1	Type B	9.48E-04	6 years	1st or 2nd input channel only with active input and alarm output	SIL2*	SIL3
					3.16E-03	20 years		SIL2**	

Configuration	Safe Detected Failure λ_{SD}	Safe Undetected Failure λ_{SU}	Dangerous Detected Failure λ_{DD}	Dangerous Undetected Failure λ_{DU}	Diagnostic Coverage DC	Safe Failure Fraction SFF	No Effect Failure λ_{NE}	Not Part Failure λ_{NP}
1st or 2nd input channel only with active input and alarm output	0.00 FIT	136.28 FIT	138.34 FIT	35.73 FIT	79.47%	88.49%	337.94 FIT	243.50 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 ISM0468_r0.

	ITEM NAME HARDWARE	ITEM NAME SOFTWARE	REPORT CODE	FINAL RESULTS					
				System type	PFD_{avg}	T_{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
44.	D6212Q	PRG0056_R0 into MK12DX128VLH5 Processor + PRG0057_R0 into MK02FN64VFM10 processor	R-IS-722222028-06 Rev.1	Type B	9.00E-04	6 years	Each channel with passive input and 4-20 mA analog current output	SIL2*	SIL3
					3.00E-03	20 years		SIL2**	

Configuration	Safe Detected Failure λ_{SD}	Safe Undetected Failure λ_{SU}	Dangerous Detected Failure λ_{DD}	Dangerous Undetected Failure λ_{DU}	Diagnostic Coverage DC	Safe Failure Fraction SFF	No Effect Failure λ_{NE}	Not Part Failure λ_{NP}
Each channel with passive input and 4-20 mA analog current output	0.00 FIT	112.13 FIT	175.91 FIT	33.83 FIT	83.87%	89.49%	368.62 FIT	201.30 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 ISM0469_r0.

	ITEM NAME HARDWARE	ITEM NAME SOFTWARE	REPORT CODE	FINAL RESULTS					
				System type	PFD_{avg}	T_{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
45.	D6212Q	PRG0056_R0 into MK12DX128VLH5 Processor + PRG0057_R0 into MK02FN64VFM10 processor	R-IS-722222028-06 Rev.1	Type B	9.52E-04	7 years	1st or 2nd input channel only with active input and 4-20 mA analog current output	SIL2*	SIL3
					2.72E-03	20 years		SIL2**	

Configuration	Safe Detected Failure λ_{SD}	Safe Undetected Failure λ_{SU}	Dangerous Detected Failure λ_{DD}	Dangerous Undetected Failure λ_{DU}	Diagnostic Coverage DC	Safe Failure Fraction SFF	No Effect Failure λ_{NE}	Not Part Failure λ_{NP}
1st or 2nd input channel only with active input and 4-20 mA analog current output	0.00 FIT	112.13 FIT	175.16 FIT	30.66 FIT	85.10%	90.36%	368.14 FIT	205.70 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 ISM0469_r0.

	ITEM NAME HARDWARE	ITEM NAME SOFTWARE	REPORT CODE	FINAL RESULTS					
				System type	PFD_{avg}	T_{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
46.	D6212Q	PRG0056_R0 into MK12DX128VLH5 Processor + PRG0057_R0 into MK02FN64VFM10 processor	R-IS-722222028-06 Rev.1	Type B	8.60E-04	5 years	Each channel with passive input and alarm output	SIL2*	SIL3
					3.44E-03	20 years		SIL2**	

Configuration	Safe Detected Failure λ_{SD}	Safe Undetected Failure λ_{SU}	Dangerous Detected Failure λ_{DD}	Dangerous Undetected Failure λ_{DU}	Diagnostic Coverage DC	Safe Failure Fraction SFF	No Effect Failure λ_{NE}	Not Part Failure λ_{NP}
Each channel with passive input and alarm output	0.00 FIT	136.28 FIT	139.09 FIT	38.90 FIT	78.14%	87.62%	338.42 FIT	239.10 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 ISM0469_r0.

	ITEM NAME HARDWARE	ITEM NAME SOFTWARE	REPORT CODE	FINAL RESULTS					
				System type	PFD_{avg}	T_{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
47.	D6212Q	PRG0056_R0 into MK12DX128VLH5 Processor + PRG0057_R0 into MK02FN64VFM10 processor	R-IS-722222028-06 Rev.1	Type B	9.48E-04	6 years	1st or 2nd input channel only with active input and alarm output	SIL2*	SIL3
					3.16E-03	20 years		SIL2**	

Configuration	Safe Detected Failure λ_{SD}	Safe Undetected Failure λ_{SU}	Dangerous Detected Failure λ_{DD}	Dangerous Undetected Failure λ_{DU}	Diagnostic Coverage DC	Safe Failure Fraction SFF	No Effect Failure λ_{NE}	Not Part Failure λ_{NP}
1st or 2nd input channel only with active input and alarm output	0.00 FIT	136.28 FIT	138.34 FIT	35.73 FIT	79.47%	88.49%	337.94 FIT	243.50 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 ISM0469_r0.

FUNCTIONAL SAFETY ASSESSMENTS		
	REPORT CODE	**FINAL RESULT**
1	R TUV IT 22 SIL 0087	Compliant to the standard for the following parts: - 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.