SIL ASSESSMENT

Isolators and Field Devices

SIL
IEC 61508/61511

ISO9001

CE

SIL2
SIL3

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1 Introduction

The devices listed here have been evaluated for use in safety instrumented systems (SIS). The "SIL" column indicates the suitability of the devices for these systems, giving the specified classification. The suitability for specific applications must be evaluated on a case-by-case basis and is dependent on other factors, such as the required safety instrumented function (SIF).

A safety instrumented system (SIS) consists of several linked components, all of which are part of the safety instrumented function. The PFD value derived from the SIL evaluation is distributed among all these relevant components, depending on the failure risk. Field devices and isolators can be components of a safety instrumented system.

- The field devices have been evaluated such that they have a maximum share of 25 % of the total PFD value.
- The isolators have been evaluated such that they a maximum share of 10 % of the total PFD value.

For more information on the suitability of the devices, please refer to the safety manuals or the assessment reports. This information is available at www.pepperl-fuchs.com.

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2 Isolators

2.1 K-System, Isolated Barriers and Signal Conditioners

Model number	Function		SIL	Remark
KCD2-SON-***.**	DI	Switch amplifier	2	exida report
KCD2-SOT-***.**	DI	Switch amplifier	2	exida report
KCD2-SR-***.**	DI	Switch amplifier	2	exida report
KCD2-ST-***.**	DI	Switch amplifier	2	exida report
KF**-SR2-***.**.**	DI	Switch amplifier	2	exida report
KFD2-ST2-***.**	DI	Switch amplifier	2	exida report
KF**-SOT2-***.**	DI	Switch amplifier	2	exida calculation
K***-SH-Ex1.*.**	DI	Switch amplifier	3	exida calculation
KFD2-SR2-**2.W.SM	DI	Standstill and rotational direction monitor	2	exida report
KF**-DWB-***.*	DI	Overspeed/underspeed monitor	2	exida report
KF**-UFC-***.*	DI	Frequency converter with trip values	2	exida report
KFD0-RO-**2	DI	Relay module	3	exida calculation [2]
KFD0-RSH-1.**.***	DI	Relay module	3	exida report
KCD0-SD-Ex1.1245	DO	Solenoid driver	3	exida report
KFD0-SD2-***.*****	DO	Solenoid driver	3	exida calculation
KFD2-RCI-Ex1	DO	Solenoid driver	3	exida calculation
KFD2-SL2-***.**.****	DO	Solenoid driver	2	exida report
KFD2-SL-4	DO	Solenoid driver	2	exida calculation
KCD2-STC-**1****	AI	SMART transmitter power supply	2	exida/TÜV report [3]
KCD2-STC-**1**ES	AI	SMART transmitter power supply	3	TÜV report
KFD2-STC4-***	AI	SMART transmitter power supply	2	exida calculation
KFD2-STC4-***.2O*	AI	SMART transmitter power supply	3	exida calculation
KFD2-STV4-***	AI	SMART transmitter power supply	2	exida calculation
KFD2-STV4-***.2O*	AI	SMART transmitter power supply	3	exida calculation
KFD2-CR4-***	AI	Transmitter power supply	2	exida calculation
KFD2-CR4-***.2O	AI	Transmitter power supply	3	exida calculation
KF**-CRG2-***.*	AI	Transmitter power supply	2	P+F calculation
KFD2-PT2-Ex1**	AI	Potentiometer converter	2	P+F calculation
KFD2-UT2-***-*-*	AI	Universal temperature converter	2	exida report
KF**-GUT-***.*	AI	Temperature converter with trip values	2	exida report
KCD2-SCD-**1	AO	SMART current driver	2	exida/TÜV report [3]
KFD2-SCD*-***.**	AO	SMART current driver	2	exida report
KFD2-CD*-***.**-**	AO	Current driver	2	exida report
KFD0-SCS-***.**	AO	SMART current driver	2	exida report
KFD0-CS-***.***	AO	Current driver (not for KFD0-CS-***.54)	2	exida report

