

1. Purpose

Dangerous machine functions in partly automated industrial plants are generally screened off by a system of safety fences and doors. The safety doors must be provided with safety locks or safety switches. The objective is to achieve a high degree of safety against tampering. For many systems and according to DIN EN ISO 13849-1, the risk assessment analysis requires control category 4 for the protection of safety doors (two-channel, reciprocal monitoring). The SIDENT/IV safety switch fulfils these criteria and is certified by the Test and Certification Bodies UL and the German DGUV.

2. Principle of the SIDENT/IV Safety Switch

The SIDENT/IV safety switch and the actuating element SIDENT/B (no extra power supply), work using the identification principle with a 6-digit safety code, issued only once, with each "lock" (the SIDENT/IV safety switch) fitting only one "key" (the actuating element SIDENT/B).

Release is only given as long as the actuating element is within the response range of the safety switch and the code number of the actuating element matches that of the switch.

The code number in the safety switch undergoes a two-channel analysis procedure. The two channels monitor each other on a reciprocal basis. Each has got one output with two output transistors each. Even in switched state, the outputs are continuously monitored.

A cyclic check allows the detection of any malfunctioning, resulting in short pulses on the non-faulty channel. This protects at the same time from short circuits between both outputs as these are recognised as soon as the outputs adopt another state.

The evaluation device is typically a safety PLC or an emergency stop relay. It supplies the operating voltage for the safety switch and its two outputs. The supply of the outputs can give short timing signals which allow the PLC to check the connecting leads for circuit breaks and cross circuits (see also data of the safety PLC). A compatibility list can be requested on demand.

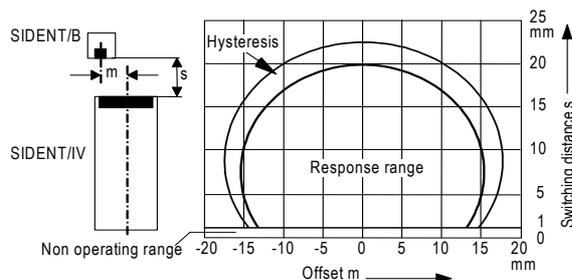
3. Versions

Both parts, the switch and the relevant actuating element, can be designed – up to a certain degree - according to customer specifications. The active surface of the sensor head can be variably repositioned.

4. Response range

For parallel and centric alignment of the sensing faces of safety switch and actuating element, the following values apply. If the sensing faces are inclined at an angle of up to 30° towards each other, deviations by $\pm 10\%$ from the standard values occur.

Please note: The response range has not been determined according to EN 60947-5-2 but according to the diagram shown below.



Switching distance $s = 20\text{ mm}$
Width of the operating range $B = 34\text{ mm}$
Depth of the operating range $T = 24\text{ mm}$
Width of the hysteresis $h = 1 \dots 2\text{ mm}$

Low temperatures and low voltages may reduce the switching distance by approx. 25 %.

5. Mounting

Safety switch and actuating element should be fixed positive-locking to door frame and door and must not be used as mechanical stops. The safety switch is normally attached to the door frame, whereas the actuating element, which requires no connecting wires, is fixed to the door itself. The manipulation safety can be increased by using (one-way) screws which cannot be undone.

Safety switch and actuating element should stand parallel and concentric to each other when the door is closed. Concerning the shape and the size of the response range, it is not relevant how the actuating element is moved towards the safety switch or moved away from it.

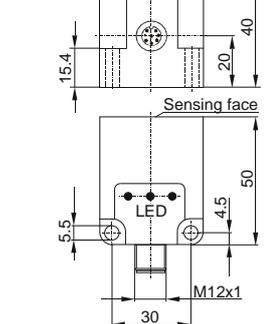
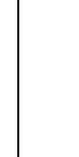
If the door is fitted with a latch, the actuating element can also be fitted directly thereto. An inadvertent closing of the door (without inserting the latch), which can be prevented by using an additional U-lock, does not activate the safety switch.

If two SIDENT/IV safety switches are mounted with a distance less than 120 mm, the switching distance s may be reduced.

6. Important Notes

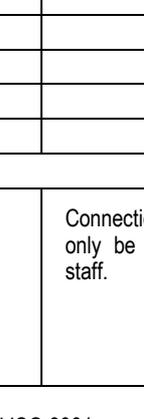
The products described in this description have been developed for safety-related functions as part of a complete plant or machine. A complete safety-related system usually contains switches, evaluation units, signal units and concepts for safe interruption. It is the responsibility of the manufacturer of a plant or machine to ensure its correct overall function. Klaschka Industrieelektronik GmbH cannot guarantee all characteristics of a complete plant or machine not conceived by Klaschka.

