

## 1. Function and Configuration

Roller or Lift gates are frequently installed in safety fences. They allow a regular or individual access to production plants, which may be necessary for the inserting or removal of work pieces. If the roller gate is not completely closed, it has to be guaranteed that the plant operator cannot be endangered.

Safety switches, which are integrated into the safety chain of the plant control, serve for recognising the safe position (gate closed). Independently of it further position switches are used, which control the movement of the gate and detect its position.

The advantages of non-contact transponder-based safety switches (insensitivity to dirt, mechanical adjustment, manipulation etc.) can also be used for recognising and controlling the gate position. This special type of SIDENT/IV does not only monitor the "safe" position of the gate; it is further able to detect and to report a total of five positions (end positions, switching the speed from slow to fast and from fast to slow).

The SIDENT/IV is mounted at a suitable place of the gate (e.g. laterally the gate) so that it can detect the actuating element which is mounted at the gate or integrated into the gate itself. A specific code is assigned to each of the five actuating elements ("safe" end position, two or three change-over positions and one not safety-related end position).

On basis of this specific code SIDENT/IV is able to recognise which actuating element is in the reading range at the moment.

All electronic components of the safety switch are fitted in just one sensor housing. Connectors are used for the connection. Three LEDs indicate the present status of the "safe" part (*red* for "no transponder recognised" and/or "error" and 2 x *green* for "transponder recognised"), four further LEDs indicate the present position.

The (two-channel) evaluation electronics of the safety-related part is electrically isolated from that part of the switch, which only controls the movement, so that no reaction is possible. Only the reading head, which is turned towards the actuating elements, is common to both systems.

## 2. Versions

### 2.1 SIDENT/IV for 4 Positions (Ref. no. 13.14-47)

The safety-related position (gate closed) as well as position 1 of the not safety-related part are identical. This means, that the safety-related outputs and one not safety-related output respond to one and the same actuating element.

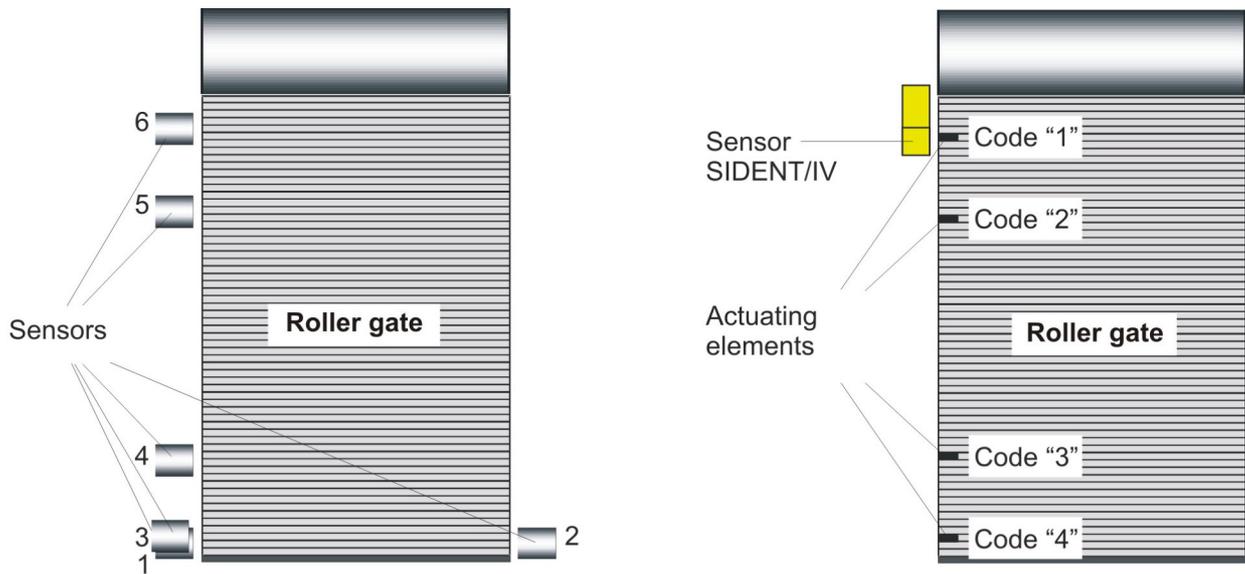
### 2.2 SIDENT/IV for 5 Positions (Ref. no. 13.14-47-100)

The safety-related position (gate closed) is not identical to any of the not safety-related positions. The switch-off and switching points are independent of the safe position (gate closed).

