

# .steute

## Ex switchgear



SAFE SWITCHGEAR FOR COMPLEX AND CRITICAL APPLICATIONS

// Explosion protection / Catalogue



#### 4 The Company

### PRODUCTS



#### 10 Ex safety switches with separate actuator

- 14 Series EEx ST 14
- 16 Series EEx 95 AZ
- 18 Series EEx AZ 16
- 24 Series EEx 335 AZ
- 28 Series EEx 355 AZ
- 32 Series EEx ST 61



#### 34 Ex solenoid interlocks

- 38 Series EEx STM 295
- 40 Series EEx AZM 415
- 42 Series EEx AZP 415



#### 50 Ex position switches with safety function

- 56 Series EEx 13
- 66 Series EEx 14
- 74 Series EEx 95
- 80 Series EEx T 356
- 84 Series EEx 335
- 90 Series EEx 355
- 96 Series EEx 61



#### 100 Ex safety switches for hinged guard doors

- 104 Series EEx 95 T.C
- 105 Series EEx 13 SB
- 106 Series EEx 95 SB
- 108 Series EEx 335 V.S
- 109 Series EEx 355 V.S



#### 110 Ex safety sensors

- 114 Series EEx RC Si M30
- 116 Series EEx RC Si 56
- 118 Series SRM 21 RT2



#### 120 Ex emergency pull-wire switches

- 126 Series EEx ZS 71
- 128 Series EEx ZS 73
- 130 Series EEx ZS 75
- 132 Series EEx ZS 80
- 134 Series EEx ZS 73 S
- 136 Series EEx ZS 75 S



#### 148 Ex command devices

152 Series EEx 14



#### 158 Ex position switches

164 Series EEx 13  
176 Series EEx/EExM 14  
186 Series EEx 95  
196 Series EEx T 356  
200 Series EEx 12  
212 Series EEx 335  
218 Series EEx 355  
224 Series EEx/EExM 61



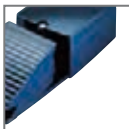
#### 232 Ex belt-alignment switches

236 Series EEx 335 4VSR  
237 Series EEx 355 4VSR  
238 Series EEx ZS 73 SR  
240 Series EEx ZS 75 SR



#### 242 Ex pull-wire switches

247 Series EEx 95 WH/90°  
248 Series EEx ZS 71 Z  
250 Series EEx/EExM 61 Z



#### 254 Ex foot switches

258 Series EEx GF  
260 Series EEx GFS  
262 Series EEx GFI  
263 Series EEx GFSI  
264 Series EEx GF 2  
266 Series EEx GFS 2  
268 Series EEx GF 3  
269 Series EEx GFS 3



**270 Ex magnetic sensors**

- 274 Series EEx RC 12
- 276 Series EEx RC 13,5
- 278 Series EEx RC 15
- 280 Series EEx RC M20



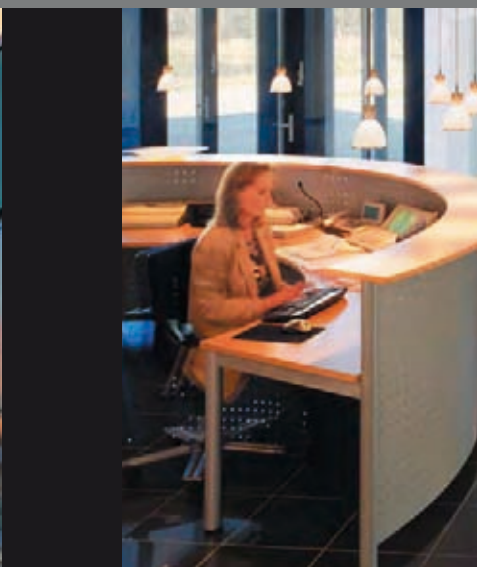
**286 Ex inductive sensors**

- 290 Series EEx IS M12
- 292 Series EEx IS M18
- 294 Series EEx IS M30
- 296 Relay module EEx RM 1W 1

STEUTE SCHALTGERÄTE IN LÖHNE  
SAFE SWITCHGEAR FOR COMPLEX AND CRITICAL APPLICATIONS

6





Löhne in Westphalia, Germany. Nestling between the »Wiehengebirge« and the »Teutoburger Wald«, this is the location of steute Schaltgeräte GmbH & Co. KG. Here switchgear is designed and produced for explosion protection, medical technology and control technology. Historians know our region as the area where the Battle of Varus took place in the year 9 AD. About 1700 years later the Treaty of Westphalia marked the end of the 30 Years War. Gourmets love Westphalian sausage, walkers the beautiful landscape. Briefly: it's a good place to live. It's also a good place to work.

The industrial culture of Westphalia is mostly characterised by SME companies; the region is also the home of many unexpected champions and world-market leaders, specialist machine and systems manufacturers, as well as of electronic and connecting technology.

This means we have many important suppliers, customers and partners practically »on our doorstep«. Nevertheless, our employees travel a great deal all over the world. This is because renowned com-

panies in all industrial markets use switchgear by steute when the focus is on high quality and availability. And when they appreciate cooperating with suppliers who can adapt flexibly to their requests.



## STEUTE MEETS HIGHEST QUALITY REQUIREMENTS



Today, the company offers a homogenous product range, drawing on its wide know-how and characterised by a high degree of technological synergy.

180 employees attentively develop and manufacture electrical and electronic components for high-standard and explosive safety applications. These applications comply with established international directives, laws, standards and regulations. In this context, key significance is attributed to a close cooperation with technical certification institutions.

With its high standards and specific orientation, steute lives and breathes the following three QM systems

- DIN EN ISO 9001: 2000
- DIN EN ISO 13485: 2003
- Certificate of Quality Assurance acknowledgement in accordance with the 94/9/EG Directive (ATEX)

On the following pages you will find an overview of our wide range of Ex switchgear for safety-related and positioning tasks, each of which can be modified in accordance with customer-specific requirements.

Talk to us. Let us help you find what you are looking for.  
The steute team.





## Ex safety switches with separate actuators

### Thermoplastic enclosure

// Series EEx ST 14

from page 14

// Series EEx 95 AZ

from page 16

// Series EEx AZ 16

from page 18

### Metal enclosure

// Series EEx 335 AZ

from page 24

// Series EEx 355 AZ

from page 28

// Series EEx ST 61

from page 32



EEx 95 AZ

01.08.0084

# Ex safety switches with separate actuators

## Range of application

These Ex safety switches with a separate actuator are suitable for sliding, hinged and particularly removable safety guards, which need to be closed to ensure the necessary operational safety. They are also suitable for mounting on profile sections and retrofitting on existing equipment.

In combination with a safety relay module series SRM, all safety switches shown in this chapter achieve Control Category 3 or 4 to EN 954-1.

The Ex switches are suitable for application in zone 1 and 2, as well as zone 21 and 22 according to ATEX 94/9/EC.

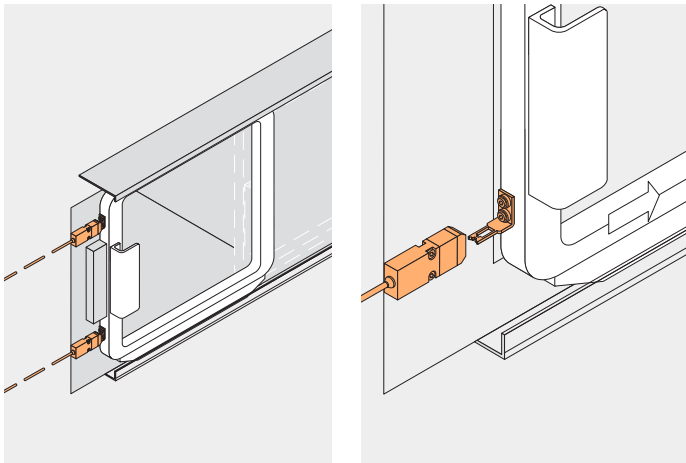
## Design and operating principle

On the Ex safety switches with a separate actuator, the switching element is not physically connected to the actuator, but functionally united or separated by switching. When the guard device is opened, the actuator is separated from the base unit. In this process, NC contacts are positively opened and NO contacts closed. A wide range of coded actuators is available for safety switches series EEx AZ 16, also suitable for small radii. Furthermore, lockout tags and different fixing mechanisms like latching magnets and ball catches can be ordered.

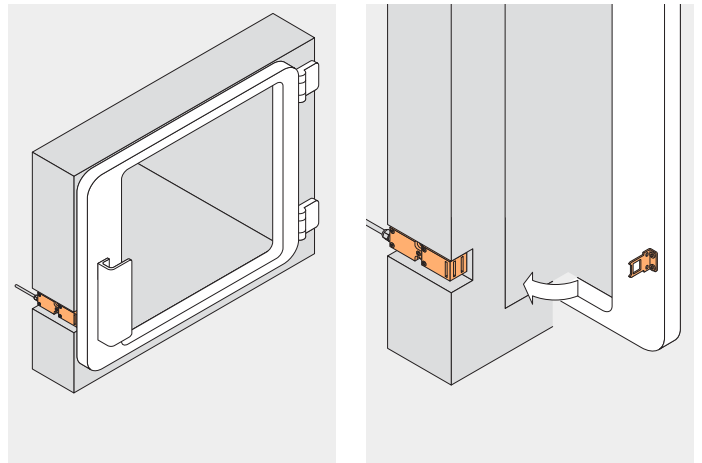
The protection class of all the safety switches is IP 65/67. The safety switches can be fitted in any desired mounting position.

All Ex safety switches shown in this chapter bear the CE mark according to the Machinery Directive 98/37/EC and according to ATEX 94/9/EC. The Ex safety switches per equipment category 3D bear the CE mark without the number of the notified body and have received a CE declaration of manufacturer conformity.

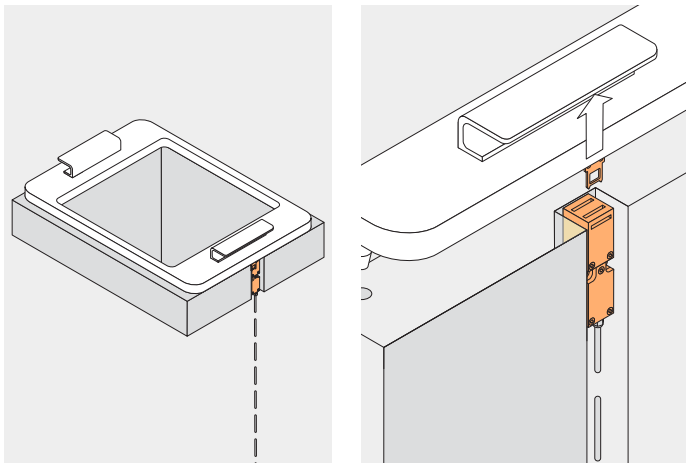
## Application on sliding guards



## on hinged guards



## on removable guards



# Ex safety switches with separate actuators

## // Series EEx ST 14

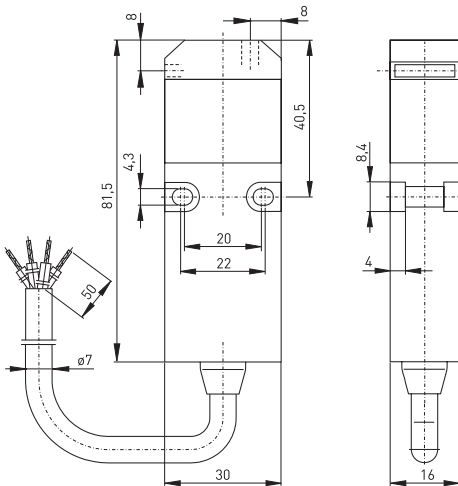
### Features/Options

- Ex zone 1 and 2, as well as 21 and 22
- Thermoplastic enclosure
- Double insulated ☐
- Slow action available with contact overlapping
- Version with cable outlet on side
- With prewired cable, length 1 metre
- Special version only for equipment category 3D, available for dust Ex zone 22
- Inmetro approval for Brazil to be ordered separately