Furthermore, Klaschka accepts no liability for recommendations given or implied in this description. This description cannot be used to derive new guarantee, warranty or liability claims exceeding our terms of delivery.

Safety device	Safety Switch category 4		
Type	SIDENT/IV-40fq50n20-11Sh1C		
Ref. no.	13.14-49		
Switching distance, hysteresis	20 mm, < 15 %		
Assured switch-off distance	35 mm		
Design, housing material	rectangle 40 x 40 x 50 mm, plastic		
Mounting	non-flush		
Protection rating, weight	IP 67, 160 g		
Protection insulation 	protection class II according to IEC 947		
Dimensions			
Plug			
Connection	 <p>Shield optional</p>		
Identification	by a 6-digit code		
Control category	4 according to EN 13849-1		
Configuration	2-channel, mutual monitoring		
Operating voltage range L+	15 ... 24 ... 30 VDC		
Current consumption	< 90 mA		
Operation mode	2 NO		
Input voltage L1, L2	12 ... 24 ... 30 VDC, can be clocked		
Output voltage A1, A2	min. U _{Lx} -3 V (400 mA); typ. U _{Lx} -1.75 V (100 mA)		
Output current	< 400 mA per output (40 °C) < 200 mA per output (70 °C)		
Response time	> 150 ms, typ. 185 ms		
Voltage drop	> 75 ms, typ. 100 ms		
Switch-on delay	approx. 2 s		
Max. actuating frequency	1 Hz		
Indicators	2 x identification (green), interference (red)		
Reverse polarity/short circuit protect.	built-in		
Ambient temperature range	- 30 ... + 70 °C		
Connection	plug, 8-pole, M12 x 1		
Lead length/ cross section	max. 300 m, with/without shield		

Safety device	Connector	
Type	JKShaZ-O-1	JKShrZ-O-1
Ref. no.	13.99-47	13.99-50
Design, housing material	straight, plastic	angled, plastic
Protection rating, weight	IP 67	
Protection insulation \square	protection class II according to IEC 947	
Dimensions		
Ambient temperature range	- 30 ... + 70 °C	
Connection	socket, 8-pole, M12 x 1	
Contact connection	screw clamps	
Connection cross section	0.5 qmm	
Lead throughput	6 ... 8 mm	
Socket		

Safety device	Connection lead		Connection lead	
Type	VLG 8E/6S/X-1	VLG 8E/6S/X-2	VLG 8E/6/X-1	VLG 8E/6/X-2
Ref. no.	20.18-53	20.18-56	20.18-54	20.18-57
Design, housing material	straight, plastic	angled, plastic	straight, plastic	angled, plastic
Protection rating, weight	IP 67		IP 67	
Protection insulation \square	Protection class II according to IEC 947		Protection class II according to IEC 947	
Dimensions	<p>shielded version with especially high resistance to interference</p>			
Ambient temperature range	- 30 ... + 70 °C		- 30 ... + 70 °C	
Connection	socket, 8-pole, M12 x 1		socket, 8-pole, M12 x 1	
Contact connection	screw clamps		screw clamps	
Lead length/ cross section	6 x 0.5 qmm		6 x 0.5 qmm	
Socket / connection	<p>1: green 5: grey 2: yellow 6: white 3: brown Shield: black 4: pink</p>		<p>1: green 5: grey 2: yellow 6: white 3: brown 4: pink</p>	

Safety device	Actuating element	
Type	SIDENT/B-22fv20-401	SIDENT/B-11fs14-401
Ref. no.	13.14-30	13.14-40
Design, housing material	rectangle 22 x 22 x 20 mm, plastic	cylinder Ø 10.8 mm, plastic
Mounting or installation	fixing preferably with one-way screws (see order data)	fixing by using glue type: on request
Protection rating, weight	IP 67, 13 g	IP 67, 2 g
Protection insulation 	protection class II according to IEC 947	protection class II according to IEC 947
Dimensions		
Identification	by 6-digit numeric code	
Control category	4 according to EN 13849-1	
Configuration	transponder	
Ambient temperature range	- 30 ... + 70 °C	

Safety Regulations	<p>Connection, commissioning and maintenance may only be accomplished by qualified or instructed staff.</p>	  
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We are certified according to DIN EN ISO 9001.

Subject to technical changes!