### 2.3 SIDENT/IV for 4 Positions with Storage Behaviour (Ref. no. 13.14-47-201)

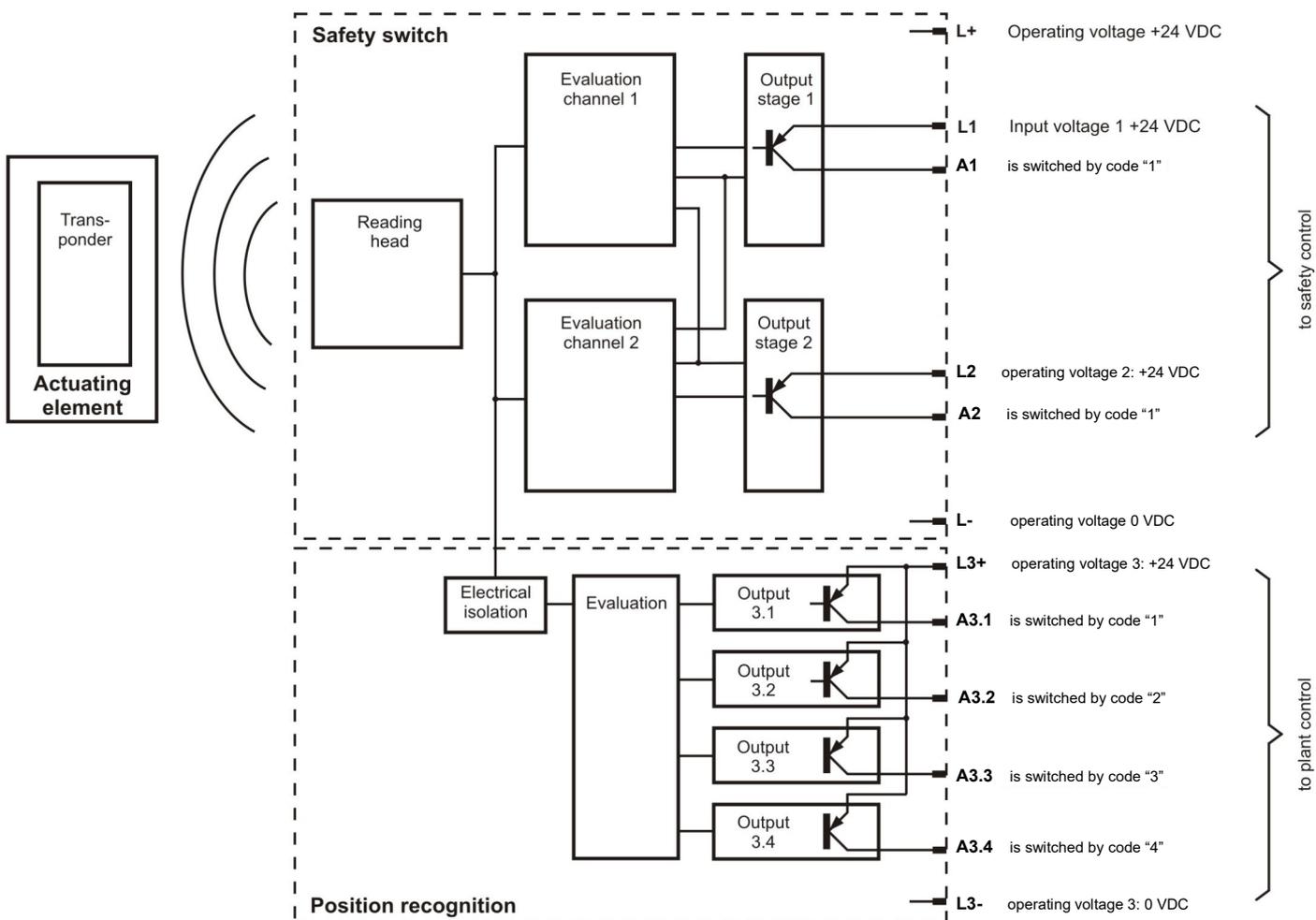
The safety-related position (gate closed) and position 1 of the not safety-related part are identical. In order to activate the frequency converters directly the positions 2 and 3 are equipped with storage behaviour. When passing position 2 the output A3.2 obtains the status "High" and maintains it until position 1 has been reached. When opening the gate and passing position 3 the output A3.3 obtains the status "High". When position 4 has been reached (upper end position) the output is reset to status "Low" and A3.4 is activated.

