

COMPLIANCE

with IEC EN 61508:2010

Certificate No.: C-IS-272994-01 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 AND HIGH 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-272994-01) 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-272994-01

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







SUMMARY TABLE T-IS-272994-01

	ITEM NAME	REPORT CODE	FINAL RESULTS						
			System type	PFD _{avg}	PFH [h ⁻¹]	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
1.	D5094S	5094S R-IS-722202852-03 Rev.2 Type	03 Rev.2 Type A	9.83E-05	1.60E-09	14 years	NE loads, valid for bipolar or	SIL3*	CII 2
	233016		.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	1.40E-04		20 years	unipolar load interruption	SIL3**	SIL3

Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}
0.00 FIT	253.24 FIT	0.00 FIT	1.60 FIT	99,37 %	196.76 FIT	20.60 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 ISM0306_r1.

	ITEM NAME	REPORT CODE	FINAL RESULTS							
			System type	PFD _{avg}	PFH [h ⁻¹]	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL	
2.	. D5094S R-IS-722202852-0	R-IS-722202852-03 Rev.2	S-722202852-03 Rev.2 Type A	9.11E-05	3.46E-09	6 years	F&G / ND loads, valid for bipolar or unipolar load	SIL3*	SIL3	
		1X-10-7 22202002-00 1XeV.2	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	3.04E-04	0,102 00	20 years	interruption	SIL3**	SILS	

Safe Dete	cted Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part
Failure	N _{SD} Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}
0.00 F	T 133.80 FIT	0.00 FIT	3.46 FIT	97,48 %	314.74 FIT	20.20 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 ISM0306_r1.





	ITEM NAME	REPORT CODE	FINAL RESULTS						
			System type	PFD _{avg}	PFH [h ⁻¹]	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
3	D5095S	R-IS-722202852-03 Rev.2	Type A	9.52E-05	3.10E-09	7 years	NE loads, valid for bipolar or	SIL3*	CII 2
	250000	11.0.1222002 00 1101.2	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	2.72E-04	20 years	unipolar load interruption	SIL3**	SIL3	

Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}
0.00 FIT	148.20 FIT	0.00 FIT	3.10 FIT	97,95 %	300.70 FIT	20.20 FIT

(**)Considering the products contribute more than 10% of total SIF dangerous failure. Please, for more Functional Safety information see Safety Manual ISM0307_r1.

	ITEM NAME	REPORT CODE	FINAL RESULTS							
	II EM IVAME		System type	PFD _{avg}	PFH [h ⁻¹]	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL	
4.	D5095S R-IS-722202852-03 Rev.:	R-IS-722202852-03 Rev.2	ev.2 Type A	9.46E-05	1.96E-09	11 years	F&G / ND loads, valid for bipolar or unipolar load	SIL3*	SIL3	
			1.72E-04			20 years	interruption	SIL3**	SILS	

Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}
0.00 FIT	238.84 FIT	0.00 FIT	1.96 FIT	99,19 %	210.80 FIT	20.60 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 ISM0307_r1.





	ITEM NAME	REPORT CODE	FINAL RESULTS						
			System type	PFD _{avg}	PFH [h ⁻¹]	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
5.	D5096S	R-IS-722202852-03 Rev.2	Type A	9.83E-05	1.60E-09	14 years	NE loads, valid for bipolar	SIL3*	SIL3
0.	20000	10 7222020 00 100.2	1,75071	1.40E-04	1.002 00	20 years	load interruption	SIL3**	SIL3

Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}
0.00 FIT	248.68 FIT	0.00 FIT	1.60 FIT	99,36 %	200.52 FIT	441.79 FIT

(**)Considering the products contribute more than 10% of total SIF dangerous failure. Please, for more Functional Safety information see Safety Manual ISM0308_r1.

	ITEM NAME	REPORT CODE	FINAL RESULTS						
			System type	PFD _{avg}	PFH [h ⁻¹]	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
6.	D5096S	R-IS-722202852-03 Rev.2	Type A	8.82E-05	3.35E-09	6 years	F&G / ND loads, valid for	SIL3*	CII 2
<u> </u>	20000		1,70071	2.94E-04	20 years	bipolar load interruption	SIL3**	SIL3	

Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part
Failure λ_{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}
0.00 FIT	133.80 FIT	0.00 FIT	3.35 FIT	97,56 %	313.65 FIT	441.79 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 ISM0308_r1.





	ITEM NAME	REPORT CODE		FINAL RESULTS					
	THE WINAMIE REPORT SOO		System type	PFD _{avg}	PFH [h ⁻¹]	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
7	D5097S	R-IS-722202852-03 Rev.2	Type A	9.52E-05	3.10E-09	7 years	NE loads, valid for bipolar	SIL3*	CII 2
''	200070	1 10 1 2220202 00 1 tov.2	1,70071	2.72E-04	0.102 00	20 years	load interruption	SIL3**	SIL3

	Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part
	Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}
Ī	0.00 FIT	143.64 FIT	0.00 FIT	3.10 FIT	97,89 %	304.06 FIT	441.79 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 ISM0309_r1.

FINAL RESULTS ITEM NAME REPORT CODE PFH [h-1] **Allowed Systematic SIL PFD**_{avg} **Allowed SIL** System type **T**Proof Configuration 9.74E-05 F&G / ND loads, valid for 12 years SIL3* D5097S R-IS-722202852-03 Rev.2 1.85E-09 8. Type A SIL3 1.62E-04 20 years bipolar load interruption SIL3**

Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}
0.00 FIT	238.84 FIT	0.00 FIT	1.85 FIT	99,23 %	210.11 FIT	441.79 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 ISM0309_r1.





	ITEM NAME	REPORT CODE		FINAL RESULTS						
	II LIII IVAIIIL		System type	PFD _{avg}	PFH [h ⁻¹]	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL	
				9.83E-05		14 years	fault relay output contact externally	SIL3*		
9.	D5096S	R-IS-722202852-03 Rev.2	Туре А	1.40E-04	1.60E-09	20 years	wired in series to input loop of Safety PLC DO and used for NE loads with bipolar load interruption	SIL3**	SIL3	

Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}
0.00 FIT	408.14 FIT	0.00 FIT	1.60 FIT	99,61 %	377.65 FIT	105.20 FIT

(**)Considering the products contribute more than 10% of total SIF dangerous failure. Please, for more Functional Safety information see Safety Manual ISM0308_r1.

	ITEM NAME	REPORT CODE		FINAL RESULTS						
	TEM NAME		System type	PFD _{avg}	PFH [h ⁻¹]	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL	
				9.83E-05		14 years	universal fault mirroring to Safety	SIL3*		
10.	D5096S-100	R-IS-722202852-03 Rev.2	Type A	1.40E-04	1.60E-09	20 years	PLC DO and used for NE loads with bipolar load interruption	SIL3**	SIL3	

Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}
0.00 FIT	406.87 FIT	0.00 FIT	1.60 FIT	99,61 %	373.72 FIT	110.40 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 ISM0435_r1.





	ITEM NAME REPORT CO		FINAL RESULTS						
	TI ZIII TVAIII Z	KEI OKI GODE	System type	PFD _{avg}	PFH [h ⁻¹]	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
11.	D5098S D5098D	R-IS-272994-02 Rev.1	Type A	9.83E-05	1.60E-09	14 years	NE loads	SIL3*	CII 2
'''		11.10 212001 02 110111	1,750,71	1.40E-04	1.002 00	20 years	112 10000	SIL3**	SIL3

	Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part
	Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}
ĺ	0.00 FIT	122.50 FIT	0.00 FIT	1.60 FIT	98,71 %	93.70 FIT	10.60 FIT

(**)Considering the products contribute more than 10% of total SIF dangerous failure. Please, for more Functional Safety information see Safety Manual ISM0314_ r0.