## // EEX ST 14



14



## Technical data

<b>Standards</b>	IEC/EN 60947-5-1; EN 1088; EN 50014; EN 50018; EN 50281-1-1
<b>Enclosure</b>	glass-fibre reinforced, shock-proof thermoplastic, self-extinguishing UL 94-V0 stainless steel 1.4301
<b>Actuator</b>	-
<b>Switch insert</b>	-
<b>Protection class</b>	IP 65 according to EN 60529
<b>Contact material</b>	silver
<b>Switching system</b>	slow action, positive break NC contact ⊖
<b>Switching elements</b>	change-over contact with double break Zb or 2 NC contacts, galvanically separated contact bridges
<b>Termination</b>	cable H05VV-F 4 x 0.75 mm <sup>2</sup>
<b>Cable section</b>	4 x 0.75 mm <sup>2</sup>
<b>Cable length</b>	1, 2, 5 and 10 m
<b>U<sub>imp</sub></b>	4 kV
<b>U<sub>i</sub></b>	250 V
<b>I<sub>the</sub></b>	6 A
<b>I<sub>e</sub>/U<sub>e</sub></b>	6 A/250 VAC; 4 A/24 VDC; 0.25 A/230 VDC
<b>Utilisation category</b>	AC-15, DC-13
<b>Max. fuse rating</b>	6 A gL/gG D-fuse
<b>Positive break travel</b>	10̇/1S, 20̇: 8 mm, UE: 9.5 mm
<b>Positive break force</b>	-
<b>Ambient temperature</b>	-20 °C ... +65 °C
<b>Mechanical life</b>	> 1 million operations
<b>Ex certification</b>	⊕ II 2G EEx d IIC T6, II 2D IP65 T80°C
<b>Approvals</b>	PTB 03 ATEX 1070 X



### Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<b>EEx ST 14 10̇/1S</b> 
1 NC/1 NO contact with overlapping	<b>EEx ST 14 UE</b> 
2 NC contacts	<b>EEx ST 14 20̇</b> 

### Ordering details

<b>EEx ST 14 10̇/1S-S-1m-3D</b>	Equipment Categ. 3D, dust Ex zone 22
	Cable length 1 m, (2 m, 5 m, 10 m)
	Cable on side
	Contact type 1NC/1NO, (20̇, UE)
	Series
	Safety door switch
	Ex certified component

# Ex safety switches with separate actuators

## // Series EEx ST 14, actuators

### Features/Options

#### ST 14-B1

- Rubber mounting damps vibrations on guard devices
- Actuating radius on hinged guards  
a = 140 mm and b = 1000 mm
- Axial misalignment x = 30 mm

#### ST 14-B3

- Especially suitable for hinged guards
- Actuating radius on hinged guards  
a = 50 mm
- Axial misalignment x = 14 mm

### Features/Options

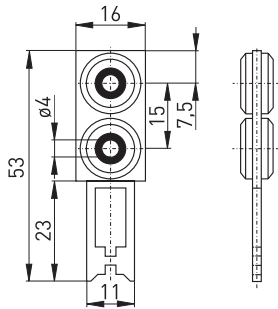
#### ST 14-B5

- Rubber mounting damps vibrations on guard devices
- Suitable for hinged guards
- Actuating radius on hinged guards  
a = 140 mm and b = 1000 mm
- Axial misalignment x = 15 mm

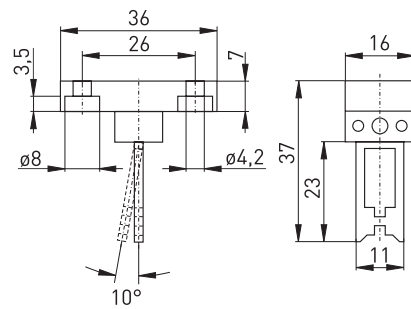
### Note

Inserted position of actuator = 0 in switch travel diagram  
The actuators are not included with the switches.

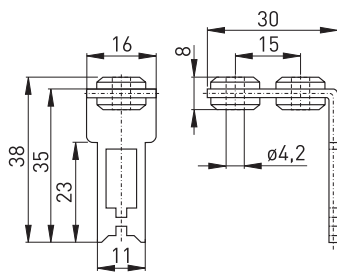
## // Straight actuator ST 14-B1



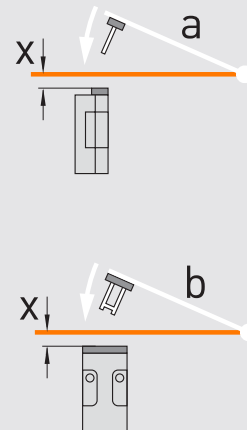
## // Flexible actuator ST 14-B3



## // Angled actuator ST 14-B5



## // Actuating radius



- The axis of the hinge should be x mm above the top edge of the safety switch and in the same plane
- a Actuating radius to the plane of the actuator
- b Actuating radius in line with the plane of the actuator
- x Axial misalignment

# Ex safety switches with separate actuators

## // Series EEx 95 AZ

### Features/Options

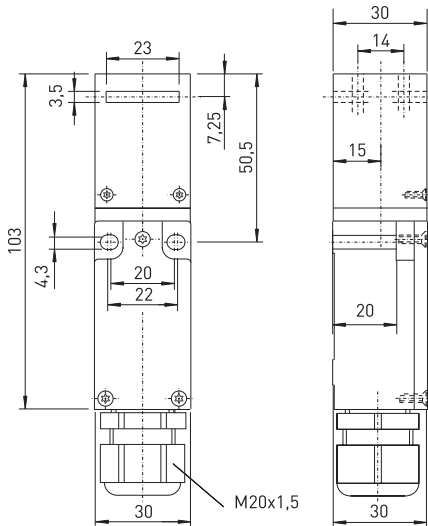
- Ex zone 1 and 2, as well as 21 and 22
- Thermoplastic enclosure, double insulated ☐
- Slow action ⊖, change-over contact with double break
- Wiring compartment
- Mounting details to EN 50 047
- Horizontal mounting slots
- Actuator head can be repositioned in factory in 4 x 90° steps
- Special version only for equipment category 3D, available for dust Ex zone 22

## // EEX 95 AZ



### Technical data

<b>Standards</b>	IEC/EN 60947-5-1; EN 1088; EN 50014; EN 50018; EN 50019; EN 50281-1-1
<b>Enclosure</b>	glass-fibre reinforced, shock-proof thermoplastic, self-extinguishing UL 94-V0 stainless steel 1.4301
<b>Actuator</b>	-
<b>Switch insert</b>	-
<b>Protection class</b>	IP 67 according to EN 60529
<b>Contact material</b>	silver
<b>Switching system</b>	slow action, positive break NC contact ⊖
<b>Switching elements</b>	change-over contact with double break Zb or 2 NC contacts, galvanically separated contact bridges
<b>Termination</b>	M3 screw clamps
<b>Cable section</b>	max. 1.5 mm <sup>2</sup> (incl. conductor ferrules)
<b>Cable length</b>	-
<b>U<sub>imp</sub></b>	4 kV
<b>U<sub>i</sub></b>	250 V
<b>I<sub>the</sub></b>	6 A
<b>I<sub>e</sub>/U<sub>e</sub></b>	6 A/250 VAC; 0.25 A/230 VDC
<b>Utilisation category</b>	AC-15, DC-13
<b>Max. fuse rating</b>	6 A gL/gG D-fuse
<b>Positive break travel</b>	9 mm
<b>Positive break force</b>	-
<b>Ambient temperature</b>	-20 °C ... +60 °C
<b>Mechanical life</b>	> 1 million operations
<b>Ex certification</b>	☉ II 2G EEx de IIC T6, II 2D IP67 T80°C
<b>Approvals</b>	DMT 01 ATEX E 118



### Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	EEx 95 AZ 10/1S 
2 NC contacts	EEx 95 AZ 20 

### Ordering details

EEx 95 AZ 10/1S-90°-3D	Equipment Categ. 3D, dust Ex zone 22
	Actuating head repositioned by 90°
	Contact type 1NC/1NO, (2Ö)
	Separate actuator AZ
	Series
	Ex certified component

# Ex safety switches with separate actuators

## // Series EEx 95 AZ, actuators

### Features/Options

#### 95 AZ-B1

- Actuating radius on hinged guards  
a = 350 mm and b = 700 mm
- Axial misalignment x = 11 mm

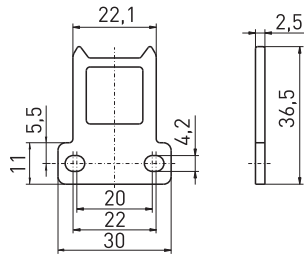
#### 95 AZ-B5

- Especially suitable for hinged guards
- Actuating radius on hinged guards  
a = 350 mm and b = 700 mm
- Axial misalignment x = 13.5 mm

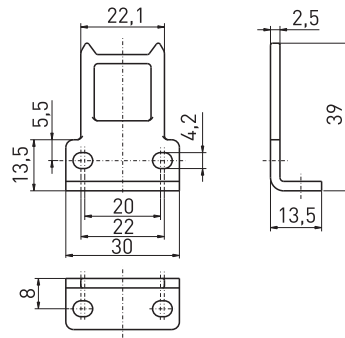
### Note

Inserted position of actuator = 0 in switch travel diagram  
The actuators are not included with the switches.

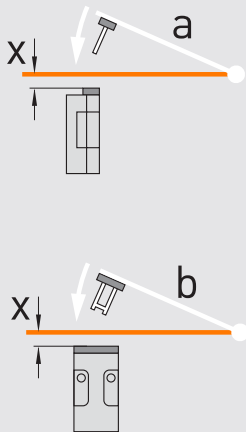
### // Straight actuator 95 AZ-B1



### // Angled actuator 95 AZ-B5



### // Actuating radius



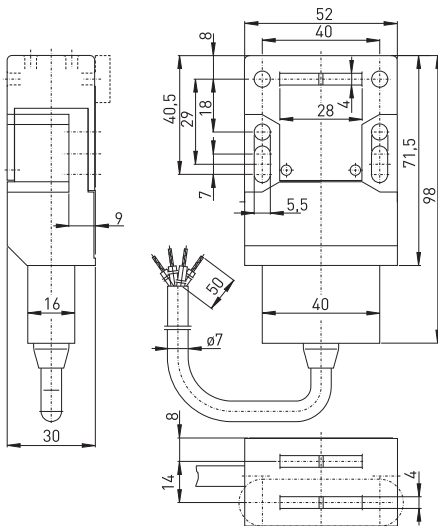
- The axis of the hinge should be x mm above the top edge of the safety switch and in the same plane
- a Actuating radius to the plane of the actuator
- b Actuating radius in line with the plane of the actuator
- x Axial misalignment



# Ex safety switches with separate actuators

## // Series EEx AZ 16

### // EEX AZ 16



#### Features/Options

- Ex zone 1 and 2, as well as 21 and 22
- Thermoplastic enclosure
- Multiple coding
- Slow action  $\ominus$ , change-over contact with double break
- With prewired cable, length 2 or 5 metres
- Special version only for equipment category 3D, available for dust Ex zone 22
- Inmetro approval for Brazil to be ordered separately

#### Technical data

<b>Standards</b>	IEC/EN 60947-5-1; EN 1088; EN 50014; EN 50018; EN 50281-1-1
<b>Enclosure</b>	glass-fibre reinforced, shock-proof thermoplastic, self-extinguishing UL 94-V0 stainless steel 1.4301
<b>Actuator</b>	stainless steel 1.4301
<b>Switch insert</b>	EEx 13
<b>Protection class</b>	IP 65 according to EN 60529
<b>Contact material</b>	silver
<b>Switching system</b>	slow action, positive break NC contact $\ominus$
<b>Switching elements</b>	change-over contact with double break Zb, galvanically separated contact bridges
<b>Termination</b>	cable H05VV-F 4 x 0.75 mm <sup>2</sup>
<b>Cable section</b>	4 x 0.75 mm <sup>2</sup>
<b>Cable length</b>	2 and 5 m
<b>U<sub>imp</sub></b>	4 kV
<b>U<sub>i</sub></b>	250 V
<b>I<sub>the</sub></b>	6 A
<b>I<sub>e</sub>/U<sub>e</sub></b>	6 A/250 VAC; 4 A/24 VDC
<b>Utilisation category</b>	AC-15, DC-13
<b>Max. fuse rating</b>	6 A gL/gG D-fuse
<b>Positive break travel</b>	9.5 mm
<b>Positive break force</b>	ca. 15 N
<b>Ambient temperature</b>	-20 °C ... +65 °C
<b>Mechanical life</b>	> 1 million operations
<b>Ex certification</b>	$\ominus$ II 2G EEx d IIC T6, II 2D IP65 T80°C
<b>Approvals</b>	PTB 03 ATEX 1068 X, referring to the switch insert



#### Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	EEx AZ 16 10/1S

#### Ordering details

EEx AZ 16	10/1S-30N-2m-3D	
		Equipment Categ. 3D, dust Ex zone 22
		Cable length 2 m, (5 m)
		30 N latching force (blank ejection force)
		1 NC/1 NO contact
		Protection class IP 67
		Series
		Separate actuator AZ
		Ex certified component

# Ex safety switches with separate actuators

## // Series EEx AZ 16, actuators

### Features/Options

#### AZ 15/16-B1

- Actuating radius on hinged guards

a = 150 mm and b = 150 mm

- Axial misalignment x = 5 mm

#### AZ 15/16-B2

- Actuating radius on hinged guards

b = 45 mm

- Axial misalignment = 11 mm

#### AZ 15/16-B3

- Actuating radius on hinged guards

a = 32 mm

### Features/Options

- Axial misalignment x = 11 mm

#### AZ 15/16-B6

- Actuating radius on hinged guards

a = 25 mm and b = 38 mm

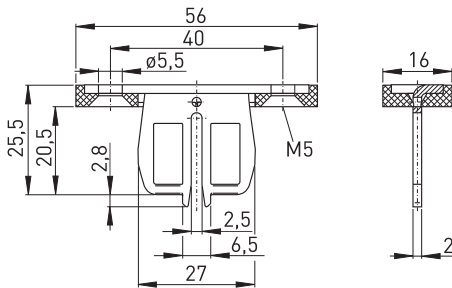
- Axial misalignment x = 11 mm

### Note

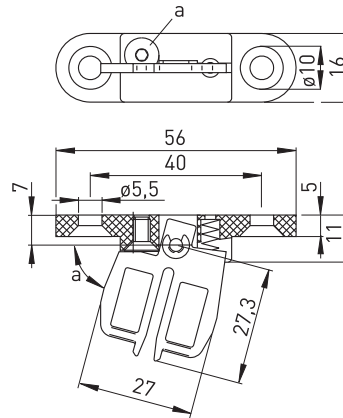
Inserted position of actuator = 0 in switch travel diagram

The actuators are not included with the switches.