Example of Application with 4 positions:



Conventional Roller Gate Monitoring

Innovative Roller Gate Monitoring



Block diagram of the basic configuration

### 3. System Description

#### 3.1 Principle of the SIDENT/IV Safety Switch

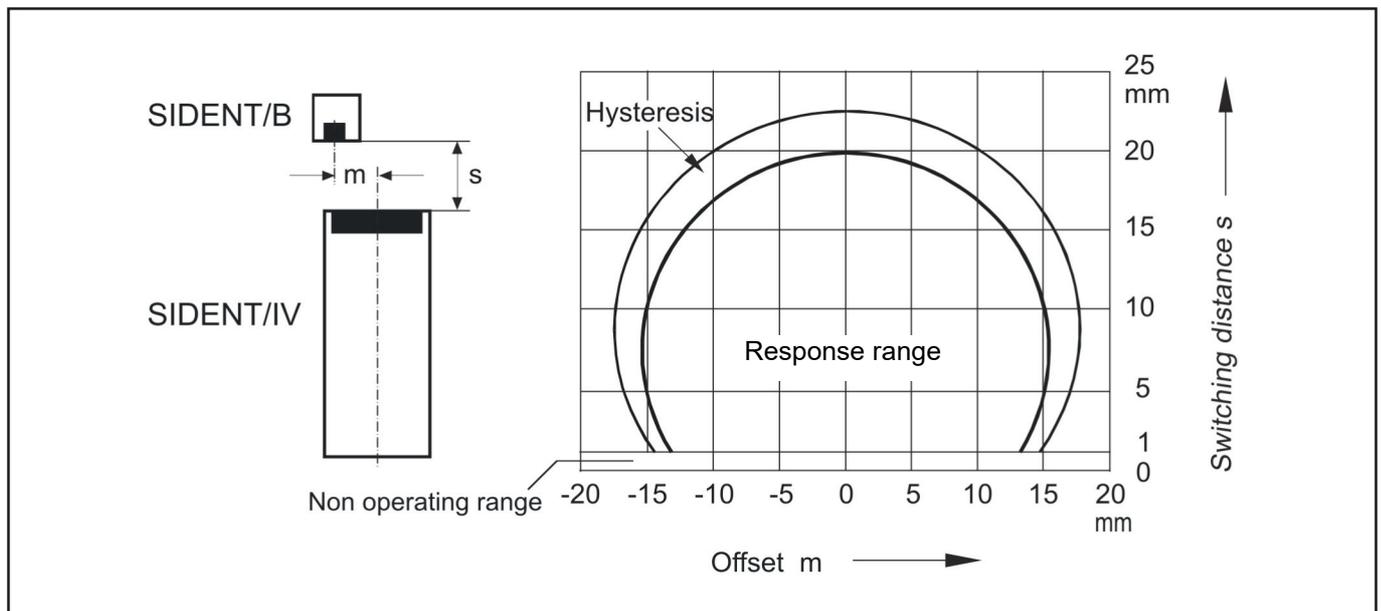
The SIDENT/IV safety switch works together with its actuating element SIDENT/B using the identification principle with a 6-digit safety code which is issued only once. Only one "key", namely the matching SIDENT/B actuating element with its imprinted code, actually fits each "lock" of the SIDENT/IV safety switch.

The safety switch and actuating element work on a non-contact basis. Release is given only when the actuating element is within the response range of the switch and the code number of the actuating element matches that of the switch. At this point, the two green safety-switch indicators (CH1 + CH2) light up. The hysteresis zone is identified by the blinking of the red display (ERR), while the green indicators continue to flash (both outputs remain either connected or disconnected, depending on the direction of the movement, and show the typical hysteresis behaviour). After exit from the hysteresis zone, both green indicators extinguish and a red indicator lights up.

The code numbers in the safety switch undergo a two-channel analysis procedure. The two channels monitor each other on a reciprocal basis. Each channel is provided with one output which features two output transistors. The output is continuously monitored also in a switched condition.

By the monitoring of the outputs a short circuit between output and supply is recognised and a switching-on is prevented. In the event of a ground fault or low voltage at one output, both outputs are switched-off. The presence of such disturbance is verified cyclically. This results in short pulses on the non-faulty channel and, at the same time, constitutes a short-circuit protection during normal operation. **A resetting of short-circuit monitoring is not necessary due to the intermittent operation mode.**

The evaluation device is typically a safety PLC (programmable logic controller) or an emergency stop relay (e.g. Klaschka type ZSY). 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 lines for circuit breaks and cross circuits (for further details, refer to the technical data of the respective safety PLC). These are tolerated by SIDENT/IV to a large extent and do not impair its safety function. However, we recommend comparing with our compatibility list, which is continuously updated and can be requested on demand.