	ITEM NAME	REPORT CODE		FINAL RESULTS						
	TIEM NAME	KEI OKI GODE	System type	PFDavg	PFH [h ⁻¹]	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL	
12	. D5291S-097	R-IS-722114552-01 Rev.1	Type A	9.83E-05	1.60E-09	14 years	ND loads	SIL3*	CII 2	
'	202010 007	10.1211.1002.011001.1	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	1.40E-04			1.2 70000	SIL3**	SIL3	

Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}
0.00 FIT	145.44 FIT	0.00 FIT	1.60 FIT	98,91 %	113.56 FIT	0.00 FIT

(**)Considering the products contribute more than 10% of total SIF dangerous failure. Please, for more Functional Safety information see Safety Manual ISM0369_ r0.





	ITEM NAME	REPORT CODE		FINAL RESULTS						
	ITEW NAME	REPORT CODE	System type	PFDavg	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL		
	PSD1220,			9.05E-05	5 years	Single power supply module	SIL3*			
13.	13. PSD1220,	R-IS-722146635-01 Rev.1	v.1 Type A	3.62E-04	20 years	NE loads	SIL2*	SIL3		
	1 02 1220 000			2.72E-04	15 years	112 10000	SIL3**			

Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	perous Undetected Safe Failure Fraction		Not Part
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}
0.00 FIT	879.28 FIT	57.99 FIT	4.02 FIT	99,57 %	763.23 FIT	9.00 FIT





	ITEM NAME	REPORT CODE	FINAL RESULTS						
	TEM NAME REPORT 605		System type	PFDavg	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL	
	PSD1220,			9.05E-05	10 years	Two paralleled modules	SIL3*		
14.	PSD1220,	R-IS-722146635-01 Rev.1	Type A	1.81E-04	20 years	NE loads	SIL2*	SIL3	
	1 05 1220 000			1.81E-04	20 years	Single or double AC input supply	SIL3**		

Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}
0.00 FIT	43.96 FIT	4.85 FIT	2.05 FIT	95.96 %	3358.17 FIT	18.00 FIT





	ITEM NAME	REPORT CODE	FINAL RESULTS						
	ITEW NAME	KEI OKI GODE	System type	PFD _{avg}	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL	
	PSD1220,			9.26E-05	7 years	Three paralleled modules	SIL3*		
15.	PSD1220,	R-IS-722146635-01 Rev.1	Type A	2.65E-04	20 years	NE loads	SIL2*	SIL3	
	1 05 1220 000			2.65E-04	20 years	Single AC input supply	SIL3**		

Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}
0.00 FIT	43.96 FIT	5.85 FIT	3.00 FIT	94.31 %	5060.74 FIT	27.00 FIT





	ITEM NAME	REPORT CODE		FINAL RESULTS						
	I I EW NAME	KEI OKI GODE	System type	PFD _{avg}	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL		
	PSD1220,			8.70E-05	5 years	Four paralleled modules	SIL3*			
16.	PSD1220,	R-IS-722146635-01 Rev.1	Type A	3.48E-04	20 years	NE loads	SIL2*	SIL3		
	1 05 1220-030			2.61E-04	15 years	Single and double AC input supply	SIL3**			

Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}
0.00 FIT	43.96 FIT	6.85 FIT	3.95 FIT	92.78 %	6763.31 FIT	36.00 FIT





	ITEM NAME	REPORT CODE		FINAL RESULTS						
	ITEW NAME	KEI OKI CODE	System type	PFDavg	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL		
	PSD1220,			8.63E-05	4 years	Five paralleled modules	SIL3*			
17.	PSD1220-098	R-IS-722146635-01 Rev.1	Type A	4.32E-04	20 years	NE loads	SIL2*	SIL3		
	1 02 1220 000			3.24E-04	15 years	Single AC input supply	SIL3**			

Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}
0.00 FIT	43.96 FIT	7.85 FIT	4.90 FIT	91.35 %	8465.88 FIT	45.00 FIT





	ITEM NAME	REPORT CODE		FINAL RESULTS						
	TEM NAME REPORT GODE		System type	PFDavg	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL		
	PSD1220,			9.02E-05	3.5 years	Six paralleled modules	SIL3*			
18.	PSD1220,	R-IS-722146635-01 Rev.1	Type A	5.15E-04	20 years	NE loads	SIL2*	SIL3		
	1 35 1220-030			3.09E-04	12 years	Single and double AC input supply	SIL3**			

Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}
0.00 FIT	43.96 FIT	8.85 FIT	5.85 FIT	90.02 %	10168.45 FIT	54.00 FIT





	ITEM NAME	REPORT CODE		FINAL RESULTS					
	I LIVI NAIVIE	REPORT CODE	System type	PFDavg	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL	
19.	PSD1220,	R-IS-722146635-01 Rev.1	Type A	8.26E-03	2 years	Single power supply module	SIL1*	011.0	
13.	PSD1220-098	11-10-1221 -1 0030-01 11ev.1	Туре А	2.48E-02	6 years	ND loads	SIL1**	SIL3	

Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}
0.00 FIT	763.23 FIT	0.00 FIT	941.29 FIT	44.78 %	-	9.00 FIT

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

Low demand mode of operation has only been considered in this analysis.

Please, for more Functional Safety information see Safety Manual ISM0371_ r0.





	ITEM NAME	REPORT CODE		FINAL RESULTS						
	TEM NAME REPORT OODE		System type	PFDavg	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL		
	PSD1220,			8.58E-04	4 years	Two paralleled modules (HFT=1)	SIL2*			
20.	PSD1220,	R-IS-722146635-01 Rev.1	Type A	4.29E-03	20 years	ND loads	SIL1*	SIL3		
	1 05 1220 000			2.57E-03	12 years	Single or double AC input supply	SIL2**			

Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}
0.00 FIT	3358.17 FIT	2.00 FIT	48.87 FIT	98.57 %	-	18.00 FIT





	ITEM NAME	REPORT CODE	FINAL RESULTS						
	TEM NAME REPORT CODE		System type	PFDavg	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL	
	PSD1220,			8.74E-04	4 years	Three paralleled modules (HFT=1)	SIL2*		
21.	PSD1220,	R-IS-722146635-01 Rev.1	Туре А	4.37E-03	20 years	ND loads	SIL1*	SIL3	
	1 051220-090			2.62E-03	12 years	Single AC input supply	SIL2**		

Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}
0.00 FIT	5060.74 FIT	3.00 FIT	49.82 FIT	99.03 %	-	27.00 FIT





	ITEM NAME	REPORT CODE		FINAL RESULTS						
	TENTIAME REPORT GODE		System type	PFDavg	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL		
	PSD1220,			8.91E-04	4 years	Four paralleled modules (HFT=1)	SIL2*			
22.	PSD1220,	R-IS-722146635-01 Rev.1	Type A	4.46E-03	20 years	ND loads	SIL1*	SIL3		
	1 05 1220-030			2.67E-03	12 years	Single and double AC input supply	SIL2**			

Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}
0.00 FIT	6763.31 FIT	4.00 FIT	50.77 FIT	99.26 %	-	36.00 FIT