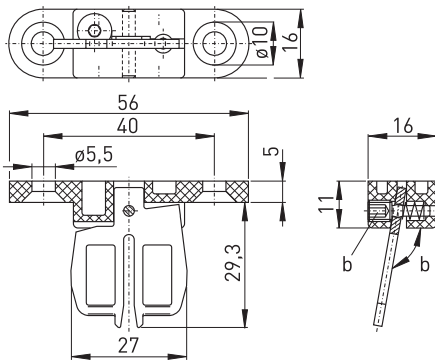
### // Straight actuator AZ 15/16-B1



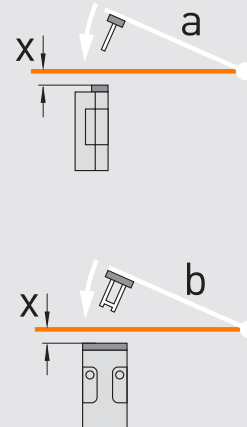
### // Flexible actuator AZ 15/16-B2



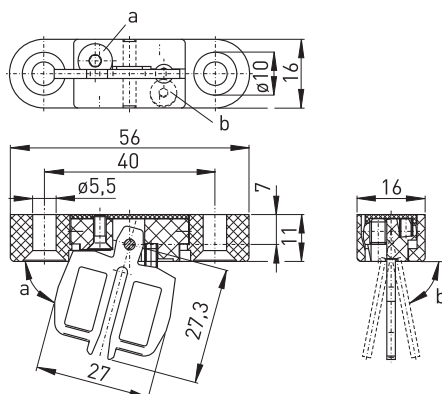
### // Flexible actuator AZ 15/16-B3



### // Actuating radius



### // Flexible actuator AZ 15/16-B6



- The axis of the hinge should be x mm above the top edge of the safety switch and in the same plane
- a Actuating radius to the plane of the actuator
- b Actuating radius in line with the plane of the actuator
- x Axial misalignment

# Ex safety switches with separate actuators

## // Series EEx AZ 16, actuators

### Features/Options

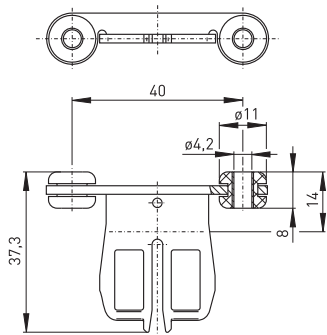
#### AZ 15/16-B1-2245

- Actuating radius on hinged guards  
a = 150 mm and b = 150 mm
- Axial misalignment x = 14 mm
- Rubber mounting damps vibrations on guard devices
- Max. 200 Ncm tightening torque for fixing the actuator

### Actuator with magnetic latch

- For play-free interlocking of light guards, holding force: 30 N
- The magnetic latch can easily be fitted in any actuating plane
- Suitable for retrofitting

## // Actuator with rubber AZ 15/16-B1-2245



### Features/Options

#### AZ 15/16-B1-1747

- Actuating radius on hinged guards  
a = 150 mm and b = 150 mm, axial misalignment x = 5 mm

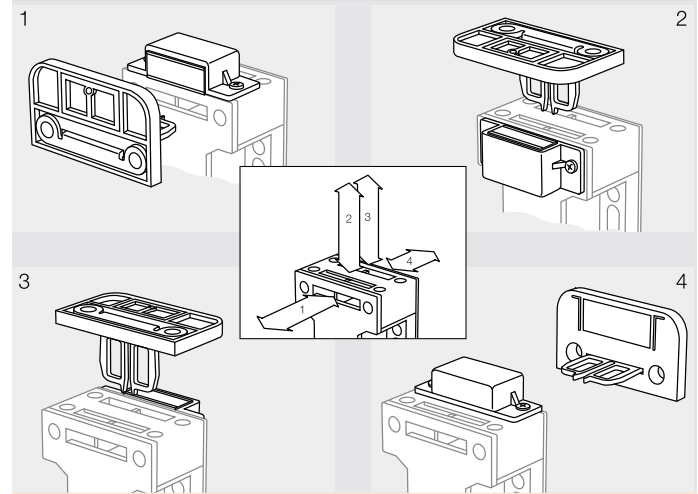
#### AZ 15/16-B2-1747

- Actuating radius on hinged guards  
b = 45 mm, axial misalignment x = 11 mm

#### AZ 15/16-B3-1747

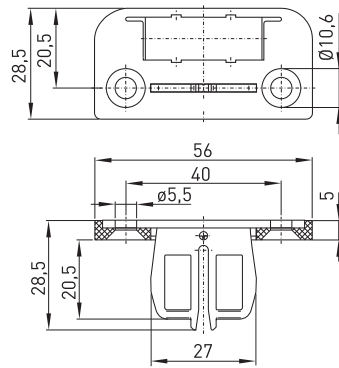
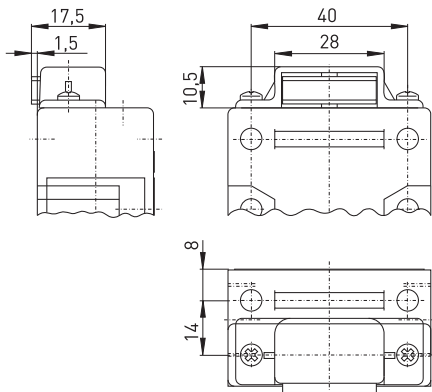
- Actuating radius on hinged guards  
a = 32 mm, axial misalignment x = 11 mm

## // Actuator with magnetic latch

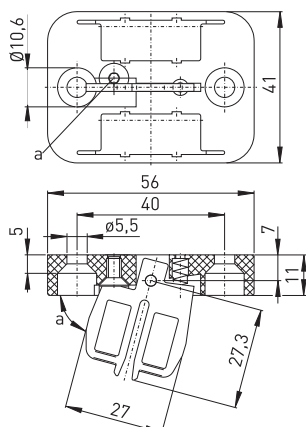


## // Actuator magn. latch AZ 15/16-B1-1747

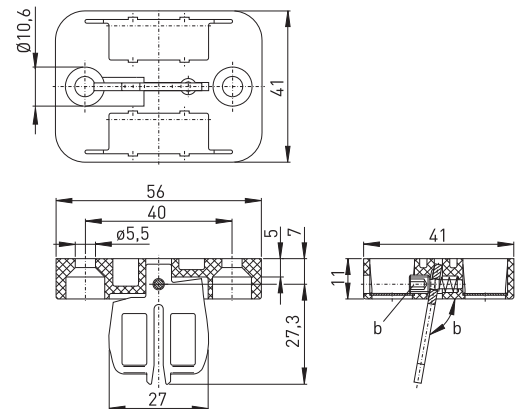
## // Magnetic latch



## // Actuator magn. latch AZ 15/16-B2-1747



## // Actuator magn. latch AZ 15/16-B3-1747



# Ex safety switches with separate actuators

## // Series EEx AZ 16, actuators

### Features/Options

#### Actuator with ball latch

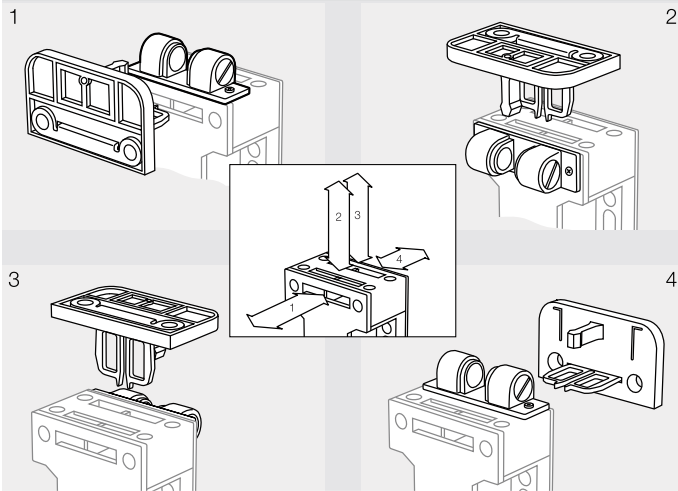
- For interlocking of light to medium-weight guards
- Latching force adjustable up to 100 N
- AZ 15/16-B1-2053
- Actuating radius on hinged guards  
a = 150 mm and b = 150 mm
- Axial misalignment x = 11 mm

### Features/Options

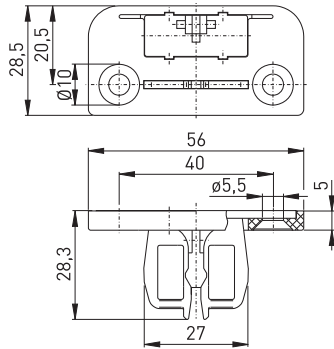
#### Actuator with centering guide

- For interlocking of light, unguided guards
- AZ 15/16-B1-2177
- Actuating radius on hinged guards  
a = 150 mm and b = 150 mm
- Axial misalignment x = 11 mm

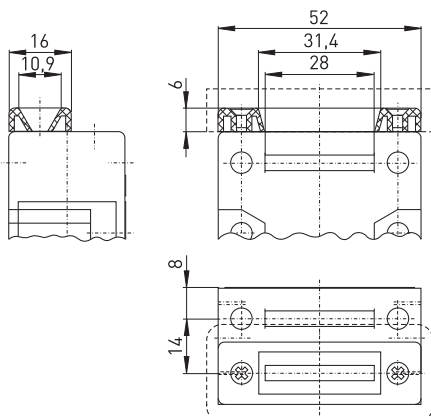
### // Actuator with ball latch



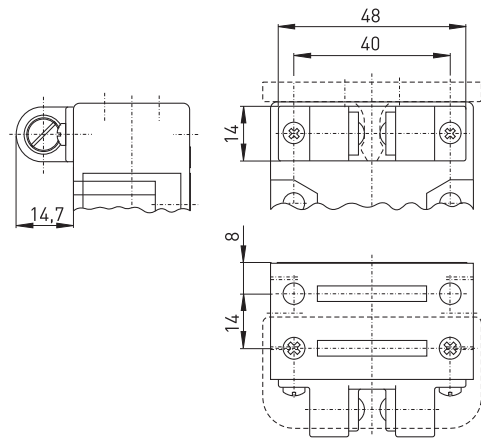
### // Actuator ball latch AZ 15/16-B1-2053



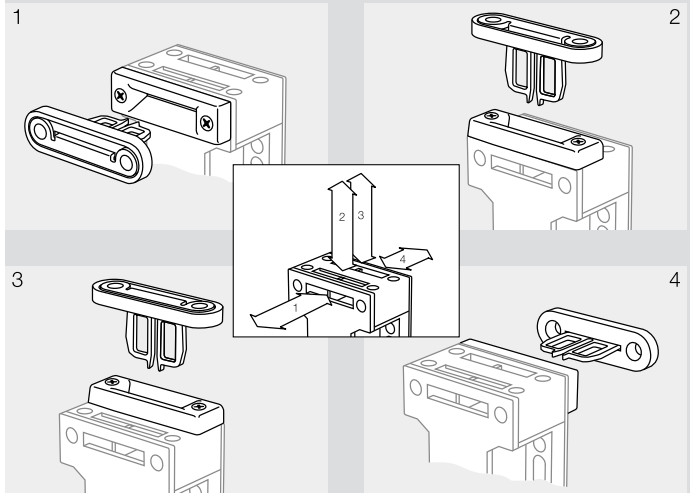
### // Centering guide



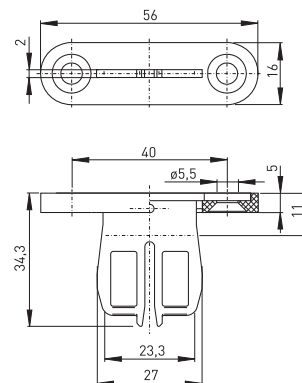
### // Ball latch



### // Actuator with centering guide



### // Actuator cent. guide AZ 15/16-B1-2177



# Ex safety switches with separate actuators

## // Series EEx AZ 16, actuators

### Features/Options

#### Actuator with slot lip-seal AZ 15/16-B1-2024

- For protection against the ingress of coarse dirt
- Particularly suitable for sliding doors
- Actuating radius on hinged guards  
a = 150 mm and b = 150 mm, axial misalignment x = 11 mm