Table 2.1

2.2 H-System, Isolated Barriers

Model number	Function		SIL	Remark
HiC282*	DI	Switch amplifier	2	exida report
HiC283***	DI	Switch amplifier	2	exida report
HiC284*	DI	Switch amplifier	2	exida report
HiC285***	DI	Switch amplifier	3	exida report
HiD282*	DI	Switch amplifier	2	exida report
HiD284*	DI	Switch amplifier	2	exida report
HiC2871	DO	Solenoid driver	3	exida report
HiC2873, HiC2877	DO	Solenoid driver	3 [1]	exida calculation
HiD2872, HiD2876	DO	Solenoid driver	3 [1]	exida calculation
HiD2881	DO	Solenoid driver	3 [1]	exida report
HiC2025	AI	SMART transmitter power supply	2	exida report
HiC2025ES	AI	SMART transmitter power supply	3	TÜV report
HiD2025, HiD2026**	AI	SMART transmitter power supply	2	exida calculation
HiD2025ES	AI	SMART transmitter power supply	3	TÜV report
HiD2029**, HiD2030**	AI	SMART transmitter power supply	2	exida calculation
HiC2031**	AO	Current driver	2	exida-/TÜV report [3]
HiD2033, HiD2034	AO	Current driver	2	exida report
HiD2037, HiD2038*	AO	Current driver	2	exida report
HiD2082	AO	Temperature converter	2	exida report

Table 2.2

2.3 HART Interface Solutions

Model number	Function		SIL	Remark
HiDMux2700	HART	HART Multiplexer Master	3	exida report
KFD2-HMM-16	HART	HART Multiplexer Master	3	exida report
KFD0-HMS-16	HART	HART Multiplexer Slave	3	exida report

Table 2.3

2.4 Surge Protection Barriers

Model number	Function		SIL	Remark
P-LB-*.*.******	SURGE	Surge protection barrier	3	exida calculation

Table 2.4

DI = digital input, DO = digital output, AI = analog input, AO = analog output

[1] if loop powered
[2] SIL2 with exida calculation, SIL3 with Pepperl+Fuchs calculation for 2-channel use
[3] without HC: exida report, with HC: TÜV report

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3 Field Devices

3.1 Level Devices

Model number	Function		SIL	Remark
LHC-M51	A	Hydrostatic pressure transmitter	2	Declaration of conformity
LHCR-51, LHCS-51	A	Hydrostatic pressure transmitter	2	Declaration of conformity
LTC***	A	Guided microwave	2	Declaration of conformity
PPC-M51	A	Process pressure transmitter	2	Declaration of conformity
LVL-M* with FEL51 ... FEL58	D	Vibration limit switch	2	Declaration of conformity

Table 3.1

3.2 Inductive Sensors

Model number	Function	SIL	Remark
NCB10-30GM40-N0	D	2	Declaration of conformity
NCB10-30GM40-N0-V1	D	2	Declaration of conformity
NCB15-30GM40-N0	D	2	Declaration of conformity
NCB15-30GM40-N0-V1	D	2	Declaration of conformity
NCB20-L2-N0-V1	D	2	Declaration of conformity
NCB2-12GK35-N0	D	2	Declaration of conformity
NCB2-12GM35-N0	D	2	Declaration of conformity
NCB2-12GM35-N0-V1	D	2	Declaration of conformity
NCB2-V3-N0	D	2	exida report
NCB4-12GM40-N0	D	2	Declaration of conformity
NCB4-12GM40-N0-V1	D	2	Declaration of conformity
NCB5-18GK40-N0	D	2	Declaration of conformity
NCB5-18GM40-N0	D	2	Declaration of conformity
NCB5-18GM40-N0-V1	D	2	Declaration of conformity
NCB8-18GM40-N0	D	2	Declaration of conformity
NCB8-18GM40-N0-V1	D	2	Declaration of conformity
NCN15-30GM40-N0	D	2	Declaration of conformity
NCN15-30GM40-N0-V1	D	2	Declaration of conformity
NCN3-F25-SN4-V1	D	3 [4]	exida report
NCN3-F31K-N4	D	2	Declaration of conformity
NCN3-F31K-N4-K	D	2	Declaration of conformity
NCN3-F31K-N4-K-S	D	2	Declaration of conformity
NCN3-F31K-N4-S	D	2	Declaration of conformity
NCN3-F31K-N4-V1-V1	D	2	Declaration of conformity
NCN3-F31-N4-K	D	2	Declaration of conformity
NCN3-F31-N4-K-K	D	2	Declaration of conformity
NCN3-F31-N4-V1	D	2	Declaration of conformity