	ITEM NAME	REPORT CODE		FINAL RESULTS						
	I I EW NAME	REPORT CODE	System type	PFDavg	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL		
	PSD1220,			9.08E-04	4 years	Five paralleled modules (HFT=1)	SIL2*			
23.	PSD1220,	R-IS-722146635-01 Rev.1	Type A	4.54E-03	20 years	ND loads	SIL1*	SIL3		
	1 051220 000			2.72E-03	12 years	Single AC input supply	SIL2**			

Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}
0.00 FIT	8465.88 FIT	5.00 FIT	51.72 FIT	99.39 %	-	45.00 FIT





	ITEM NAME	REPORT CODE	FINAL RESULTS						
	TEM WANTE KEI OKT GODE		System type	PFDavg	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL	
	PSD1220,			9.25E-04	4 years	Six paralleled modules (HFT=1)	SIL2*		
24.	PSD1220,	R-IS-722146635-01 Rev.1	Type A	4.62E-03	20 years	ND loads	SIL1*	SIL3	
	1 35 1220-030			2.77E-03	12 years	Single and double AC input supply	SIL2**		

Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}
0.00 FIT	10168.45 FIT	6.00 FIT	52.67 FIT	99.49 %	-	54.00 FIT





	ITEM NAME	REPORT CODE	FINAL RESULTS						
	TIEWINAME REPORT CODE		System type	PFDavg	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL	
25.	PSD1220, PSD1220-098	R-IS-722146635-01 Rev.1	Type A	2.19E-04	1 year	Three paralleled modules (HFT=2) ND loads Single AC input supply	SIL3*	SIL3	

Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}
0.00 FIT	5060.74 FIT	3.00 FIT	49.82 FIT	99.03 %	-	27.00 FIT





	ITEM NAME	REPORT CODE	FINAL RESULTS						
	I I EW NAME	REPORT CODE	System type	PFDavg	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL	
26.	PSD1220, PSD1220-098	R-IS-722146635-01 Rev.1	Type A	2.23E-04	1 year	Four paralleled modules (HFT=2) ND loads Single AC input supply	SIL3*	SIL3	

Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}
0.00 FIT	6818.08 FIT	4.00 FIT	50.77 FIT	99.26 %	-	36.00 FIT





	ITEM NAME	REPORT CODE		FINAL RESULTS						
	I I EW NAME	REPORT CODE	System type	PFDavg	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL		
27.	PSD1220, PSD1220-098	R-IS-722146635-01 Rev.1	Type A	2.27E-04	1 year	Five paralleled modules (HFT=2) ND loads Single AC input supply	SIL3*	SIL3		

Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}
0.00 FIT	8465.88 FIT	5.00 FIT	51.72 FIT	99.39 %	-	45.00 FIT





	ITEM NAME	REPORT CODE	FINAL RESULTS						
	ITEW NAME	REPORT CODE	System type	PFDavg	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL	
28.	PSD1220, PSD1220-098	R-IS-722146635-01 Rev.1	Type A	2.31E-04	1 year	Six paralleled modules (HFT=2) ND loads Single AC input supply	SIL3*	SIL3	

Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}
0.00 FIT	10168.45 FIT	6.00 FIT	52.67 FIT	99.49 %	-	54.00 FIT





	ITEM NAME	REPORT CODE		FINAL RESULTS						
	II LIN NAME	KEI OKI GODE	System type	PFDavg	PFH [h ⁻¹]	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL	
29.	D5290S-092	R-IS-722146635-02 Rev.1	Type A	9.83E-05	1.60E-09	14 years	NE loods	SIL3*	CII 2	
20.	202000 002	10.121.13000 02.100.1	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	1.40E-04		20 years	NE loads	SIL3**	SIL3	

Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part	
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}	
0.00 FIT	145.44 FIT	0.00 FIT	1.60 FIT	98,91 %	113.56 FIT	0.00 FIT	

(**)Considering the products contribute more than 10% of total SIF dangerous failure. Please, for more Functional Safety information see Safety Manual ISM0373_ r0.





	ITEM NAME	REPORT CODE				F	FINAL RESULTS		
	TIEW NAME	KEI OKI OODE	System type	PFDavg	PFH [h ⁻¹]	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
30.	TB-D5016-TRI-010	R-IS-722172544 Rev.1	Туре А	0.00	0.00	20 years**	For each channel connected to AI, AO, DI or DO module loop with DTT condition	SIL3*	SIL3

Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}
1.04 FIT	0.00 FIT	0.00 FIT	0.00 FIT	100,00 %	105.36 FIT	34.40 FIT

(**)It is considered the product life time.

Please, for more Functional Safety information see Safety Manual ISM0385_r1.

	ITEM NAME	REPORT CODE							
		KEI OKI GODE	System type	PFD _{avg}	PFH [h ⁻¹]	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
31.	TB-D5016-TRI-010	R-IS-722172544 Rev.1	Type A	1.66E-07	0.00	20 years	For each channel connected to DO module loop with ETT condition	SIL3*	SIL3

Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Diagnostic Coverage	Safe Failure Fraction	No Effect	Not Part
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	DC	SFF	Failure λ _{NE}	Failure λ _{NP}
0.00 FIT	0.00 FIT	1.04 FIT	0.00 FIT	100,00%	100,00 %	105.36 FIT	34.40 FIT

(*)Considering the products do not contribute more than 10% of total SIF dangerous failure. Please, for more Functional Safety information see Safety Manual ISM0385_r1.





	ITEM NAME	REPORT CODE	FINAL RESULTS							
	TIEM NAME		System type	PFDavg	PFH [h ⁻¹]	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL	
32.	D6001S/D	R-IS-722172544 Rev.1	Туре А	0.00	0.00	20 years**	For each channel connected to AI, AO, DI or DO module loop with DTT condition	SIL3*	SIL3	

	Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part
I	Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}
ĺ	0.00 FIT	8.45 FIT	0.00 FIT	0.00 FIT	100,00 %	23.55 FIT	0.00 FIT

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

(**)It is considered the product life time.

Please, for more Functional Safety information see Safety Manual ISM0384_r0.

	ITEM NAME	REPORT CODE	REPORT CODE FINAL RESULTS						
	TIEM NAME		System type	PFD _{avg}	PFH [h ⁻¹]	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
33.	D6001S/D	R-IS-722172544 Rev.1	Туре А	1.35E-06	0.00	20 years	For each channel connected to DO module loop with ETT condition	SIL3*	SIL3

Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Diagnostic Coverage	Safe Failure Fraction	No Effect	Not Part
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	DC	SFF	Failure λ _{NE}	Failure λ _{NP}
0.00 FIT	0.00 FIT	8.45 FIT	0.00 FIT	100,00 %	100,00 %	23.55 FIT	0.00 FIT

(*)Considering the products do not contribute more than 10% of total SIF dangerous failure. Please, for more Functional Safety information see Safety Manual ISM0384_r0.