#### Slot sealing plug AZ 15/16-1476

- For protection against the ingress of coarse dirt
- To cover unused actuator slots
- Simple clip-in fitting
- Quantity required: 3 per switch, ordering unit: 10 pieces

### Features/Options

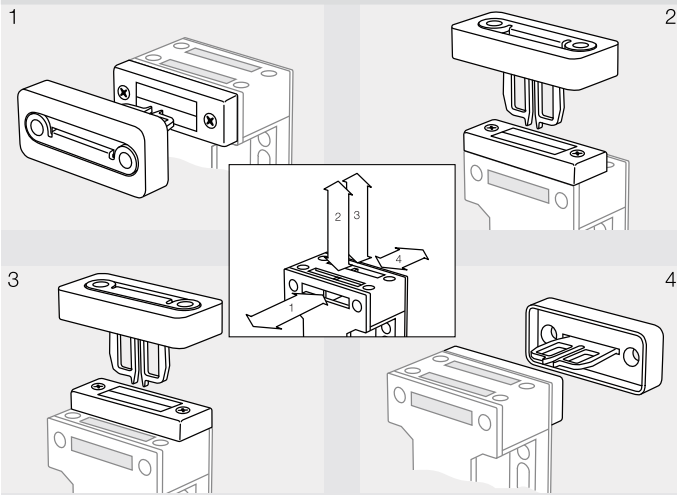
#### Ball latch 2053-2

- Additional ball latch for stable latching of light to medium-weight guards
- For separate mounting on the guard
- Latching force adjustable up to 100 N

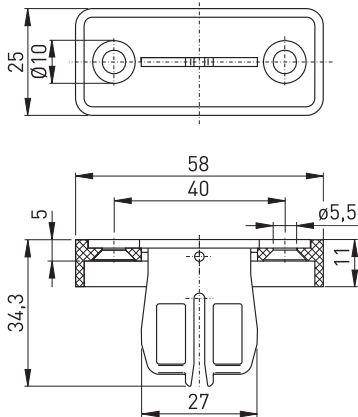
#### Lockout tag SZ 16/335

- To prevent inadvertent closing, e. g. during maintenance by preventing actuation of the switch
- For complex plants
- Up to 6 padlocks can be fitted
- The lockout tag can be fixed on a chain near to the safety switch

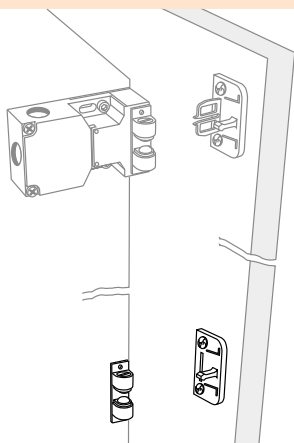
### // Actuator with slot lip-seal



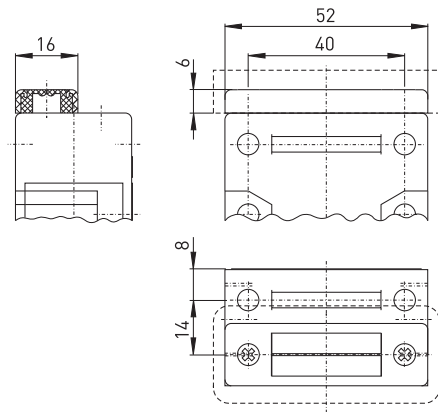
### // Actuator slot lip-seal AZ 15/16-B1-2024



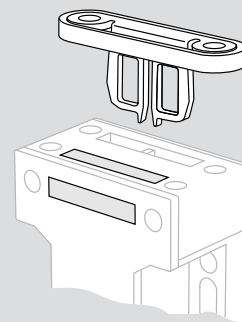
### // Ball latch 2053-2



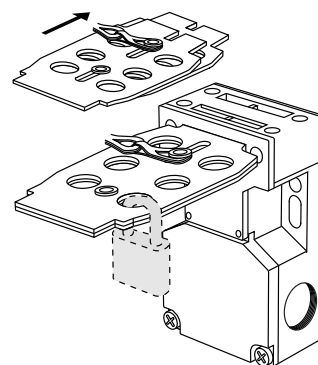
### // Slot lip-seal



### // Slot sealing plug AZ 15/16-1476



### // Lockout tag SZ 16/335



## Ex safety switches with separate actuators

### // Series EEx AZ 16, actuators

#### Features/Options

##### Tamperproof screws

- To mount the actuator
- Higher protection against tampering with interlock
- Protects against unauthorised removal of actuator
- Available in various lengths
- Countersunk-head screws
- M 5 x 12, M 5 x 16 and M 5 x 20 available
- Ordering unit: 2 pieces

#### // Tamperproof screws



# Ex safety switches with separate actuators

## // Series EEx 335 AZ

### Features/Options

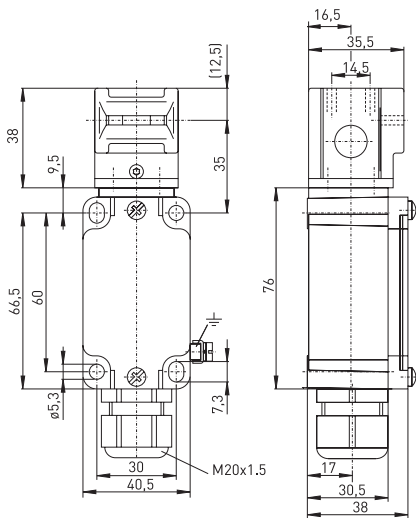
- Ex zone 1 and 2, as well as 21 and 22
- Metal enclosure
- Mounting details to EN 50 041
- Wiring compartment
- Actuator head can be repositioned in factory in 4 x 90° steps
- Special version only for equipment category 3D, available for dust Ex zone 22
- Gost approval for Russia to be ordered separately

## // EEX 335 AZ



### Technical data

<b>Standards</b>	IEC/EN 60947-5-1; EN 1088; EN 50014; EN 50018; EN 500190; EN 50281-1-1
<b>Enclosure</b>	zinc die casting, enamelled
<b>Actuator</b>	stainless steel 1.4301
<b>Switch insert</b>	Ex 95
<b>Protection class</b>	IP 65 according to EN 60529
<b>Contact material</b>	silver
<b>Switching system</b>	slow action, positive break NC contact ⊖
<b>Switching elements</b>	change-over contact with double break Zb or 2 NC contacts, galvanically separated contact bridges
<b>Termination</b>	M3 screw clamps
<b>Cable section</b>	max. 1.5 mm <sup>2</sup> (incl. conductor ferrules)
<b>Cable length</b>	-
<b>U<sub>imp</sub></b>	4 kV
<b>U<sub>i</sub></b>	250 V
<b>I<sub>the</sub></b>	6 A
<b>I<sub>e</sub>/U<sub>e</sub></b>	6 A/250 VAC; 4 A/24 VDC
<b>Utilisation category</b>	AC-15, DC-13
<b>Max. fuse rating</b>	6 A gL/gG D-fuse
<b>Positive break travel</b>	8.3 mm
<b>Positive break force</b>	-
<b>Ambient temperature</b>	-20 °C ... +65 °C
<b>Mechanical life</b>	> 1 million operations
<b>Ex certification</b>	⊕ II 2G EEx d IIC T6, II 2D IP65 T80°C
<b>Approvals</b>	DMT 01 ATEX E 178



### Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	EEx 335 AZ 10/1S 
2 NC contacts	EEx 335 AZ 20 

### Ordering details

<b>EEx 335 AZ 10/1S-3D</b>	
Equipment Categ. 3D, dust Ex zone 22	
Contact type 10/1S, (20)	
Separate actuator AZ	
Series	
Ex certified component	

# Ex safety switches with separate actuators

## // Series EEx 335 AZ, actuators

### Features/Options

#### AZ 335/355-B1

- Actuating radius on hinged guards  
a = 900 mm and b = 700 mm
- Axial misalignment x = 52.7 mm

#### AZ 335/355-B1-2246

- Rubber mounting damps vibrations on guard devices
- Actuating radius on hinged guards  
a = 900 mm and b = 700 mm
- Axial misalignment x = 52.7 mm

### Features/Options

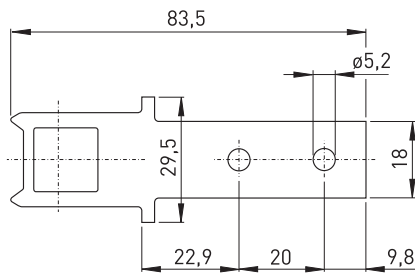
#### AZ 335/355-B5

- Especially suitable for hinged guards
- Actuating radius on hinged guards  
a = 900 mm and b = 700 mm
- Axial misalignment x = 15.4 mm

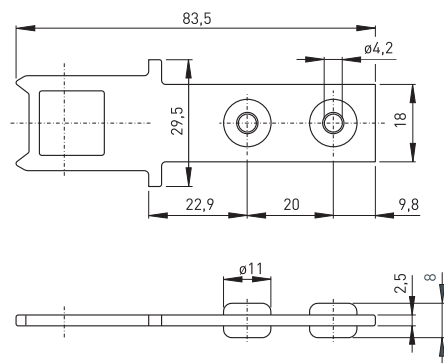
### Note

Inserted position of actuator = 0 in switch travel diagram  
The actuators are not included with the switches.

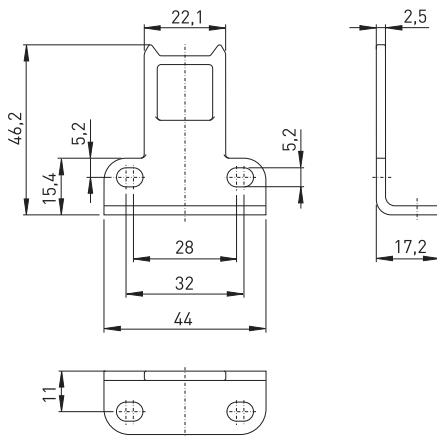
## // Straight actuator AZ 335/355-B1



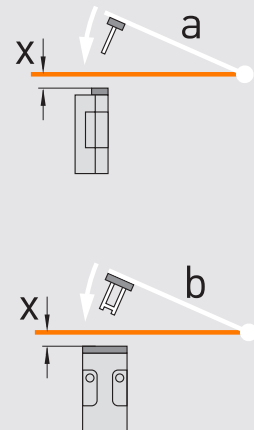
## // Straight actuator AZ 335/355-B1-2246



## // Angled actuator AZ 335/355-B5



## // Actuating radius



- The axis of the hinge should be x mm above the top edge of the safety switch and in the same plane
- a Actuating radius to the plane of the actuator
- b Actuating radius in line with the plane of the actuator
- x Axial misalignment



# Ex safety switches with separate actuators

## // Series EEx 335 AZ, actuators

### Features/Options

#### AZ 335/355-B5-Flex

- Especially suitable for sliding and hinged guards
- Compensates play of  $\pm 5$  mm in two axes
- Actuating radius on hinged guards  
a = 100 mm and b = 100 mm, axial misalignment x = 30.3 mm

#### AZ 335/355-B6

- Especially suitable for hinged guards
- Actuating radius adjustable, min. 100 mm, using a hexagonal key wrench 2 mm A/F (a or b)
- Actuating radius on hinged guards  
a = 100 mm and b = 100 mm, axial misalignment x = 13 mm

### Features/Options

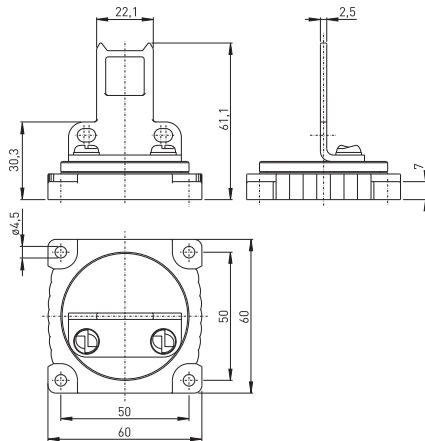
#### AZ 335/355-B6-Flex

- Especially suitable for hinged guards
- Compensates play of  $\pm 5$  mm in two axes
- Actuating radius on hinged guards  
a = 100 mm, axial misalignment x = 28 mm