#### 3.2 Response range

In case of 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° to each other, deviations by  $\pm 10\%$  from the standard values occur.

Switching distance	$s = 20\text{ mm}$
Width of the response range	$W = 34\text{ mm}$
Depth of the response range	$D = 24\text{ mm}$
Width of hysteresis	$h = 1 \dots 2\text{ mm}$

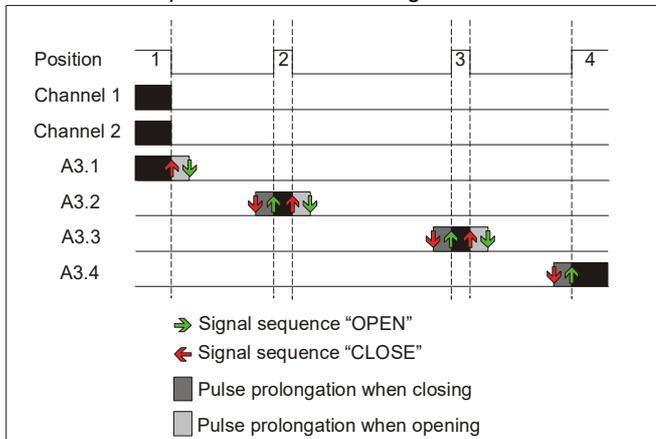
### 3.3 LEDs

The status of the SIDENT/IV (actuated/non-actuated) and possible error situations can be derived from the LED indication. Some possibilities are represented below (version with 4 positions):

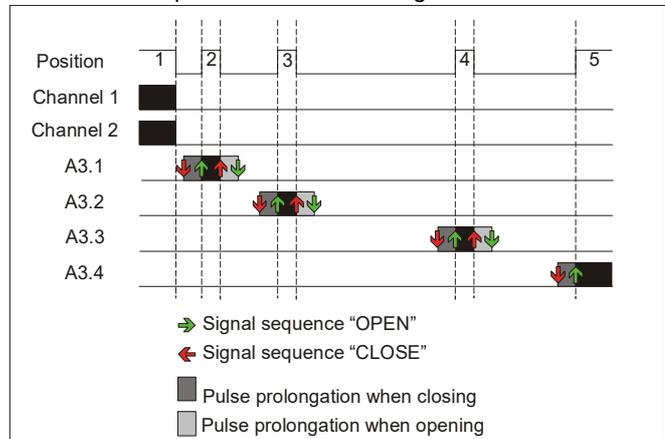
Situation	LED CH 1	LED CH 2	LED Error	LED A3.1	LED A3.2	LED A3.3	LED A3.4
<b>Normal operation</b>							
Sensor actuated with safe position	on	on	off	on	off	off	off
position 2	off	off	on	off	on	off	off
position 3	off	off	on	off	off	on	off
position 4	off	off	on	off	off	off	on
Sensor non-actuated	off	off	on	off	off	off	off
Hysteresis zone of the correspon. actuator	on	on	is flashing	on	on	on	on
<b>Error situation (corresponding actuator in the response range)</b>							
Channel 1 defective	off	on	on	off	off	off	off
Channel 2 defective	on	off	on	off	off	off	off
Short circuit Ch. 1*	is flashing	is flashing	on	off	off	off	off
Short circuit Ch. 2*	is flashing	is flashing	on	off	off	off	off
Short circuit A3.1*	on	on	off	is flashing	off	off	off
Short circuit A3.2*	off	off	off	off	is flashing	off	off
Short circuit A3.3*	off	off	off	off	off	is flashing	off
Short circuit A3.4*	off	off	off	off	off	off	is flashing

\* against power supply (L-)