	ITEM NAME	REPORT CODE		FINAL RESULTS						
	I I EW NAME	REPORT CODE	System type	PFD _{avg}	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL		
34.	TB-D5001-HRT-003 with 5700	R-IS-722146635-03 Rev.1	Type A	4.39E-06	20 years	for each channel	SIL3*	SIL3		

Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{no effect}	Failure λ _{not part}
0.00 FIT	0.48 FIT	0.00 FIT	0.05 FIT	90.57 %	512.31 FIT	2586.65 FIT





	ITEM NAME	REPORT CODE		FINAL RESULTS					
	II EW NAME		System type	PFDavg	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL	
35.	TB-D5001-HRT-004, -006, -007 with 5700	R-IS-722146635-03 Rev.1	Type A	4.39E-06	20 years	for each channel	SIL3*	SIL3	

Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{no effect}	Failure λ _{not part}
0.00 FIT	0.47 FIT	0.00 FIT	0.05 FIT	90.38 %	490.98 FIT	999.20 FIT





	ITEM NAME	REPORT CODE		FINAL RESULTS					
			System type	PFD _{avg}	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL	
36.	TB-D5001-HRT-005 with 5700	R-IS-722146635-03 Rev.1	Type A	9.67E-06	20 years	for each channel	SIL3*	SIL3	

Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{no effect}	Failure λ _{not part}
0.00 FIT	1.42 FIT	0.12 FIT	0.11 FIT	93.33 %	491.35 FIT	1045.70 FIT





	ITEM NAME	REPORT CODE	FINAL RESULTS							
	TI EM NAME		System type	PFDavg	PFH [h ⁻¹]	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL	
							For each channel connected			
37.	D6004S/D	D IC 700044077 Dov 4	Tuno A	0.00	0.00	20 vooro**	to field transmitter and AI			
37.	D60045/D	R-IS-722211277 Rev.1	Type A	0.00	0.00	20 years**	module loop with DTT	SIL3*	SIL3	
							condition			

Sa	afe Detected	tected Safe Undetected Dangerous Detected		Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part	
F	Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}	
	0.00 FIT	10.95 FIT	0.00 FIT	0.00 FIT	100.00 %	46.05 FIT	0.00 FIT	

(*)Considering the products do not contribute more than 10% of total SIF dangerous failure. (**)The product life time is considered.

Please, for more Functional Safety information see Safety Manual ISM0451_r0.





	ITEM NAME	REPORT CODE	FINAL RESULTS						
		REPORT CODE	System type	PFDavg	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL	
38	38. D5038S* R-IS-722188601-01 Rev.1	Type A	9.13E-05	2 years	Single channel	SIL3**	SIL3		
00.		1 10 722100001 01 1 1 OV.1	1,750 / 1	2.28E-04	5 years	Cirigio chamio	SIL3***	SILS	

Safe Detected	Detected Safe Undetected Dangerous Detected		Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part	
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}	
0.00 FIT	206.10 FIT	0.00 FIT	10.40 FIT	95.2 %	224.20 FIT	12.40 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.

Low demand mode of operation has only been considered in this analysis.

Please, for more Functional Safety information see Safety Manual ISM0429_r0.





	ITEM NAME	REPORT CODE	FINAL RESULTS						
	II EW NAME	REPORT CODE	System type	PFDavg	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL	
39.). D5038D* R-IS-722188601-0	R-IS-722188601-01 Rev.1	Type A	9.13E-05	2 years	Double channel	SIL3**	SIL3	
00.	200002	K 10 722100001 01 K0V.1	1,750 / 1	2.28E-04	5 years	Double charmer	SIL3***	SIL3	

Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected Safe Failure Fract		No Effect	Not Part	
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}	
0.00 FIT	211.70 FIT	0.00 FIT	10.40 FIT	95.3 %	224.90 FIT	337.70 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.

Low demand mode of operation has only been considered in this analysis.

Please, for more Functional Safety information see Safety Manual ISM0429_r0.





	ITEM NAME	REPORT CODE	FINAL RESULTS						
	ITEW NAME		System type	PFDavg	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL	
40.	D5038X* R-IS-722188601-01 Rev.1	Type A	9.13E-05	2 years	Duplicator channel	SIL3**	SII 2		
10.	20000	10 122 100001 01 1000.1	1,750 //	2.28E-04	5 years	Daphoator chamic	SIL3***	SIL3	

Safe Detected	Detected Safe Undetected Dangerous Detected		Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part	
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}	
0.00 FIT	206.20 FIT	0.00 FIT	10.40 FIT	95.2 %	225.00 FIT	202.90 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.

Low demand mode of operation has only been considered in this analysis.

Please, for more Functional Safety information see Safety Manual ISM0429_r0.





	ITEM NAME	REPORT CODE	FINAL RESULTS						
	ITEW NAME		System type	PFDavg	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL	
41.	D5039S* R-IS-722188601-01 Rev.1	Type A	9.98E-04	6 years	Single channel	SIL2**	CII 2		
*'.	200000	10 722 100001 01 1000.1	Турол	1.99E-03	12 years	3 Single channel	SIL2***	SIL3	

Safe Detected	fe Detected Safe Undetected Dangerous Detect		Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part	
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}	
0.00 FIT	148.10 FIT	0.00 FIT	37.90 FIT	79.6 %	164.60 FIT	12.40 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.

Low demand mode of operation has only been considered in this analysis.

Please, for more Functional Safety information see Safety Manual ISM0430_r0.





	ITEM NAME	REPORT CODE	FINAL RESULTS						
	ITEW NAME	REPORT CODE	System type	PFDavg	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL	
42.	D5039D* R-IS-722188601-01 Rev.1	Type A	9.98E-04	6 years	Double channel	SIL2**	SII 3		
12.	200002	1 10 722100001 01 1 1 tov.1	1,450 / 1	1.99E-03	12 years	Double charmer	SIL2***	SIL3	

Safe Detected	etected Safe Undetected Dangerous Detected		Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part	
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}	
0.00 FIT	153.60 FIT	0.00 FIT	37.90 FIT	80.2 %	185.00 FIT	248.10 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.

Low demand mode of operation has only been considered in this analysis.

Please, for more Functional Safety information see Safety Manual ISM0430_r0.





	ITEM NAME	REPORT CODE		FINAL RESULTS						
	I I EW NAME		System type	PFDavg	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL		
43.	D5039X*	R-IS-722188601-01 Rev.1	Type A	9.98E-04	6 years	Duplicator channel	SIL2**	CII 2		
10.	Boocox	1 10 122100001 01 1 tov.1	Турот	1.99E-03	12 years	Bupiloator orialino	SIL2***	SIL3		

Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}
0.00 FIT	148.40 FIT	0.00 FIT	37.90 FIT	79.6 %	165.20 FIT	112.90 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.

Low demand mode of operation has only been considered in this analysis.





	ITEM NAME	REPORT CODE		FINAL RESULTS						
	I I EW NAME		System type	PFDavg	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL		
44.	D6038S*	R-IS-722188601-01 Rev.1	Type A	9.13E-05	2 years	Single channel	SIL3**	CII 2		
17.	20000	10 722 100001 01 100v.1	1,5007	2.28E-04	5 years	Olligie Chaillei	SIL3***	SIL3		

Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}
0.00 FIT	206.10 FIT	0.00 FIT	10.40 FIT	95.2 %	224.20 FIT	12.40 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.

Low demand mode of operation has only been considered in this analysis.





	ITEM NAME	REPORT CODE		FINAL RESULTS						
	I I EW NAME	KLFOKT CODE	System type	PFDavg	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL		
45.	D6038D*	R-IS-722188601-01 Rev.1	Type A	9.13E-05	2 years	Double channel	SIL3**	CII 2		
10.	20000	10 722 100001 01 100v.1	1,750 //	2.28E-04	5 years	Doddio orialino	SIL3***	SIL3		

Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}
0.00 FIT	211.70 FIT	0.00 FIT	10.40 FIT	95.3 %	224.90 FIT	337.70 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.

Low demand mode of operation has only been considered in this analysis.