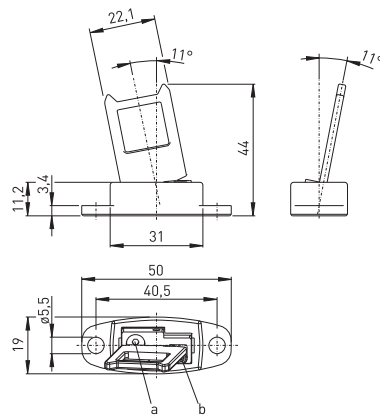
#### Lockout tag SZ 16/335

- To prevent inadvertent closing, e. g. during maintenance by preventing actuation of the switch
- Slot sealing plug AZ 335/355-1990
- For protection against the ingress of coarse dirt
- Quantity required: 3 per switch, ordering unit: 10 pieces

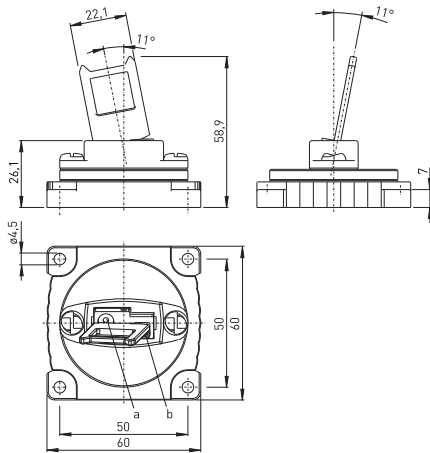
### // Angled actuator AZ 335/355-B5-Flex



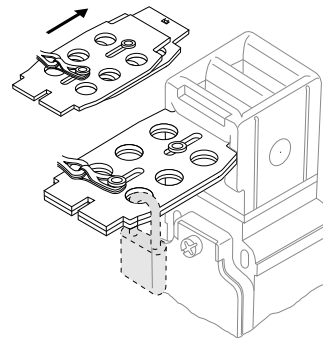
### // Flexible actuator AZ 335/355-B6



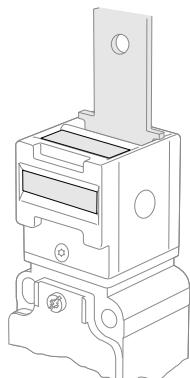
### // Flexible actuator AZ 335/355-B6-Flex



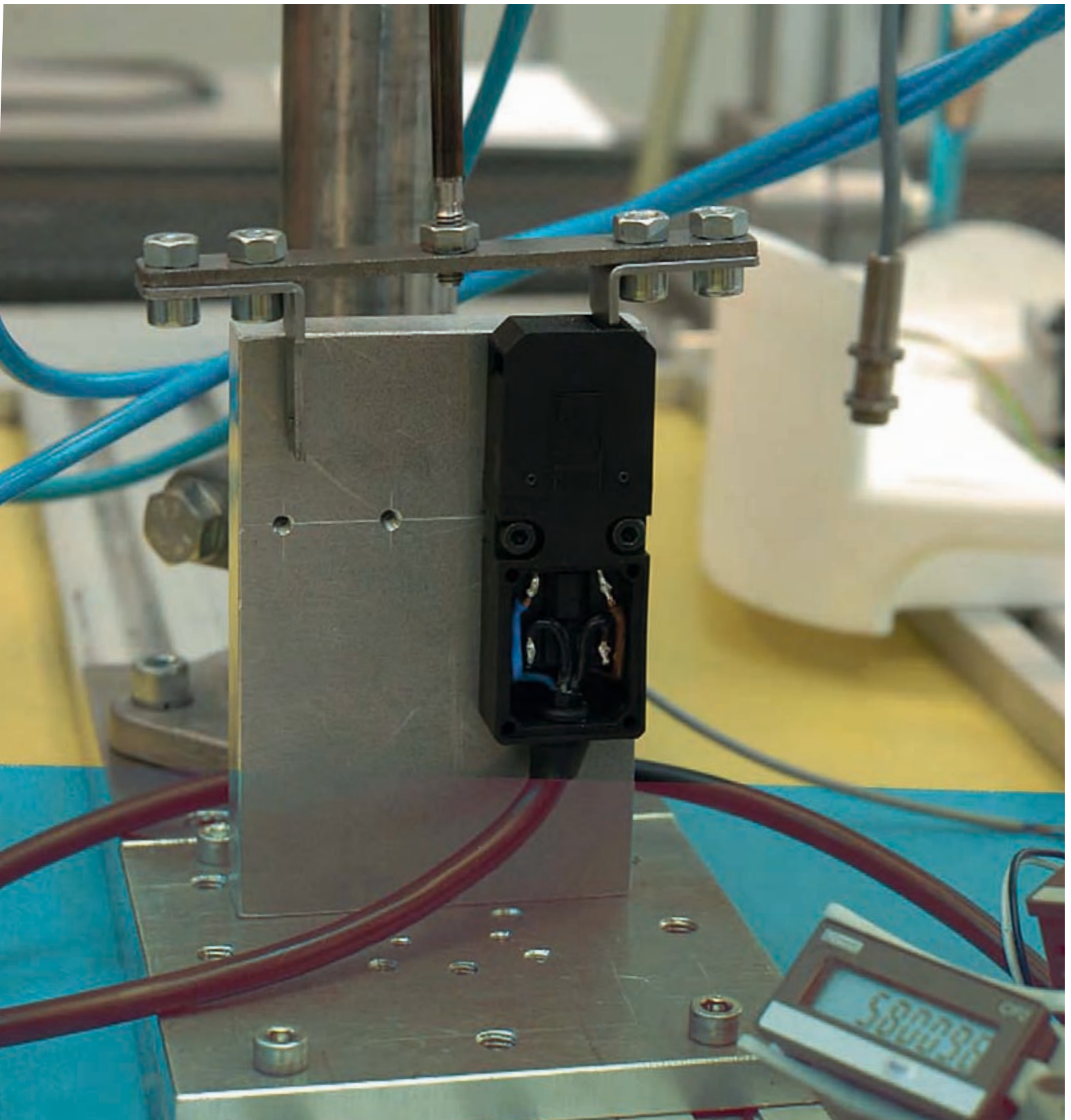
### // Lockout tag SZ 16/335



### // Slot sealing plug AZ 335/355-1990



PRODUCTION PROCESS QUALITY MANAGEMENT  
LIFE TEST OF ACTUATOR MECHANISM OF EEX ST 14



# Ex safety switches with separate actuators

## // Series EEx 355 AZ

### Features/Options

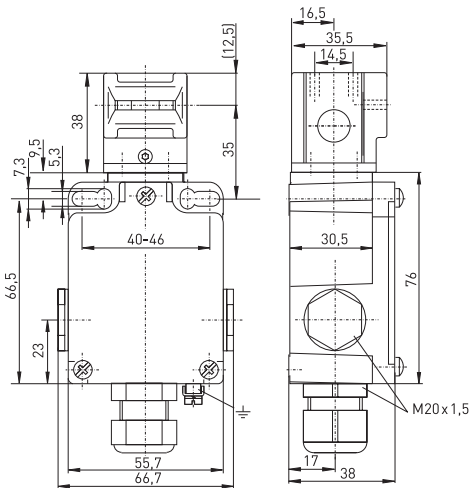
- Ex zone 1 and 2, as well as 21 and 22
- Metal enclosure
- Mounting details to EN 50 041
- Wiring compartment
- Actuator head can be repositioned in factory in 4 x 90° steps
- Special version only for equipment category 3D, available for dust Ex zone 22
- Inmetro approval for Brazil and Gost approval for Russia to be ordered separately

## // EEX 355 AZ



### Technical data

<b>Standards</b>	IEC/EN 60947-5-1; EN 1088; EN 50014; EN 50018; EN 500190; EN 50281-1-1
<b>Enclosure</b>	zinc die casting, enamelled
<b>Actuator</b>	stainless steel 1.4301
<b>Switch insert</b>	Ex 95
<b>Protection class</b>	IP 67 according to EN 60529
<b>Contact material</b>	silver
<b>Switching system</b>	slow action, positive break NC contact ⊖
<b>Switching elements</b>	change-over contact with double break Zb or 2 NC contacts, galvanically separated contact bridges
<b>Termination</b>	M3 screw clamps
<b>Cable section</b>	max. 1.5 mm <sup>2</sup> (incl. conductor ferrules)
<b>Cable length</b>	-
<b>U<sub>imp</sub></b>	4 kV
<b>U<sub>i</sub></b>	250 V
<b>I<sub>the</sub></b>	6 A
<b>I<sub>e</sub>/U<sub>e</sub></b>	6 A/250 VAC; 4 A/24 VDC
<b>Utilisation category</b>	AC-15, DC-13
<b>Max. fuse rating</b>	6 A gL/gG D-fuse
<b>Positive break travel</b>	8.3 mm
<b>Positive break force</b>	-
<b>Ambient temperature</b>	-20 °C ... +65 °C
<b>Mechanical life</b>	> 1 million operations
<b>Ex certification</b>	⊕ II 2G EEx d IIC T6, II 2D IP65 T80°C
<b>Approvals</b>	BVS 04 ATEX 126



### Contact variants: switch travel/contacts

	<b>Slow action</b>
1 NC/1 NO contact	<b>EEx 355 AZ 10/15</b> 
2 NC contacts	<b>EEx 355 AZ 20</b> 

### Ordering details

<b>EEx 355 AZ 10/15-3D</b>	
Equipment Categ. 3D, dust Ex zone 22	
Contact type 10/15, (20)	
Separate actuator AZ	
Series	
Ex certified component	

# Ex safety switches with separate actuators

## // Series EEx 355 AZ, actuators

### Features/Options

#### AZ 335/355-B1

- Actuating radius on hinged guards  
a = 900 mm and b = 700 mm
- Axial misalignment x = 52.7 mm

#### AZ 335/355-B1-2246

- Rubber mounting damps vibrations on guard devices
- Actuating radius on hinged guards  
a = 900 mm and b = 700 mm
- Axial misalignment x = 52.7 mm

### Features/Options

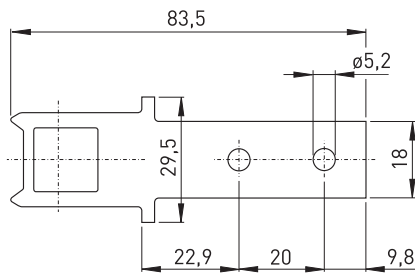
#### AZ 335/355-B5

- Especially suitable for hinged guards
- Actuating radius on hinged guards  
a = 900 mm and b = 700 mm
- Axial misalignment x = 15.4 mm

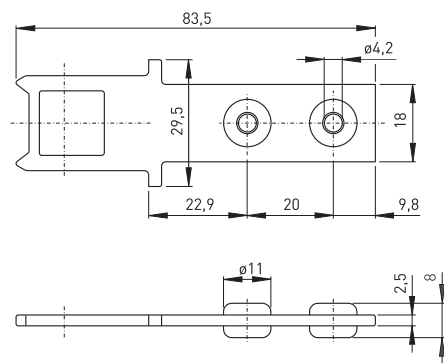
### Note

Inserted position of actuator = 0 in switch travel diagram  
The actuators are not included with the switches.