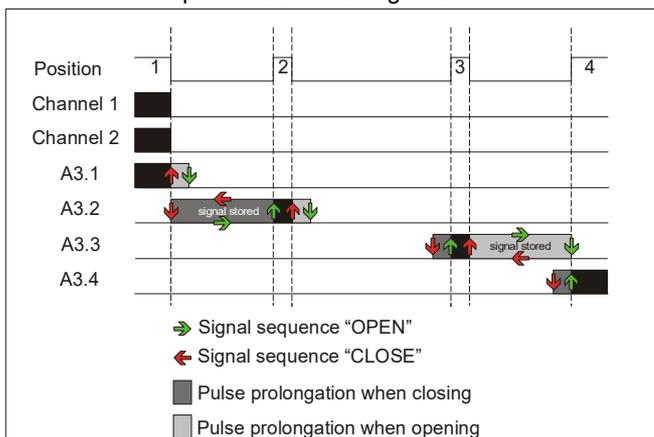
Signal sequence SIDENT/IV, Ref. no. 13.14-47  
for 4 positions without storage behaviour



Signal sequence SIDENT/IV, Ref. no. 13.14-47-100  
for 5 positions without storage behaviour



Signal sequence SIDENT/IV, Ref. no. 13.14-47-201  
for 4 positions with storage behaviour



#### 4. Technical data

General Technical Data	
Switching distance, hysteresis	20 mm*, < 15%
Assured switching off distance	35 mm
Design, housing material	cube 40 x 40 x 114 mm, KS
Installation	non-flush
Wiring	plug, 12-poles
Max. permitted lead length	300 m, with/without shield
Ambient temperature range	- 30 ... + 70 °C
Protection rating, weight	IP 67, 300 g
Protective insulation	Prot. class II conform IEC 947

Technical Data of Safety-Related Part	
Wiring diagram	
Identification	by a 6-digit numeric code
Control category	4 conform to EN 13849-1
Configuration	2-channel, reciprocal monitoring
Operating voltage range L+	15 ... 24 ... 30 VDC
Current consumption	< 90 mA
Operating mode	2 NO
Input voltage L1, L2	12 ... 24 ... 30 VDC, clockable
Output voltage A1, A2	min. $U_{L1,2} - 3$ V (400 mA); typ. $U_{L1,2} - 1.75$ V (100 mA)
Output current	< 400 mA per output
Actuating time	> 150 ms, typ. 185 ms
Drop-out time	> 75 ms, typ. 100 ms
Switch-on delay	approx. 2 s
Max. operating frequency	1 Hz
Indicators	2 x identification (green), 1 x fault (red)
Rev. polarity, short circuit prot.	installed

Technical Data for Position Recognition	
Ref. no.	13.14-47, 13.14-47-100
Wiring diagram	
Operating voltage range L3+	15 ... 24 ... 30 VDC
Current consumption	< 45 mA
Operating mode	4 NO
Output voltage A3.1 ... A3.4	typ. $U_{L3} - 1.75$ V (100 mA)
Output current	< 400 mA per output
Actuating time	typ. 10 ms
Drop-out time (pulse prolong.)	typ. 200 ms
Switch-on delay	approx. 1 s
Moving speed	max. 1 m/s
Indicators	4 x position (green)
Rev. polarity, interference prot.	installed

Technical Data for Position Recognition	
Ref. no.	13.14-47-201
Wiring diagram	
Operating voltage range L3+	15 ... 24 ... 30 VDC
Current consumption	< 45 mA
Operating mode	4 NO
Output voltage A3.1 ... A3.4	typ. $U_{L3} - 1.75$ V (100 mA)
Output current	< 400 mA per output
Actuating time	typ. 10 ms
Drop-out time (pulse prolong.)	typ. 200 ms
Storage behaviour	when A3.2 + A3.3
Switch-on delay	approx. 1 s
Moving speed	max. 1 m/s
Indicators	4 x position (green)
Rev. polarity, short circuit prot.	installed

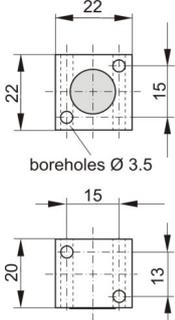
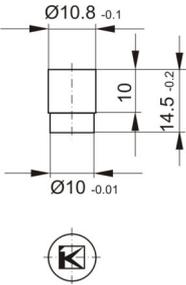
Table: pinning diagram

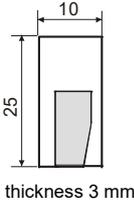
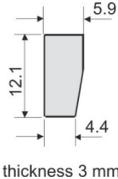
Pin number	Function	Wire colour
3	L+	green
2	L1	brown
1	A1	white
4	L2	yellow
5	A2	grey
6	L-	pink
7	L3+	blue
8	A3.1	red
9	A3.2	black
10	A3.3	violet
11	A3.4	grey/pink
12	L3-	red/blue



**\* Note**

- When mounting actuating elements in metallic environment, switching distances may change. Therefore it is strongly recommended to contact the producer.