	ITEM NAME	REPORT CODE		FINAL RESULTS						
	ITEW NAME	REPORT CODE	System type	PFDavg	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL		
46.	D6038X*	R-IS-722188601-01 Rev.1	Type A	9.13E-05	2 years	Duplicator channel	SIL3**	CII 2		
10.	Boocox	10 722 10000 1 0 1 1000.1	1,750 / 1	2.28E-04	5 years	Daphoatol ollamici	SIL3***	SIL3		

Safe Detected	Safe Undetected Dangerous Detected		Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}
0.00 FIT	206.20 FIT	0.00 FIT	10.40 FIT	95.2 %	225.00 FIT	202.90 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.

Low demand mode of operation has only been considered in this analysis.





	ITEM NAME	REPORT CODE		FINAL RESULTS						
	ITEW NAME	REPORT CODE	System type	PFDavg	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL		
47.	D6039S*	R-IS-722188601-01 Rev.1	Type A	9.98E-04	6 years	Single channel	SIL2**	CII 2		
.	200000	10 722 100001 01 1000.1	1,700 //	1.99E-03	12 years	Olligie Charmer	SIL2*	SIL3		

Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}
0.00 FIT	148.10 FIT	0.00 FIT	37.90 FIT	79.6 %	164.60 FIT	12.40 FIT

(*)On the end of ITEM NAME, the * is a suffix letter for specific set of RL and RH output resistance values.

(**)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.

Low demand mode of operation has only been considered in this analysis.





	ITEM NAME	REPORT CODE		FINAL RESULTS						
	I I EW NAME	KEPOKI CODE	System type	PFDavg	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL		
48.	D6039D*	R-IS-722188601-01 Rev.1	Type A	9.98E-04	6 years	Double channel	SIL2**	CII 2		
10.	200002	K 10 722100001 01 1001.1	1,750 / 1	1.99E-03	12 years	Doddio charmor	SIL2***	SIL3		

Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}
0.00 FIT	153.60 FIT	0.00 FIT	37.90 FIT	80.2 %	185.00 FIT	248.10 FIT

(*)On the end of ITEM NAME, the * is a suffix letter for specific set of RL and RH output resistance values.

(**)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.

Low demand mode of operation has only been considered in this analysis.





	ITEM NAME	REPORT CODE	FINAL RESULTS						
	ITEW NAME		System type	PFDavg	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL	
49.	D6039X*	R-IS-722188601-01 Rev.1	Type A	9.98E-04	6 years	Duplicator channel	SIL2**	SII 2	
10.	20000	10.122.100001.01.1000.1	, , , , , ,	1.99E-03	12 years	Daphoatol ollamici	SIL2***	SIL3	

Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}
0.00 FIT	148.40 FIT	0.00 FIT	37.90 FIT	79.6 %	165.20 FIT	112.90 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.

Low demand mode of operation has only been considered in this analysis.





	ITEM NAME	REPORT CODE	FINAL RESULTS							
	112	ILLI ON TOODE	System type	PFD _{avg}	PFH [h ⁻¹]	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL	
50.	D5090S-102	-102 R-IS-722211279 Rev.1	Type A	9.83E-05	1.60E-09	14 years	s NE load	SIL3*	SIL3	
	233330 102		.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	1.40E-04	20 years	NE lodd	SIL3**	SIL3		

Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}
0.00 FIT	191.64 FIT	0.00 FIT	1.60 FIT	99.17 %	162.16 FIT	19.40 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 ISM0458_r0.





	ITEM NAME	REPORT CODE	FINAL RESULTS							
	TIEM NAME		System type	PFD _{avg}	PFH [h ⁻¹]	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL	
51.	D5091S-103 R-IS-722211279 Re	R-IS-722211279 Rev.1	R-IS-722211279 Rev.1 Type A	9.48E-05	3.59E-09	6 years	ND relays and NO contacts, for ND load	SIL3*	SIL3	
	23310 100		.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	3.16E-04		20 years		SIL3**	SIL3	

Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}
0.00 FIT	96.00 FIT	0.00 FIT	3.59 FIT	96.40 %	266.61 FIT	9.60 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 ISM0459_r0.





	ITEM NAME	REPORT CODE	FINAL RESULTS							
	TI EW NAME	in and a second	System type	PFD _{avg}	PFH [h ⁻¹]	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL	
52.	52. D5091S-103 R-IS-	R-IS-722211279 Rev.1	Type A	9.83E-05 Type A 1.60E-09	14 years	NE relays and NC contacts,	SIL3*	SIL3		
02.	20010 100	IN 10 722211210 NOV.1	Турот	1.40E-04		20 years	for ND load	SIL3**	SIL3	

Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}
0.00 FIT	191.37 FIT	0.00 FIT	1.60 FIT	99.17 %	164.03 FIT	18.80 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 ISM0459_r0.





	ITEM NAME	REPORT CODE			FINAL RESULTS					
	ITEW NAME	KEI OKI GODE	System type	PFDavg	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL		
53.	D5015SS and			9.92E-04	13 years	Active input	SIL2*	CII 2		
30.	D5015SK		Type A	1.53E-03	20 years	, tours input	SIL2**	SIL3		

Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}
0.00 FIT	58.65 FIT	90.36 FIT	17.23 FIT	89.63 %	195.86 FIT	6.80 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. Low demand mode of operation has only been considered in this analysis. Please, for more Functional Safety information see Safety Manual ISM0398_r0.





	ITEM NAME	REPORT CODE	FINAL RESULTS						
	I I EW NAME	REPORT CODE	System type	PFDavg	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL	
54.	D5015SS and	R-IS-722188601-02 Rev.1	2 Rev.1 Type A	9.50E-04	13 years	Passive input	SIL2*	CH 2	
	D5015SK		.,,,,,	1.46E-03	20 years	. accive input	SIL2**	SIL3	

Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}
0.00 FIT	58.65 FIT	79.51 FIT	16.51 FIT	89.32 %	189.63 FIT	24.60 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. Low demand mode of operation has only been considered in this analysis. Please, for more Functional Safety information see Safety Manual ISM0398_r0.





	ITEM NAME	REPORT CODE	FINAL RESULTS							
	I I EW NAME	KEI OKI GODE	System type	PFDavg	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL		
55.	D6015SS and	R-IS-722188601-02 Rev.1	Type A	9.92E-04	13 years	Active input	SIL2*	CII 2		
	D6015SK			1.53E-03	20 years	riouvo input	SIL2**	SIL3		

Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}
0.00 FIT	58.65 FIT	90.36 FIT	17.23 FIT	89.63 %	195.86 FIT	6.80 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. Low demand mode of operation has only been considered in this analysis. Please, for more Functional Safety information see Safety Manual ISM0446_r0.





	ITEM NAME	REPORT CODE	FINAL RESULTS							
	ITEW NAME		System type	PFDavg	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL		
56.	D6015SS and	R-IS-722188601-02 Rev.1	Type A	9.50E-04	13 years	Passive input	SIL2*	CH 2		
00.	D6015SK			1.46E-03	20 years	r doorvo mpat	SIL2**	SIL3		

Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}
0.00 FIT	58.65 FIT	79.51 FIT	16.51 FIT	89.32 %	189.63 FIT	24.60 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. Low demand mode of operation has only been considered in this analysis. Please, for more Functional Safety information see Safety Manual ISM0446_r0.





	ITEM NAME	REPORT CODE		FINAL RESULTS								
	ITEW NAME	NEI ONI GODE	System type	PFDavg	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL				
				6.63E-05	1 year		SIL3*					
57.	D6017SS and	R-IS-722211281-01 Rev.1	Type A	9.95E-04	15 years	Active input	SIL2*	CII 2				
	D6017SK	10 722211201 01 100.1	Турол	3.32E-04	5 years	_	SIL3**	SIL3				
				1.33E-03	20 years		SIL2**					

Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}
0.00 FIT	78.51 FIT	71.02 FIT	14.98 FIT	90.89 %	209.88 FIT	6.20 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.