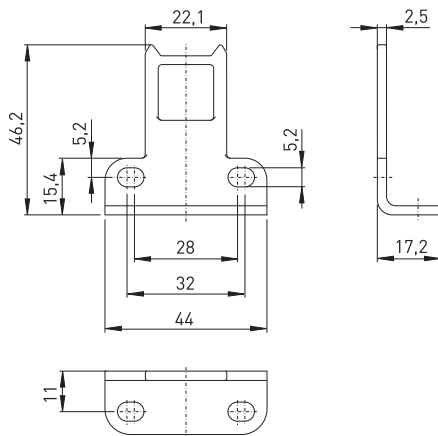
## // Straight actuator AZ 335/355-B1



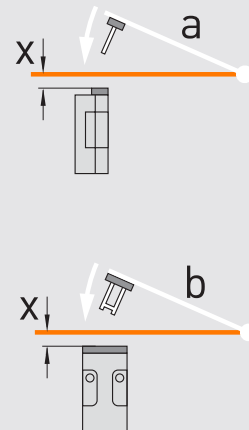
## // Straight actuator AZ 335/355-B1-2246



## // Angled actuator AZ 335/355-B5



## // Actuating radius



- The axis of the hinge should be x mm above the top edge of the safety switch and in the same plane
- a Actuating radius to the plane of the actuator
- b Actuating radius in line with the plane of the actuator
- x Axial misalignment

# Ex safety switches with separate actuators

## // Series EEx 355 AZ, actuators

### Features/Options

#### AZ 335/355-B5-Flex

- Especially suitable for sliding and hinged guards
- Compensates play of  $\pm 5$  mm in two axes
- Actuating radius on hinged guards  
a = 100 mm and b = 100 mm, axial misalignment x = 30.3 mm

#### AZ 335/355-B6

- Especially suitable for hinged guards
- Actuating radius adjustable, min. 100 mm, using a hexagonal key wrench 2 mm A/F (a or b)
- Actuating radius on hinged guards  
a = 100 mm and b = 100 mm, axial misalignment x = 13 mm

### Features/Options

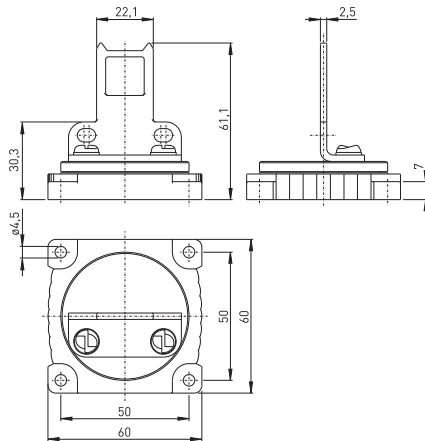
#### AZ 335/355-B6-Flex

- Especially suitable for hinged guards
- Compensates play of  $\pm 5$  mm in two axes
- Actuating radius on hinged guards  
a = 100 mm, axial misalignment x = 28 mm

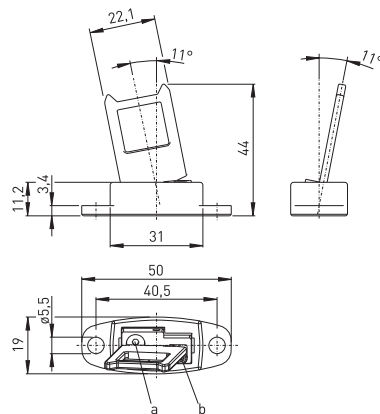
#### Lockout tag SZ 16/335

- To prevent inadvertent closing, e. g. during maintenance by preventing actuation of the switch
- Slot sealing plug AZ 335/355-1990
- For protection against the ingress of coarse dirt
- Quantity required: 3 per switch, ordering unit: 10 pieces

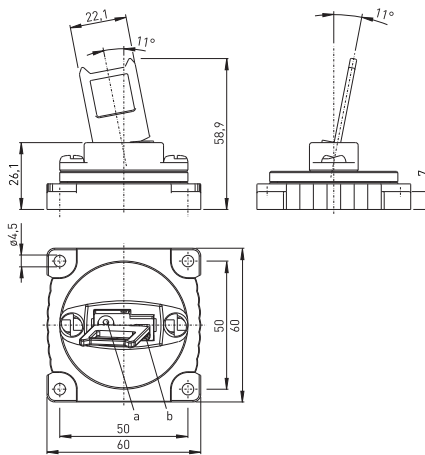
### // Angled actuator AZ 335/355-B5-Flex



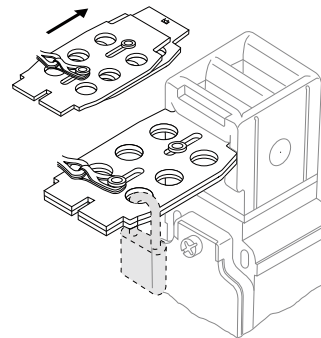
### // Flexible actuator AZ 335/355-B6



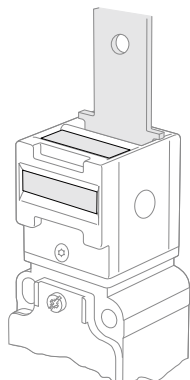
### // Flexible actuator AZ 335/355-B6-Flex



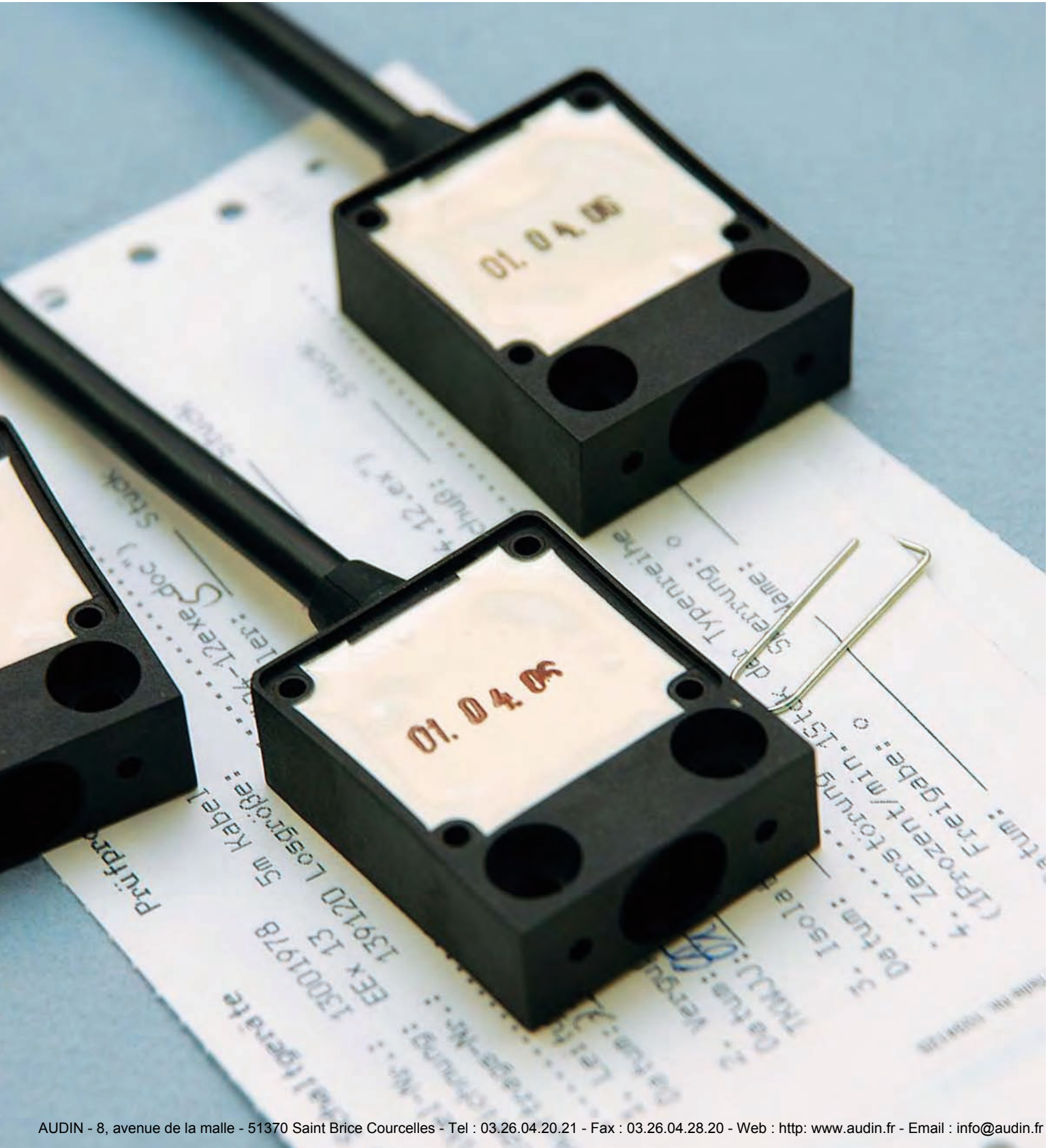
### // Lockout tag SZ 16/335



### // Slot sealing plug AZ 335/355-1990



PRODUCTION PROCESS ASSEMBLY  
EX SWITCH INSERT AFTER MOULDING



# Ex safety switches with separate actuators

## // Series EEx ST 61

### Features/Options

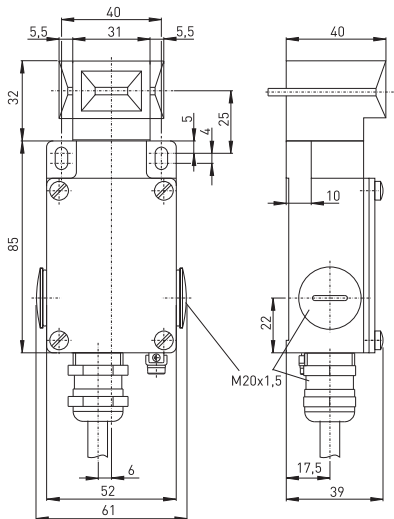
- Ex zone 1 and 2, as well as 21 and 22
- Metal enclosure
- Double insulated  $\square$
- Slow action  $\ominus$ , change-over contact with double break
- Pre-wired cable, cable length 3 metres
- Long life
- High level of contact reliability with low voltages and currents

## // EEX ST 61



### Technical data

<b>Standards</b>	IEC/EN 60947-5-1; EN 1088; EN 50014; EN 50018; EN 50281-1-1
<b>Enclosure</b>	aluminium die casting, enamelled
<b>Actuator</b>	stainless steel 1.4301
<b>Switch insert</b>	EEx 14
<b>Protection class</b>	IP 65 according to EN 60529
<b>Contact material</b>	silver
<b>Switching system</b>	slow action, NC contact with positive break $\ominus$
<b>Switching elements</b>	change-over contact with double break Zb, galvanically separated contact bridges
<b>Termination</b>	cable H05VV-F 4 x 0.75 mm <sup>2</sup>
<b>Cable section</b>	4 x 0.75 mm <sup>2</sup>
<b>Cable length</b>	3 m
<b>U<sub>imp</sub></b>	4 kV
<b>U<sub>i</sub></b>	250 V
<b>I<sub>the</sub></b>	6 A
<b>I<sub>e</sub>/U<sub>e</sub></b>	6 A/250 VAC; 0.25 A/230 VDC
<b>Utilisation category</b>	AC-15, DC-13
<b>Max. fuse rating</b>	6 A gL/gG D-fuse
<b>Positive break travel</b>	12 mm
<b>Positive break force</b>	-
<b>Ambient temperature</b>	-20 °C ... +65 °C
<b>Mechanical life</b>	> 1 million operations
<b>Ex certification</b>	$\oplus$ II 2G EEx d IIC T6, II 2D IP65 T80°C
<b>Approvals</b>	PTB 03 ATEX 1070 X, referring to the switch insert



### Contact variants: switch travel/contacts

	<b>Slow action</b>
1 NC/1 NO contact	<b>EEx ST 61 10/1S</b>

### Ordering details

**EEx ST 61 10/1S**  
 Contact type 10/1S  
 Series  
 Safety door switch  
 Ex certified component

# Ex safety switches with separate actuators

## // Series EEx ST 61, actuators

### Features/Options

#### ST 61-B1

- Rubber mounting damps vibrations on guard devices
- Actuating radius on hinged guards
  - a = 140 mm and b = 1000 mm
- x = 30 mm

### Features/Options

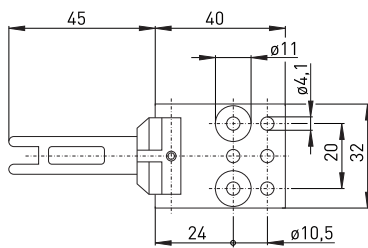
#### ST 61-B5

- Rubber mounting damps vibrations on guard devices
- Especially suitable for hinged guards
- Actuating radius on hinged guards
  - a = 140 mm and b = 1000 mm
- x = 15 mm

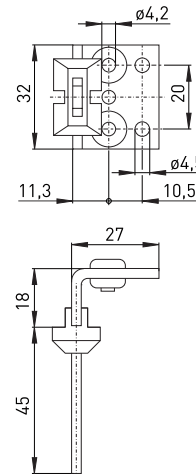
### Note

Inserted position of actuator = 0 in switch travel diagram  
The actuators are not included with the switches.