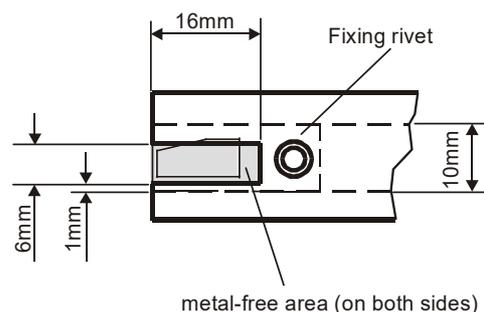
Designation	Actuating Element	Actuating Element
<b>Type</b>	<b>SIDENT/B-22fv20-401</b>	<b>SIDENT/B-11fs14-401</b>
<b>Ref. no.</b>	<b>13.14-30</b>	<b>13.14-40</b>
Index no. safety position and pos.1	-001, yellow	-001, yellow
Index no. safety position (spare part)	-002, yellow	-002, yellow
Index no. position 1(for 13.14-47-100 only)	-012, grey	-012, grey
Index no. position 2	-022, blue	-022, blue
Index no. position 3	-032, green	-032, green
Index no. position 4	-042, red	-042, red
Design, housing material	Cube 22 x 22 x 20 mm, KS	Cylinder Ø 10.8 mm, Crastin
Installation	non-flush; mounting preferably with one-way screws or by gluing	
Protection rating, weight	IP 67, 13 g	IP 67, 2 g
Protective insulation <input type="checkbox"/>	Prot. class II conform IEC 947	
<b>Dimensions</b>		
Identification	by a 6-digit numeric code	
Control category	4 conform to EN 13849-1	
Configuration	Transponder	
Ambient temperature range	-30 ... +70 °C	

Designation	Actuating Element	Actuating Element
<b>Type</b>	<b>SIDENT/B-10fs25-401</b>	<b>SIDENT/B-6fs12-401</b>
<b>Ref. no.</b>	<b>13.14-64</b>	<b>13.14-66</b>
Index no. safety position and pos.1	-001, yellow	-001
Index no. safety position (spare part)	-002, yellow	-002
Index no. position 1(for 13.14-47-100 only)	-012, grey	-012
Index no. position 2	-022, blue	-022
Index no. position 3	-032, green	-032
Index no. position 4	-042, red	-042
Design, housing material	25 x 10 x 3 mm, KS	12.1 x 5.9 x 3 mm, KS
Installation	non-flush; undoable fastening by screws or by glue in order to guarantee manipulation safety	
Protection rating, weight	IP 67, 1 g	IP 67, 0.8 g
Protective insulation <input type="checkbox"/>	Prot. class II conform IEC 947	
<b>Dimensions</b>		
Identification	by a 6-digit numeric code	
Control category	4 conform to EN 13849-1	
Configuration	Transponder	
Ambient temperature range	-30 ... +70 °C	

### Installation Instructions

When the actuating elements are installed in a metallic environment, e.g. in lamellas of roller gates, the switching distance may be reduced. Metal lamellas must therefore be slit within the transponder range. When the actuating elements SIDENT/B-10fs25-4O1 are used, the lamellas must be treated as shown in the diagram. Doing this, the metal-free range has to be observed. The same applies to the actuating elements SIDENT/B-6fs12-4O1.

The mounting in the lamella should take place with a flush rivet or similar device. For this, the holder of the transponder in the rear part can be perforated (see diagram).



Mounting example: SIDENT/B-10fs25-4O1

Designation	Safety Switch
Type	SIDENT/IV-40fv-1111Z11D
Ref. No.	13.14-47, 13.14-47-100, -201
Dimensions	

### 5. Proper Use

The purpose of the SIDENT/IV safety switch is to monitor *mobile, separating safety devices*. These are intended to ensure that dangerous work carried out on or with a machine or plant can only be executed when the safety device is closed.

The SIDENT/IV safety switch can accomplish its task only if it is employed, wired and installed according to the instructions of the manufacturer. In all other respects the relevant requirements and regulations must be kept.

These are inter alia:

- EN 13849-1 - safety-related parts of control devices,
- EN 1088 - locking devices in connection with separating safety devices,
- EN 60204-1 - electrical equipment of machines,
- EN 60947-5-3 - requirements for proximity switches with a defined action under fault conditions.