Low demand mode of operation has only been considered in this analysis.

Please, for more Functional Safety information see Safety Manual ISM0471_r0.





	ITEM NAME	REPORT CODE	FINAL RESULTS						
	TI ZIII NAINZ		System type	PFD _{avg}	PFH [h ⁻¹]	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
58.	D5094S-104	R-IS-722202852-03 Rev.2	Type A	9.83E-05	1.60E-09	14 years	NE loads, valid for bipolar or	SIL3*	CII 2
00.	2000 10 101	1 10 1 2220202 00 1 tov.2	1,70071	1.40E-04	1.002 00	20 years	unipolar load interruption	SIL3**	SIL3

Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}
0.00 FIT	253.24 FIT	0.00 FIT	1.60 FIT	99,37 %	196.76 FIT	6.40 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 ISM0464_r0.

	ITEM NAME	REPORT CODE		FINAL RESULTS						
		KEI OKI GODE	System type	PFDavg	PFH [h ⁻¹]	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL	
59.	D5094S-104	R-IS-722202852-03 Rev.2	Type A	9.11E-05	3,46E-09	6 years	F&G / ND loads, valid for bipolar or unipolar load	SIL3*	SIL3	
			- , , , , , ,	3.04E-04	=, := = 00	20 years	interruption	SIL3**	SILS	

Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}
0.00 FIT	133.80 FIT	0.00 FIT	3.46 FIT	97,48 %	314.74 FIT	6.00 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 ISM0464_r0.





	ITEM NAME	ME REPORT CODE	FINAL RESULTS						
	TI ZIII TVAIIIZ		System type	PFD _{avg}	PFH [h ⁻¹]	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
60.	D5095S-105	R-IS-722202852-03 Rev.2	Туре А	9.52E-05	3.10E-09	7 years	NE loads, valid for bipolar or	SIL3*	CII 2
	200000 100	1 10 1 2220202 00 1 tov.2	1,707.	2.72E-04	0.102 00	20 years	unipolar load interruption	SIL3**	SIL3

Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}
0.00 FIT	148.20 FIT	0.00 FIT	3.10 FIT	97,95 %	300.70 FIT	6.00 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. Please, for more Functional Safety information see Safety Manual ISM0465_r0.

	ITEM NAME	REPORT CODE	FINAL RESULTS							
	TI EW NAME		System type	PFD _{avg}	PFH [h ⁻¹]	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL	
61.	D5095S-105	R-IS-722202852-03 Rev.2	Type A	9.46E-05	1.96E-09	11 years	F&G / ND loads, valid for bipolar or unipolar load	SIL3*	SIL3	
				1.72E-04		20 years	interruption	SIL3**	SILO	

Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part	
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}	
0.00 FIT	238.84 FIT	0.00 FIT	1.96 FIT	99,19 %	210.80 FIT	6.40 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 ISM0465_r0.





	ITEM NAME	REPORT CODE	FINAL RESULTS							
			System type	PFD _{avg}	PFH [h ⁻¹]	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL	
62.	D5096S-106	R-IS-722202852-03 Rev.2	Type A	9.83E-05	1.60E-09	14 years	NE loads, valid for bipolar	SIL3*	SIL3	
02.	200000 100	1 10 1 2220202 00 1 tov.2	1,75071	1.40E-04	1.002 00	20 years	load interruption	SIL3**	SILS	

Safe Detected	red Safe Undetected Dangerous Detect		Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part	
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}	
0.00 FIT	248.68 FIT	0.00 FIT	1.60 FIT	99,36 %	200.52 FIT	439.79 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 ISM0466_r0.

	ITEM NAME	REPORT CODE	FINAL RESULTS						
			System type	PFD _{avg}	PFH [h ⁻¹]	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
63.	D5096S-106	R-IS-722202852-03 Rev 2	S-722202852-03 Rev.2 Type A	8.82E-05	3.35E-09	6 years	F&G / ND loads, valid for	SIL3*	CII 2
00.	500000 100	14 16 7 2220202 00 1404.2	1,70071	2.94E-04		20 years	bipolar load interruption	SIL3**	SIL3

Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part	
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}	
0.00 FIT	133.80 FIT	0.00 FIT	3.35 FIT	97,56 %	313.65 FIT	439.79 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 ISM0466_r0.





	ITEM NAME	REPORT CODE	FINAL RESULTS						
			System type	PFD _{avg}	PFH [h ⁻¹]	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
64.	D5097S-107	R-IS-722202852-03 Rev.2	Type A	9.52E-05	3.10E-09	7 years	NE loads, valid for bipolar	SIL3*	SIL3
	2000.0 10.	1 10 1 2220202 00 1 tov.2	1,75071	2.72E-04	0.102 00	20 years	load interruption	SIL3**	SIL3

Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part	
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}	
0.00 FIT	143.64 FIT	0.00 FIT	3.10 FIT	97,89 %	304.06 FIT	439.79 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 ISM0467_r0.

	ITEM NAME	REPORT CODE	FINAL RESULTS						
			System type	PFD _{avg}	PFH [h ⁻¹]	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
65.	D5097S-107	R-IS-722202852-03 Rev.2	Type A	9.74E-05	1.85E-09	12 years	F&G / ND loads, valid for	SIL3*	CII 2
	200010 101	TO TEEESESSE SO TOTAL	1,70071	1.62E-04	1.002 00	20 years	bipolar load interruption	SIL3**	SIL3

Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part	
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}	
0.00 FIT	238.84 FIT	0.00 FIT	1.85 FIT	99,23 %	210.11 FIT	439.79 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 ISM0467_r0.





	ITEM NAME	REPORT CODE	FINAL RESULTS						
			System type	PFD _{avg}	PFH [h ⁻¹]	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
66.	TBE-D5016-TRI-001	R-IS-722226666 Rev.1	Туре А	5.29E-06	0.06E-09	20 years	For each channel	SIL3*	SIL3

Safe Detected	Safe Undetected Dangerous Detected		Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}
0.00 FIT	0.82 FIT	0.14 FIT	0.06 FIT	94,10 %	86.38 FIT	146.20 FIT

	ITEM NAME	REPORT CODE		FINAL RESULTS							
			System type	PFD _{avg}	PFH [h ⁻¹]	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL		
67.	TBE-D5016-TRI-002 Part A or Part B	R-IS-722226666 Rev.1	Type A	5.29E-06	0.06E-09	20 years	For each channel	SIL3*	SIL3		

	Safe Detected	Safe Undetected Dangerous Detected		Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part	
	Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}	
ľ	0.00 FIT	0.82 FIT	0.14 FIT	0.06 FIT	94,10 %	86.38 FIT	143.00 FIT	

(*)Considering the products not contribute more than 10% of total SIF dangerous failure. Please, for more Functional Safety information see Safety Manual ISM0472_r0.





	ITEM NAME	REPORT CODE	FINAL RESULTS						
			System type	PFD _{avg}	PFH [h ⁻¹]	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
68.	TBE-D5016-TRI-003	R-IS-722226666 Rev.1	Туре А	5.31E-06	0.06E-09	20 years	For each channel	SIL3*	SIL3

Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}
0.00 FIT	0.82 FIT	0.26 FIT	0.06 FIT	94,72 %	86.26 FIT	152.40 FIT

	ITEM NAME	REPORT CODE FINAL RESULTS							
			System type	PFD _{avg}	PFH [h ⁻¹]	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
69.	TBE-D5016-TRI-011	R-IS-722226666 Rev.1	Type A	5.31E-06	0.06E-09	20 years	For each channel	SIL3*	SIL3

Safe Detected	Safe Undetected Dangerous Detected		Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part	
Failure λ _{SD}	Failure λ _{SU} Failure λ _{DD}		Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}	
0.00 FIT	0.82 FIT	0.26 FIT	0.06 FIT	94,72 %	86.26 FIT	158.60 FIT	

(*)Considering the products not contribute more than 10% of total SIF dangerous failure. Please, for more Functional Safety information see Safety Manual ISM0472_r0.