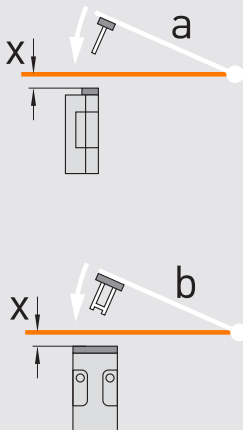
## // Straight actuator ST 61-B1



## // Angled actuator ST 61-B5

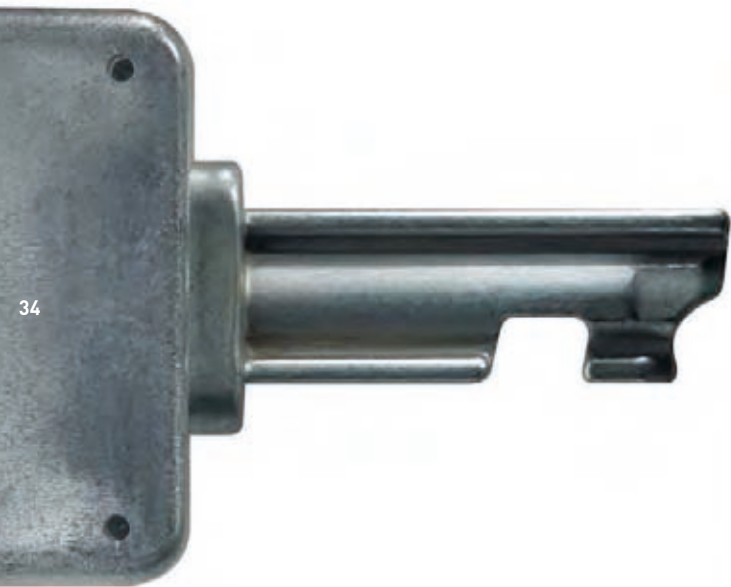


## // Actuating radius



- The axis of the hinge should be x mm above the top edge of the safety switch and in the same plane
- a Actuating radius to the plane of the actuator
- b Actuating radius in line with the plane of the actuator
- x Axial misalignment





**.steute**

**EEx AZM 415 2Ö/2S-R**  
**94.3.53.3.06**



II 2G EEx dem IIC T6  
II 2D IP64 T80°C  
DMT 02 ATEX E256 X

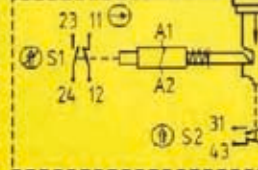
250V / 6A AC 15

-20°C ≤ Ta ≤ +55°C



24 V DC - 12 W max.

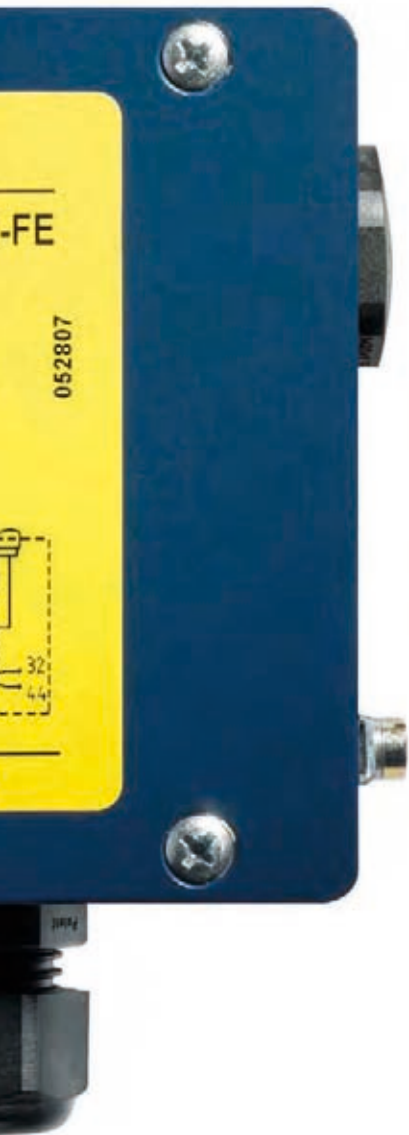
A1 +  
A2 -



0158

SN- 00008

**32584 Löhne, Germany**



## Ex solenoid interlocks

Thermoplastic enclosure

// Series EEx STM 295

from page 38

Metal enclosure

// Series EEx AZM 415

from page 40

// Series EEx AZP 415

from page 42



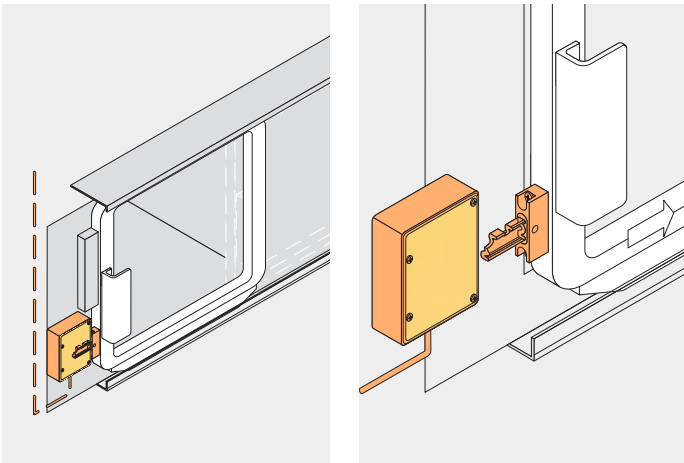
# Ex solenoid interlocks

## Range of application

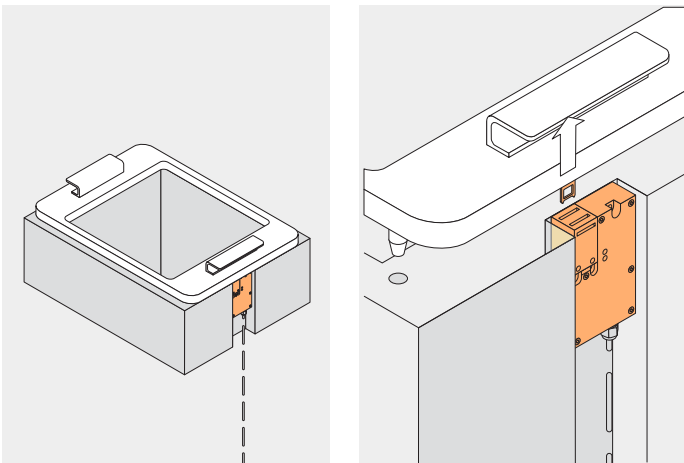
The Ex solenoid and pneumatic interlocks ensure that sliding, hinged and removable guarding devices, such as grids, hoods or doors, cannot be opened until dangerous conditions (e.g. run-on movements) have been terminated. This takes place in co-ordination with the control system of a machine. Fail-safe standstill monitors or delay timers monitor run-on movements or time sequences. These Ex solenoid and pneumatic interlocks are also used for cases in which the opening of a guarding device represents a non-permissible intrusion in a production process.

In combination with the SRM range safety relay module, the AZM and AZP range Ex solenoid and pneumatic interlocks achieve Control Category 3 or 4 to EN 954-1, subject to suitable circuit arrangements.

## Application on sliding guards



## Application on removable guards

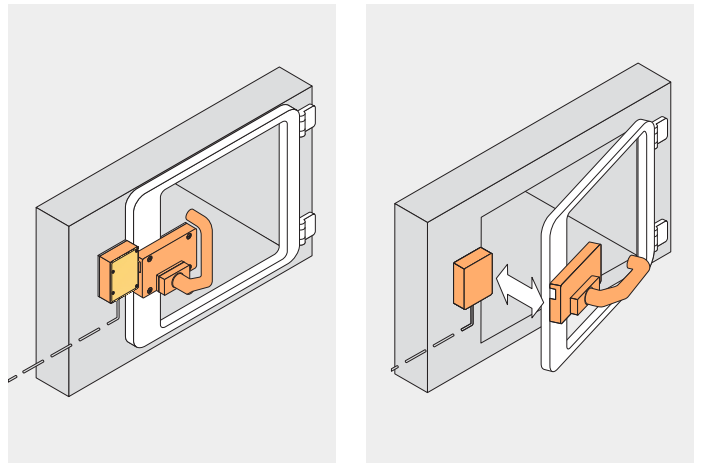


## Design and operating principle

On the Ex solenoid and pneumatic interlocks, the switching element with interlock is not physically connected to the actuator but functionally united or separated on switching. When the guard device is opened in the uninterlocked condition, the actuator is separated from the base unit. In the process, NC contacts are positively opened and NO contacts closed. The machine control circuit is only activated when the actuator has been inserted into the interlock and is interlocked. The Ex solenoid and pneumatic interlocks operate on the principle of »actuated without power supply«, whereby the actuator is held in the interlock by spring pressure. When power/air is supplied to the solenoid/pneumatic cylinder, the interlock is released. The guarding device can then be opened. The Ex solenoid interlocks with the power-to-lock principle work in the opposite way.

The Ex solenoid interlocks shown in this chapter bear the CE mark according to the Machinery Directive 98/37/EC and according to ATEX 94/9/EC. The Ex solenoid interlocks per equipment category 3D bear the CE mark without the number of the notified body and have received a CE declaration of manufacturer conformity.


## Application on hinged guards



# Ex solenoid interlocks

## // Series EEx STM 295

### Features/Options

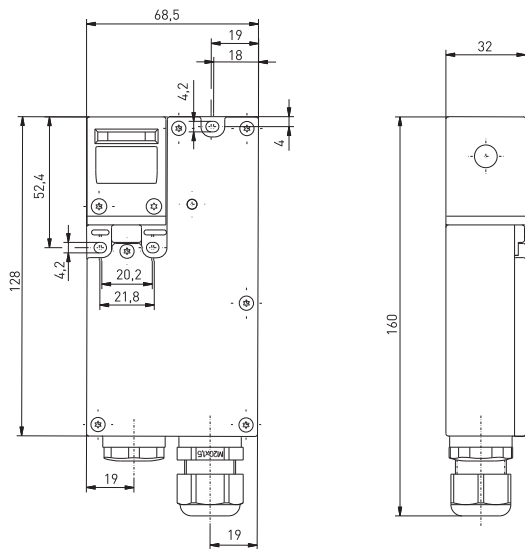
- For equipment category 3G/D gas Ex zone 2 and dust Ex zone 22
- Ex zone 1 and 21 in preparation
- Thermoplastic enclosure
- Double insulated 
- Two Ex switch inserts in one enclosure
- Spring-to-lock or power-to-lock principle
- Holding force 1000 N
- Wiring compartment

### // EEX STM 295

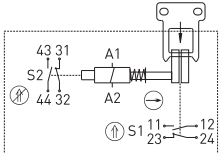
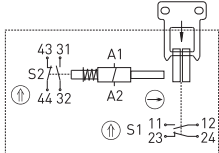


### Technical data

<b>Standards</b>	IEC/EN 60947-5-1; EN 1088; EN 50014; EN 50018; EN 50281-1-1
<b>Enclosure</b>	glass-fibre reinforced, shock-proof thermoplastic, self-extinguishing UL 94-V0 stainless steel 1.4301
<b>Actuator</b>	Ex 95
<b>Switch insert</b>	IP 65 according to EN 60529
<b>Protection class</b>	IP 65 according to EN 60529
<b>Contact material</b>	silver
<b>Switching system</b>	slow action, positive break NC contact $\ominus$
<b>Switching elements</b>	2 NC and 2 NO contacts with positive break, galvanically separated contact bridges
<b>Termination</b>	M3 screw clamps
<b>Cable section</b>	max. 1.5 mm <sup>2</sup> (incl. conductor ferrules)
<b>Cable entries</b>	1 x M20 x 1.5 for cable section 5 ... 9 mm
<b>Cable length</b>	-
<b>U<sub>imp</sub></b>	4 kV
<b>U<sub>i</sub></b>	250 V
<b>I<sub>the</sub></b>	6 A
<b>I<sub>e</sub>/U<sub>e</sub></b>	6 A/250 VAC; 0.25 A/230 VDC
<b>Utilisation category</b>	AC-15; DC-13
<b>Max. fuse rating</b>	6 A gL/gG D-fuse
<b>U<sub>s</sub></b>	24 VDC
<b>Magnet</b>	100 % ED
<b>Unlocking</b>	100 % ED
<b>Power consumption</b>	max. 23 W
<b>Ambient temperature</b>	-20 °C ... +55 °C
<b>Mechanical life</b>	> 1 million operations
<b>Holding force F</b>	max. 1000 N
<b>Holding force of integrated ball catch</b>	-
<b>Ex certification</b>	$\oplus$ II 3G Ex nR IIC T4, II 3D Ex tD A22 IP67 T100°C
<b>Approvals</b>	-



### Contact variants: switch travel/contacts

	Spring-to-lock principle	Power-to-lock principle
2 NC/2 NO contact	EEx STM 295 2Ö/2S-R 	EEx STM 295 2Ö/2S-A 

### Ordering details

<b>EEx STM 295 1Ö/1S-R-3G/D</b>	Equipment Categ. 3G/D, gas Ex zone 2 and dust Ex zone 22
	R Spring-to-lock principle, (A Power-to-lock principle)
	Contact type 2 NC/2 NO contact
	Series
	Solenoid interlock
	Ex certified component

# Ex solenoid interlocks

## // Series EEx STM 295, actuators

### Features/Options

#### 95 AZ-B1

- Actuating radius on hinged guards  
a = 350 mm and b = 700 mm
- Axial misalignment x = 11 mm

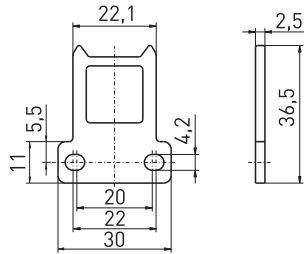
#### 95 AZ-B5

- Especially suitable for hinged guards
- Actuating radius on hinged guards  
a = 350 mm and b = 700 mm
- Axial misalignment x = 13.5 mm

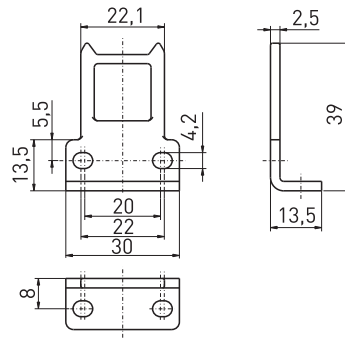
### Note

The actuators are not included with the switches.