It is required to carry out a risk evaluation for the machine or the plant itself based on the following standards:

- EN 13849-1 - safety-related parts of control devices,
- EN 14121 - safety of machines, risk evaluation.

The described product was developed, produced, inspected and documented under consideration of the relevant safety standards. If you observe the handling regulations and safety instructions concerning projecting, installation, proper use, and maintenance as described in this manual, the SIDENT, in the normal case, neither cause personal injury nor damage to property.

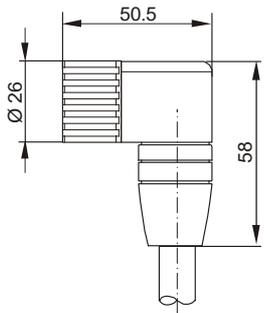
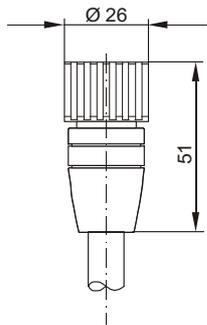
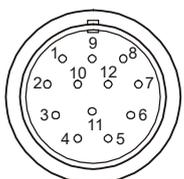
### 6. Marking

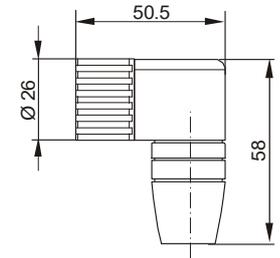
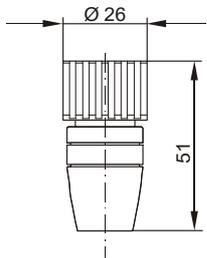
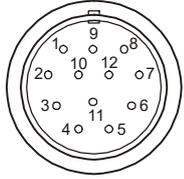


### 7. Safety Regulations

Connection, commissioning and maintenance may only be accomplished by qualified or instructed staff.

### 8. Accessories

Designation	Connecting lead	Connecting lead
Type	VLG 12E/12/X-2	VLG 12E/12/X-3
Ref. no.	20.18-52	20.18-55
Housing material	Metal	
Protection rating	IP 67	
Protective insulation <input type="checkbox"/>	Prot. class II conform to IEC 947	
Dimensions		
Connector diagram / Connection		1: white    7: blue 2: brown   8: red 3: green   9: black 4: yellow   10: violet 5: grey    11: grey/pink 6: pink    12: red/blue
Ambient temperature range	- 30 ... + 70 °C	
Cross section	12 x 0.5 mm <sup>2</sup>	
Wiring	Socket, 12-pole	
Contact connection	Solder contacts	

Designation	Connector	Connector
Type	JKYIrZ-O-1	JKYIaZ-O-2
Ref. no.	13.99-46	13.99-48
Housing material	Metal	
Protection rating	IP 67	
Protective insulation	Prot. class II conform to IEC 947	
Dimensions		
Connector diagram		
Ambient temperature range	-30 ... +70 °C	
Wiring	Socket, 12-pole	
Contact connection	Crimp contacts	

## Important notes for area of application from 2021-01-01

From mid-2021 a proposal by the EU Commission for a revised Machinery Directive (2006/42/EG) is planned. Standards to be revised are also affected (including Norms like DIN EN ISO 13849-1).

The European harmonized law replaces national provisions – applies within European Economic Area (EEA), Switzerland, Turkey.

### The validity of the certificates ends on 2020-12-31.

(Installations outside the scope of the Machinery Directive are not affected).

From 2021-01-01, these products may not be used in new safety-relevant applications within the applicable guidelines.

### Last-order-date: 2020-11-30

For applications within existing and already safety-compliant approved applications, as replacement and, if necessary, retrofitting, (also for applications outside the scope of the Machinery Directive) - SIDENT Safety switches are available furthermore.