	ITEM NAME	REPORT CODE	FINAL RESULTS						
			System type	PFD _{avg}	PFH [h ⁻¹]	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
70.	TBE-D5016-TRI-008	R-IS-722226666 Rev.1	Туре А	1.06E-05	0.12E-09	20 years	For each channel	SIL3*	SIL3

Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part	
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}	
0.00 FIT	0.82 FIT	0.28 FIT	0.12 FIT	90,14 %	86.18 FIT	152.40 FIT	

	ITEM NAME	REPORT CODE	FINAL RESULTS							
			System type	PFD _{avg}	PFH [h ⁻¹]	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL	
71.	TBE-D5016-TRI-004	R-IS-722226666 Rev.1	Type A	0.00	0.00	20 years**	For each channel	SIL3*	SIL3	

Safe Detected	Safe Undetected Dangerous Detected		Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part	
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}	
0.00 FIT	0.82 FIT	0.00 FIT	0.00 FIT	100,00 %	86.38 FIT	140.00 FIT	

(*)Considering the products not contribute more than 10% of total SIF dangerous failure. (**)The product lifetime is considered.





	ITEM NAME	M NAME REPORT CODE	FINAL RESULTS						
	TIEM WANTE		System type	PFD _{avg}	PFH [h ⁻¹]	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
72.	TBE-D5016-TRI-005 Part A or Part B	R-IS-722226666 Rev.1	Туре А	0.00	0.00	20 years**	For each channel	SIL3*	SIL3

Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part	
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}	
0.00 FIT	0.82 FIT	0.00 FIT	0.00 FIT	100,00 %	86.38 FIT	140.00 FIT	

(*)Considering the products not contribute more than 10% of total SIF dangerous failure. (**)The product lifetime is considered.

Please, for more Functional Safety information see Safety Manual ISM0472_r0.

	ITEM NAME	REPORT CODE	REPORT CODE FINAL RESULTS							
			System type	PFD _{avg}	PFH [h ⁻¹]	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL	
73.	TBE-D5016-TRI-006	R-IS-722226666 Rev.1	Туре А	0.00	0.00	20 years**	For each channel	SIL3*	SIL3	

Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part	
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}	
0.00 FIT	0.82 FIT	0.00 FIT	0.00 FIT	100,00 %	86.18 FIT	140.00 FIT	

(*)Considering the products not contribute more than 10% of total SIF dangerous failure. (**)The product lifetime is considered.





	ITEM NAME	REPORT CODE	FINAL RESULTS						
			System type	PFD _{avg}	PFH [h ⁻¹]	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
74.	TBE-D5016-TRI-012	R-IS-722226666 Rev.1	Type A	7.90E-06	0.09E-09	20 years	For each channel	SIL3*	SIL3

Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}
0.00 FIT	0.93 FIT	0.00 FIT	0.09 FIT	91,18 %	86.39 FIT	152.40 FIT

	ITEM NAME REPOR	REPORT CODE		FINAL RESULTS						
	TI EW WAWLE		System type	PFDavg	PFH [h ⁻¹]	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL	
75.	TBE-D5016-TRI-007	R-IS-722226666 Rev.1	Туре А	0.00	0.00	20 years**	For each channel of DO bus powered module (as D5049S), considering DTT safety loop	SIL3*	SIL3	

ĺ	Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part
	Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}
I	0.00 FIT	0.82 FIT	0.00 FIT	0.00 FIT	100,00 %	86.18 FIT	134.80 FIT

(*)Considering the products not contribute more than 10% of total SIF dangerous failure. (**)The product lifetime is considered.





	ITEM NAME	REPORT CODE								
			System type	PFDavg	PFH [h ⁻¹]	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL	
76.	TBE-D5016-TRI-007	R-IS-722226666 Rev.1	Туре А	0.00	0.00	Not required	For channels of DO or safety relay loop powered modules, considering DTT safety loops	TBE component failures cannot influence DTT safety loops	Absence of TBE functional safety systematic failures, therefore no influence on DTT safety loops	

Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}
0.00 FIT	0.00 FIT	0.00 FIT	0.00 FIT	Not defined	0.00 FIT	221.80 FIT

Please, for more Functional Safety information see Safety Manual ISM0472_r0.

	ITEM NAME	REPORT CODE	FINAL RESULTS REPORT CODE						
			System type	PFD _{avg}	PFH [h ⁻¹]	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
77.	TBE-D5016-TRI-007	R-IS-722226666 Rev.1	Туре А	0.00	0.00	Not required	For channels of safety relay loop powered modules, considering ETT safety loops	TBE component failures cannot influence ETT safety loops	Absence of TBE functional safety systematic failures, therefore no influence on ETT safety loops

Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part	
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}	
0.00 FIT	0.00 FIT	0.00 FIT	0.00 FIT	Not defined	0.00 FIT	221.80 FIT	





	ITEM NAME	REPORT CODE	FINAL RESULTS							
			System type	PFDavg	PFH [h ⁻¹]	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL	
78.	TBE-D5016-TRI-009	R-IS-722226666 Rev.1	Type A	0.00	0.00	20 years**	For each channel of DO bus powered module, considering DTT safety loop	SIL3*	SIL3	

Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}
0.00 FIT	0.82 FIT	0.00 FIT	0.00 FIT	100,00 %	86.18 FIT	134.80 FIT

(*)Considering the products not contribute more than 10% of total SIF dangerous failure. (**)The product lifetime is considered.

Please, for more Functional Safety information see Safety Manual ISM0472_r0.

	ITEM NAME	REPORT CODE	FINAL RESULTS							
	II EIII NAIILE		System type	PFDavg	PFH [h ⁻¹]	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL	
79.	TBE-D5016-TRI-009	R-IS-722226666 Rev.1	Туре А	0.00	0.00	Not required	For channels of DO or safety relay loop powered modules, considering DTT safety loops	TBE component failures cannot influence DTT safety loops	Absence of TBE functional safety systematic failures, therefore no influence on DTT safety loops	

Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part	
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}	
0.00 FIT	0.00 FIT	0.00 FIT	0.00 FIT	Not defined	0.00 FIT	221.80 FIT	





	ITEM NAME	REPORT CODE		FINAL RESULTS						
			System type	PFDavg	PFH [h ⁻¹]	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL	
80.	TBE-D5016-TRI-009	R-IS-722226666 Rev.1	Туре А	0.00	0.00	Not required	For channels of safety relay loop powered modules, considering ETT safety loops	TBE component failures cannot influence ETT safety loops	Absence of TBE functional safety systematic failures, therefore no influence on ETT safety loops	

Safe Detected	Safe Undetected	detected Dangerous Detected Dangerous Und		Safe Failure Fraction	No Effect	Not Part
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}
0.00 FIT	0.00 FIT	0.00 FIT	0.00 FIT	Not defined	0.00 FIT	221.80 FIT

Please, for more Functional Safety information see Safety Manual ISM0472_r0.

