

Klaschka safety elements for a safe start with the new machinery directive

SIL/PL compliant safety switches and safety controllers

The Machinery Directive 2006/42/EG from the European Parliament lays down a homogeneous level of protection for accident prevention on and around machinery. European harmonisation of legislation supersedes national provisions and applies within the European Economic Area (EEA), in Switzerland and in Turkey.

The new standards are intended to further reduce hazards on and around machinery, to prevent personal injury, and to increase the availability of plant and machinery. When assessing products for **SIL** (Safety Integrity Level), probability studies, or **PL** (Performance Level), must be taken into account.

In the classification of risks and safety, **SIL** and **PL** play a central role. Design engineers need these safety data as evidence that plant and machinery comply with safety laws and standards.

With our **SIDENT** non-contact safety switches and **ZSY** safety controllers, you are well prepared. The recent, successful recertification of these products proved that they fulfil all the latest requirements.



SIDENT non-contact safety switches



Certified for control categories 3 and 4 to DIN EN ISO 13849-1

Advantages over mechanical or magnetic safety switches:

- Transponder technology and digital coding make them resistant to tampering
- Easy mounting and adjustment
- Reliable operation with high switching distances up to 20 mm
- High tolerance of vibration
- Robust and maintenance-free in dirty environments
- Can be used to monitor multiple positions

Used for:

- Monitoring safety fences, doors and roller gates
- Safety guards on plant and machinery
- Monitoring robots' safe positions
- Sawing and processing plant, e. g. for plaster or wood, particularly where there is high humidity
- Grinding and milling plant where deposits of dust and dirt are likely
- Safety door handles with integral SIDENT non-contact safety switches

Level assignment and calculation of failure probability

Parameter from DIN EN 62061 or EN ISO 13849-1		Value	
DC	<i>Diagnostic Coverage</i>	High	
CCF	<i>Common Cause Failure</i>	70 points	
Category		3	4
MTTF	<i>Mean Time To Dangerous Failure</i>	74 years	
TM	<i>Mission time</i>	20 years	
SIL CL	<i>SIL Claim Limit</i>	2	3
PFHD	<i>Probability of dangerous Failure per Hour</i>	$\geq 10^{-8}$ bis $< 10^{-7}$	
PL	<i>Performance Level</i>	d	e

apply for ...		Category 3	Category 4
Ref. no.	Designation		
13.14-33	Safety switch SIDENT/IV-40fv114n20-11Z1C		X
13.14-42	Safety switch SIDENT/III-40fq50n20-11Sh1C	X	
13.14-44	Safety switch SIDENT/III-40fv114n20-11Sh1C	X	
13.14-45	Safety switch SIDENT/IV-40fv114n20-11Sh1C		X
13.14-47	Safety switch SIDENT/IV-40fv-1111Z1D		X
13.14-49	Safety switch SIDENT/IV-40fq50n20-11Sh1C		X
13.14-65	Safety switch SIDENT/III-40fv114n20-11Z1C	X	

ZSY Safety Controller



Safety Controllers

- Ensure comprehensive plant safety in combination with safety switches

Level assignment and calculation of failure probability

Parameter from EN 61508:2001 or EN ISO 13849-1:2008		Value
DC	<i>Diagnostic Coverage;</i> Decrease of probability of dangerous hardware failures, resulting from automatic diagnostic tests	High
Category	Classification of safety-related components of controls about their resistance to failures and their behaviour resulting from occurring failures	4
MTTF_D	<i>Mean Time To Dangerous Failure;</i> Mean time expectancy to the dangerous failure of a channel	> 100 years
SIL	<i>Safety Integrity Level</i> Specification of the requirements for safety integrity level of safety functions	3
PFH	<i>Probability of dangerous Failure per Hour;</i> Average probability of a dangerous failure in an hour	2,87x10⁻⁹
PFD	<i>Probability of dangerous Failure on Demand;</i> Probability of failure on demand	2,01x10⁻⁶
SFF	<i>Safe Failure Fraction;</i> Measures the fraction of all "safe" failures that may occur	95,73%
PL	<i>Performance Level;</i> Ability to carry out a safety function under predictable conditions for risk-reduction	e

apply for ...		
Ref. no.	Designation	
20.20-01	ZSY/IV/ba-1.67 Safety Controllers	X

Product overview

Safety switch

Housing	Number of safety-related outputs	Control category according to DIN EN ISO 13849-1	Type	Ref. no.
Short	2	3	SIDENT/III-40fq50n20-11Sh1C	13.14-42
Long	2	3	SIDENT/III-40fv114n20-11Sh1C	13.14-44
Long	2	3	SIDENT/III-40fv114n20-11Z1C	13.14-65
Short	2	4	SIDENT/IV-40fq50n20-11Sh1C	13.14-49
Long	2	4	SIDENT/IV-40fv114n20-11Z1C	13.14-33
Long	2	4	SIDENT/IV-40fv114n20-11Sh1C	13.14-45
Long	2	3	SIDENT/III-40fv114n20-11Z1C	13.14-65
Long	2, + 4 position outputs	4	SIDENT/IV-40fv-1111ZI1D	13.14-47

Safety door handles with safety switches

System	Type	Ref. no.	Control category according to DIN EN ISO 13849-1	Integral Safety Switch Type	Ref. no.	Panic handle	Position output
Schmersal	TGY/r1-Sid3-1.3	43.20-01	3	SIDENT/III-40fv114n20-11Z1C	13.14-65	no	no
Schmersal	TGY/r1-Sid3-2.3	43.20-02	3	SIDENT/III-40fv114n20-11Sh1C	13.14-44	no	no
Schmersal	TGY/r1-Sid4-1.3	43.20-04	4	SIDENT/IV-40fv114n20-11Z1C	13.14-33	no	no
Schmersal	TGY/r1-Sid4m-2.3	43.20-07	4	SIDENT/IV-40fv1111ZI1D	13.14-47	no	yes
Schmersal	TGY/r1f-Sid3-1.3	43.20-03	3	SIDENT/III-40fv114n20-11Z1C	13.14-65	yes	no
Schmersal	TGY/r1f-Sid4-1.3	43.20-05	4	SIDENT/IV-40fv114n20-11Z1C	13.14-33	yes	no
Schmersal	TGY/r1f-Sid4m-2.3	43.20-06	4	SIDENT/IV-40fv1111ZI1D	13.14-47	yes	yes

Safety controllers

Type	Ref. no.	Control category according to DIN EN ISO 13849-1
ZSY/IVba-1.67	20.20-01	4



You will find more product information on safety elements in the **ALSEN TK 5** catalog.

You will find a large selection of further automation components in the following catalogs:

- ALSEN** Inductive proximity switches, pulse sensors, capacitive and ultrasonic sensors
- ALME** Measuring relays and control units
- ALDIF** Evaluation units for pulse rate, frequency, and direction of rotation