For supporting information please contact us or your vendor / distributor

## 9. Order Data

### 9.1.1 Safety Switches for multiple positions

**SIDENT/IV-40fv-1111ZI1D** Ref. no. 13.14-47  
**four positions**

**SIDENT/IV-40fv-1111ZI1D** Ref. no. 13.14-47-100  
**five independent positions**

**SIDENT/IV-40fv-1111ZI1D** Ref. no. 13.14-47-201  
**four positions, with storage behaviour**

### 9.2 Actuating Elements

#### 9.2.1 Actuating Elements in cubic housing

**SIDENT/B-22fv20-4O1** Ref. no. 13.14-30-001  
safety-related position + pos. 1 (yellow)

**SIDENT/B-22fv20-4O1** Ref. no. 13.14-30-002  
safety-related position + pos. 1 (spare part / yellow)

**SIDENT/B-22fv20-4O1** Ref. no. 13.14-30-012  
position 1 (for 13.14-47-100 only) (grey)

**SIDENT/B-22fv20-4O1** Ref. no. 13.14-30-022  
position 2 (blue)

**SIDENT/B-22fv20-4O1** Ref. no. 13.14-30-032  
position 3 (green)

**SIDENT/B-22fv20-4O1** Ref. no. 13.14-30-042  
position 4 (red)

#### 9.2.2 Actuating El., minimal size, cylindrical housing

**SIDENT/B-11fs14-4O1** Ref. no. 13.14-40-001  
safety-related position + pos. 1 (yellow)

**SIDENT/B-11fs14-4O1** Ref. no. 13.14-40-002  
safety-related position (spare part / yellow)

**SIDENT/B-11fs14-4O1** Ref. no. 13.14-40-012  
position 1 (for 13.14-47-100 only) (grey)

**SIDENT/B-11fs14-4O1** Ref. no. 13.14-40-022  
position 2 (blue)

**SIDENT/B-11fs14-4O1** Ref. no. 13.14-40-032  
position 3 (green)

**SIDENT/B-11fs14-4O1** Ref. no. 13.14-40-042  
position 4 (red)

#### 9.2.3 Actuating Elements in fork holder

**SIDENT/B-10fs25-4O1** Ref. no. 13.14-64-001  
safety-related position + pos. 1 (yellow)

**SIDENT/B-10fs25-4O1** Ref. no. 13.14-64-002  
safety-related position (spare part / yellow)

**SIDENT/B-10fs25-4O1** Ref. no. 13.14-64-012  
position 1 (for 13.14-47-100 only) (grey)

**SIDENT/B-10fs25-4O1** Ref. no. 13.14-64-022  
position 2 (blue)

**SIDENT/B-10fs25-4O1** Ref. no. 13.14-64-032  
position 3 (green)

**SIDENT/B-10fs25-4O1** Ref. no. 13.14-64-042  
position 4 (red)

### 9.2.4 Actuating Elements without housing

**SIDENT/B-6fs12-4O1** Ref. no. 13.14-66-001  
safety-related position + pos. 1

**SIDENT/B-6fs12-4O1** Ref. no. 13.14-66-002  
safety-related position (spare part)

**SIDENT/B-6fs12-4O1** Ref. no. 13.14-66-012  
position 1 (for 13.14-47-100 only)

**SIDENT/B-6fs12-4O1** Ref. no. 13.14-66-022  
position 2

**SIDENT/B-6fs12-4O1** Ref. no. 13.14-66-032  
position 3

**SIDENT/B-6fs12-4O1** Ref. no. 13.14-66-042  
position 4

### 9.3 Connecting Leads for SIDENT

Please indicate lead length X when placing the order  
(standard length X = 5 m).

**VLG 12E/12/X-2** Ref. no. 20.18-52  
with angled outlet,  
12-lines, (12 x 0.5 mm<sup>2</sup>),  
with Coninvers connector

**VLG 12E/12/X-3** Ref. no. 20.18-55  
with straight outlet,  
12-lines, (12 x 0.5 mm<sup>2</sup>),  
with Coninvers connector

### 9.4 Connector

**JKYIrZ-O-1** Ref. no. 13.99-46  
Coninvers connector,  
coupling, series RC,  
angled outlet,  
12-pole, crimp contacts

**JKYIaZ-O-2** Ref. no. 13.99-48  
Coninvers connector,  
coupling, series RC,  
straight outlet,  
12-pole, crimp contacts

### 9.5 Accessories for Increasing the Manipulation Safety

**Self-cutting one-way screw** Ref. no. 92.18-20  
Flat head tapping screw, 3.5 x 32 mm,  
one-way slot, stainless steel,  
for fixing the actuating element  
SIDENT/B-22fv20-4O1

**Self-cutting one way screw** Ref. no. 92.18-21  
Flat head tapping screw, 4.8 x 50 mm,  
one-way slot, stainless steel,  
for fixing the safety switch SIDENT  
on a sheet metal base

**One way screw with metrical thread** Ref. no. 92.18-22  
Semi-circular head screw, M5 x 35 mm,  
one-way slot, stainless steel,  
for fixing the safety switch SIDENT

We are certified according to DIN EN ISO 9001

Subject to changes!