Model number	Function	SIL	Remark
NCN3-F31-N4-V16-K	D	2	Declaration of conformity
NCN3-F31-N4-V16-V16	D	2	Declaration of conformity
NCN3-F31-N4-V18	D	2	Declaration of conformity
NCN40-L2-N0-V1	D	2	Declaration of conformity
NCN4-12GK35-N0	D	2	Declaration of conformity
NCN4-12GM35-N0	D	2	Declaration of conformity
NCN4-12GM35-N0-V1	D	2	Declaration of conformity
NCN4-V3-N0	D	2	exida report
NCN8-18GM40-N0	D	2	Declaration of conformity
NCN8-18GM40-N0-V1	D	2	Declaration of conformity
NJ 0,8-4,5-N	D	2	Declaration of conformity
NJ 0,8-5GM-N	D	2	Declaration of conformity
NJ 1,5-18GM-N-D	D	2	Declaration of conformity
NJ 1,5-18GM-N-D-V1	D	2	Declaration of conformity
NJ 1,5-6,5-N	D	2	Declaration of conformity
NJ 1,5-8GM-N	D	2	Declaration of conformity
NJ 1,5-8GM-N-V1	D	2	Declaration of conformity
NJ 2-11-N	D	2	Declaration of conformity
NJ 2-11-N-G	D	2	Declaration of conformity
NJ 2-11-SN	D	3 [4]	exida report
NJ 2-11-SN-G	D	3 [4]	exida report
NJ 2-12GK-N	D	2	Declaration of conformity
NJ 2-12GK-SN	D	3 [4]	exida report
NJ 2-12GM-N	D	2	Declaration of conformity
NJ 2-12GM-N-V1	D	2	Declaration of conformity
NJ 3-18GK-S1N	D	3 [4]	exida report
NJ 4-12GK-N	D	2	Declaration of conformity
NJ 4-12GK-SN	D	3 [4]	exida report
NJ 4-12GM-N	D	2	Declaration of conformity
NJ 4-12GM-N-V1	D	2	Declaration of conformity
NJ 5-11-N	D	2	Declaration of conformity
NJ 5-11-N-G	D	2	Declaration of conformity
NJ 5-18GK-N	D	2	Declaration of conformity
NJ 5-18GK-SN	D	3 [4]	exida report
NJ 5-18GM-N	D	2	Declaration of conformity
NJ 5-18GM-N-V1	D	2	Declaration of conformity
NJ 5-30GK-S1N	D	3 [4]	exida report
NJ 6-22-N	D	2	Declaration of conformity
NJ 6-22-N-G	D	2	Declaration of conformity
NJ 6-22-SN	D	3 [4]	exida report
NJ 6-22-SN-G	D	3 [4]	exida report
NJ 6S1+U1+N1	D	3 [4]	exida report
NJ 8-18GK-N	D	2	Declaration of conformity

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Model number	Function	SIL	Remark
NJ 8-18GK-SN	D	3 [4]	exida report
NJ 8-18GM-N	D	2	Declaration of conformity
NJ 8-18GM-N-V1	D	2	Declaration of conformity
NJ 10-22-N-G	D	2	Declaration of conformity
NJ 10-30GKK-N	D	2	Declaration of conformity
NJ 10-30GK-N	D	2	Declaration of conformity
NJ 10-30GK-SN	D	3 [4]	exida report
NJ 10-30GM-N	D	2	Declaration of conformity
NJ 10-30GM-N-V1	D	2	Declaration of conformity
NJ 15-30GKK-N	D	2	Declaration of conformity
NJ 15-30GK-N	D	2	Declaration of conformity
NJ 15-30GK-SN	D	3 [4]	exida report
NJ 15-30GM-N	D	2	Declaration of conformity
NJ 15S+U1+N	D	3 [4]	exida report
NJ 20S+U1+N	D	3 [4]	exida report
NJ 40-FP-SN-P1	D	3 [4]	exida report
NJ2-V3-N	D	2	Declaration of conformity
NJ2-V3-N-V5	D	2	Declaration of conformity
SC2-N0	D	2	exida report
SC3,5-N0	D	2	Declaration of conformity
SJ 2-N	D	2	exida report
SJ 2-S1N	D	3 [4]	exida report
SJ 2-SN	D	3 [4]	exida report
SJ 3,5-S1N	D	3 [4]	exida report
SJ 3,5-SN	D	3 [4]	exida report
SJ 5-N	D	2	exida report
SJ 10-N	D	2	exida report
SJ3,5-N	D	2	Declaration of conformity

Tabelle 3.2

A = analog sensor, D = digital sensor
[4] in connection with K**-SH-Ex1.* and HiC2851 switch amplifiers

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Worldwide Headquarters
Pepperl+Fuchs GmbH
68307 Mannheim · Germany
Tel. +49 621 776-0
E-mail: info@de.pepperl-fuchs.com

For the Pepperl+Fuchs representative
closest to you check www.pepperl-fuchs.com/contact

www.pepperl-fuchs.com

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