	ITEM NAME	REPORT CODE	FINAL RESULTS						
			System type	PFD _{avg}	PFH [h ⁻¹]	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
81.	TBE-D5008-TRI-001	R-IS-722226666 Rev.1	Type A	0.00	0.00	20 years**	For each channel	SIL3*	SIL3

Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part	
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}	
0.00 FIT	0.82 FIT	0.00 FIT	0.00 FIT	100,00 %	86.18 FIT	140.00 FIT	

(*)Considering the products not contribute more than 10% of total SIF dangerous failure. (**)The product lifetime is considered.





	ITEM NAME	REPORT CODE		FINAL RESULTS						
	TI EW NAME		System type	PFDavg	PFH [h ⁻¹]	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL	
82.	TBE-D5016-TRI-010	R-IS-722276622-01 Rev.1	Type A	0.00	0.00	20 years**	For each channel connected to AI, AO, DI or DO module loop with DTT condition	SIL3*	SIL3	

	Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	angerous Undetected Safe Failure Fraction		Not Part
ı	Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}
ľ	1.04 FIT	0.00 FIT	0.00 FIT	0.00 FIT	100,00 %	105.36 FIT	34.40 FIT

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

(**)The product life time is considered.

Please, for more Functional Safety information see Safety Manual ISM0385_r1.

	ITEM NAME	REPORT CODE	FINAL RESULTS							
	TI EIII IVAIILE		System type	PFD _{avg}	PFH [h ⁻¹]	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL	
							For each channel connected			
83.	TBE-D5016-TRI-010	R-IS-722276622-01 Rev.1	Type A	1.66E-07	0.00	20 years	to DO module loop with ETT	SIL3*	SIL3	
							condition			

I	Safe Detected	cted Safe Undetected Dangerous Detected		Dangerous Undetected	Diagnostic Coverage	Safe Failure Fraction	No Effect	Not Part	
	Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	DC	SFF	Failure λ _{NE}	Failure λ _{NP}	
ľ	0.00 FIT	0.00 FIT	1.04 FIT	0.00 FIT	100,00%	100,00 %	105.36 FIT	34.40 FIT	

(*)Considering the products do not contribute more than 10% of total SIF dangerous failure. Please, for more Functional Safety information see Safety Manual ISM0385_r1.





	ITEM NAME	REPORT CODE	FINAL RESULTS							
	I I EW NAME	KEI GKI GODE	System type	PFDavg	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL		
	D6017SS-TB and D6017SK-TB	R-IS-722283044 Rev.1	Type A	6.63E-05	1 year		SIL3*			
84.				9.95E-04	15 years	Active input	SIL2*	SII 2		
01.				3.32E-04	5 years		SIL3**	SIL3		
				1.33E-03	20 years		SIL2**			

Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{NE}	Failure λ _{NP}
0.00 FIT	78.51 FIT	71.02 FIT	14.98 FIT	90.89 %	209.88 FIT	6.20 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. Low demand mode of operation has only been considered in this analysis. Please, for more Functional Safety information see Safety Manual ISM0566_r0.





	ITEM NAME	REPORT CODE	FINAL RESULTS						
	ITEW NAME		System type	PFD _{avg}	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL	
85.	TB-D5001-HRT-003 with 5700-110	R-IS-722291884 Rev.1	Type A	4.39E-06	20 years	for each channel	SIL3*	SIL3	

Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{no effect}	Failure λ _{not part}
0.00 FIT	0.48 FIT	0.00 FIT	0.05 FIT	90.57 %	512.31 FIT	2586.65 FIT





	ITEM NAME	REPORT CODE	FINAL RESULTS							
			System type	PFDavg	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL		
86.	TB-D5001-HRT-004, -006, -007 with 5700-110	R-IS-722291884 Rev.1	Type A	4.39E-06	20 years	for each channel	SIL3*	SIL3		

Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{no effect}	Failure λ _{not part}
0.00 FIT	0.47 FIT	0.00 FIT	0.05 FIT	90.38 %	490.98 FIT	999.20 FIT





	ITEM NAME	REPORT CODE	FINAL RESULTS							
	II LIVI IVAIVIL	KEI OKI CODE	System type	PFDavg	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL		
87.	TB-D5001-HRT-005 with 5700-110	R-IS-722291884 Rev.1	Type A	9.67E-06	20 years	for each channel	SIL3*	SIL3		

Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{no effect}	Failure λ _{not part}
0.00 FIT	1.42 FIT	0.12 FIT	0.11 FIT	93.33 %	491.35 FIT	1045.70 FIT





	ITEM NAME	REPORT CODE	FINAL RESULTS							
	TI EIVI IVAIVIE		System type	PFD _{avg}	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL		
88.	TBE-D5001-HRT-003 with 5700 or 5700-110	R TUV IT SIL 0085 Rev.1	Type A	4.39E-06	20 years	for each channel	SIL3*	SIL3		

Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{no effect}	Failure λ _{not part}
0.00 FIT	1.08 FIT	0.00 FIT	0.05 FIT	95.57 %	547.97 FIT	2013.40 FIT





	ITEM NAME	REPORT CODE	FINAL RESULTS						
		KEI OKI CODE	System type	PFD _{avg}	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL	
89.	TBE-D5001-HRT-004, -006, -007 with 5700 or 5700-110	R TUV IT SIL 0085 Rev.1	Type A	4.39E-06	20 years	for each channel	SIL3*	SIL3	

Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{no effect}	Failure λ _{not part}
0.00 FIT	1.32 FIT	0.00 FIT	0.05 FIT	96.35 %	534.13 FIT	994.20 FIT





	ITEM NAME	REPORT CODE	FINAL RESULTS						
	II EW WANTE	KEI OKI CODE	System type	PFD _{avg}	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL	
90.	TBE-D5001-HRT-005 with 5700 or 5700-110	R TUV IT SIL 0085 Rev.1	Type A	9.68E-06	20 years	for each channel	SIL3*	SIL3	

Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{no effect}	Failure λ _{not part}
0.00 FIT	1.34 FIT	0.12 FIT	0.11 FIT	92.99 %	534.13 FIT	1000.40 FIT





			FINAL RESULTS					
	ITEM NAME REPORT CODE		System type	PFD _{avg}	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
91.	TBE-D5001-TRI-001 with 5700 or 5700-110	R TUV IT SIL 0085 Rev.1	Type A	1.50E-05	20 years	for each channel, with input passive transmitter or AI IS Barrier / Non IS Isolator with sink out	SIL3*	SIL3

Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part
Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{no effect}	Failure λ _{not part}
0.00 FIT	10.57 FIT	0.24 FIT	0.17 FIT	98.45 %	426.23 FIT	2116.49 FIT





		REPORT CODE	FINAL RESULTS					
	ITEM NAME		System type	PFD _{avg}	T _{Proof}	Configuration	Allowed SIL	Allowed Systematic SIL
92.	TBE-D5001-TRI-001 with 5700 or 5700-110	R TUV IT SIL 0085 Rev.1	Type A	1.50E-05	20 years	for each channel, with input active transmitter or AI IS Barrier / Non IS Isolator with source out	SIL3*	SIL3

	Safe Detected	Safe Undetected	Dangerous Detected	Dangerous Undetected	Safe Failure Fraction	No Effect	Not Part
	Failure λ _{SD}	Failure λ _{SU}	Failure λ _{DD}	Failure λ _{DU}	SFF	Failure λ _{no effect}	Failure λ _{not part}
ľ	0.00 FIT	7.07 FIT	0.24 FIT	0.17 FIT	97.73 %	350.33 FIT	2195.89 FIT





	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.				