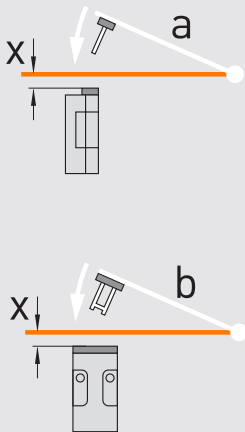
### // Straight actuator 95 AZ-B1



### // Angled actuator 95 AZ-B5



### // Actuating radius



- The axis of the hinge should be x mm above the top edge of the safety switch and in the same plane
- a Actuating radius to the plane of the actuator
- b Actuating radius in line with the plane of the actuator
- x Axial misalignment

# Ex solenoid interlocks

## // Series EEx AZM 415

### Features/Options

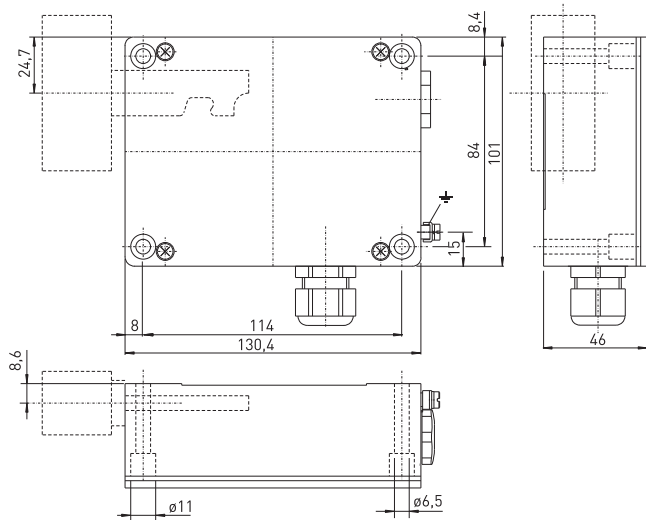
- Ex zone 1 and 2, as well as 21 and 22
- Two Ex switch inserts in one enclosure
- Spring-to-lock or power-to-lock principle
- Problem-free opening of stressed doors by means of bell-crank system
- High holding force 3.500 N
- Ball catch
- Special version only for equipment category 3D, available for dust Ex zone 22
- Inmetro approval for Brazil to be ordered separately

### Technical data

<b>Standards</b>	IEC/EN 60947-5-1; EN 1088; EN 50014; EN 50018; EN 50019; EN 50281-1-1; EN 500081-1-1
<b>Enclosure</b>	aluminium die casting, enamelled
<b>Cover</b>	steel, enamelled
<b>Actuator/locking bolt</b>	metal zinc/aluminium
<b>Switch insert</b>	Ex 95
<b>Protection class</b>	IP 67 according to EN 60529
<b>Contact material</b>	silver
<b>Switching system</b>	slow action, positive break NC contact ⊖
<b>Switching elements</b>	change-over contact with double break Zb, galvanically separated contact bridges
<b>Termination</b>	M3 screw clamps
<b>Cable section</b>	max. 2.5 mm <sup>2</sup> (incl. conductor ferrules)
<b>Cable entries</b>	2 x M20 x 1.5 for cable section 5 ... 9 mm
<b>Cable length</b>	-
<b>U<sub>imp</sub></b>	4 kV
<b>U<sub>i</sub></b>	250 V
<b>I<sub>the</sub> / U<sub>e</sub></b>	6 A
<b>Utilisation category</b>	6 A/250 VAC; 40 mA/24 VDC AC-15
<b>Max. fuse rating</b>	6 A gL/gG D-fuse
<b>U<sub>s</sub></b>	24 VDC
<b>Magnet</b>	100 % ED
<b>Unlocking</b>	100 % ED
<b>Power consumption</b>	max. 12 W
<b>Ambient temperature</b>	-20 °C ... +55 °C
<b>Mechanical life</b>	> 1 million operations
<b>Holding force F</b>	max. 3500 N
<b>Holding force of integrated ball catch</b>	120 - 400 N, adjustable
<b>Ex certification</b>	⊕ II 2G EEx dem IIC T6, II 2D IP67 T80°C
<b>Approvals</b>	DMT 02 ATEX E 255 X



### // EEX AZM 415



40

### Contact variants: switch travel/contacts

	Spring-to-lock principle	Power-to-lock principle
2 NC/2 NO contact	EEx AZM 415 2Ö/2S-R 	EEx AZM 415 2Ö/2S-A 

### Ordering details

EEx AZM 415 1Ö/1S-R-3D	Equipment Categ. 3D, dust Ex zone 22
	R Spring-to-lock principle, (A Power-to-lock principle)
	Contact type 2 NC/2 NO contacts
	Series
	Solenoid interlock
	Ex certified component

# Ex solenoid interlocks

## // Series EEx AZM 415, variants

### Features/Options

#### EEx AZM 415-FE

- With auxiliary unlocking for service, maintenance, etc.
- Unlocking with M5 triangular key

#### EEx AZM 415-TE

- With emergency release, actuation in case of emergency
- Unlocking by pressing a push-button

#### EEx AZM 415-TE-FE

- With emergency release and auxiliary unlocking
- Emergency release by pressing a push-button
- Auxiliary unlocking with M5 triangular key

### Features/Options

#### - Mounting of the device inside a hazardous area

#### EEx AZM 415-TEI

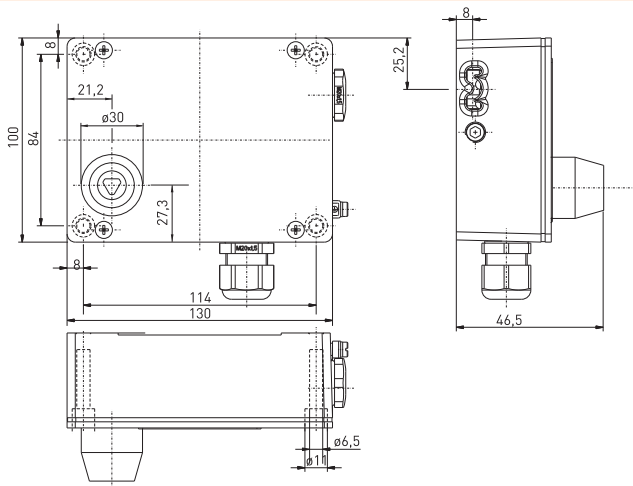
- With emergency release, actuation in case of emergency
- Unlocking by pressing a push-button

#### - Mounting of the device outside a hazardous area

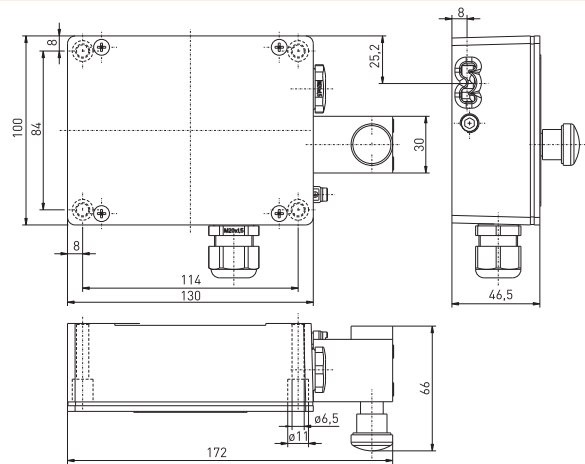
#### EEx AZM 415-TEI-FE

- With emergency release and auxiliary unlocking
- Unlocking by pressing a push-button
- Auxiliary unlocking with M5 triangular key
- Mounting of the device outside a hazardous area

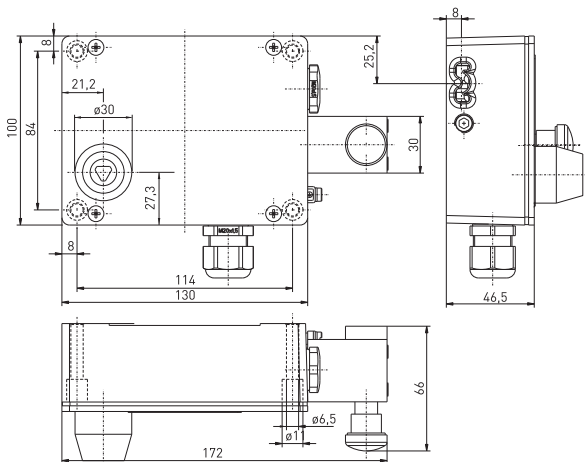
### // EEx AZM 415-FE



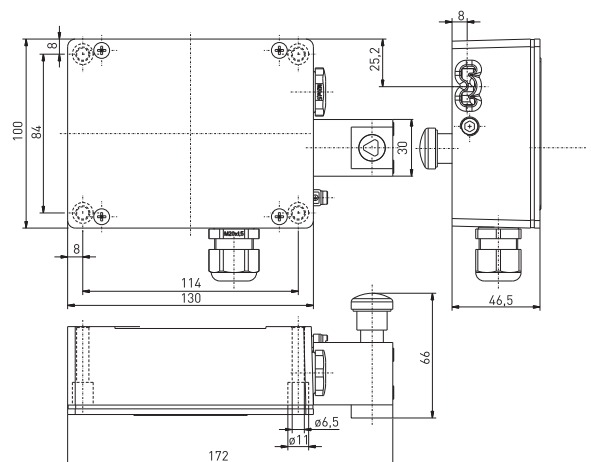
### // EEx AZM 415-TE



### // EEx AZM 415-TE-FE



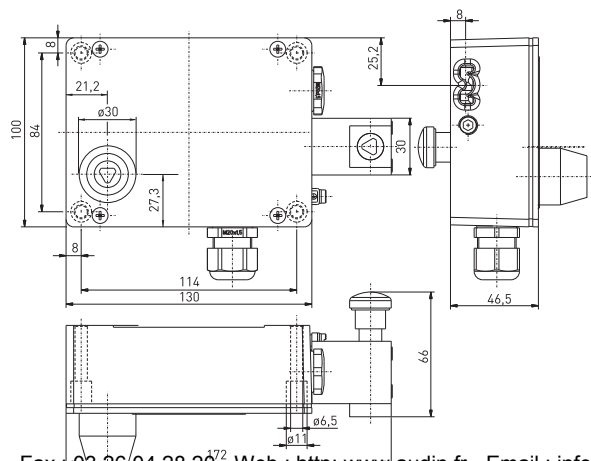
### // EEx AZM 415-TEI



### // EEx AZM 415-TEI-FE



### // EEx AZM 415-TEI-FE





# Ex solenoid interlocks

## // Series EEx AZP 415

### // EEX AZP 415

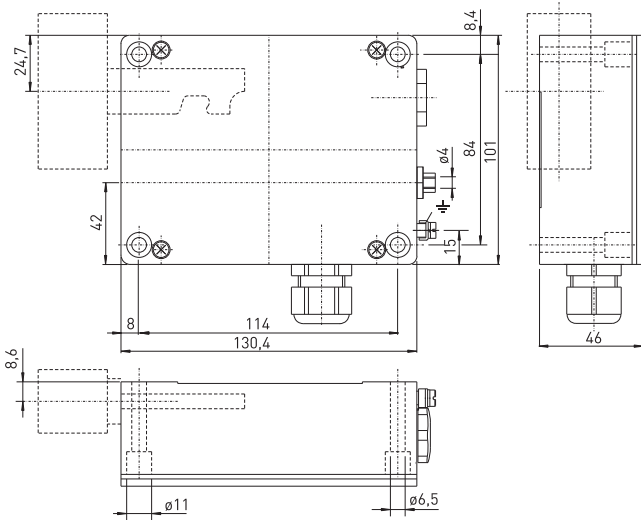


#### Features/Options

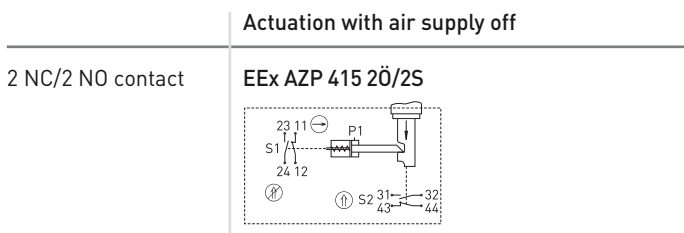
- Ex zone 1 and 2, as well as 21 and 22
- Two Ex switch inserts in one enclosure
- Release by means of pneumatic cylinder
- Problem-free opening of stressed doors by means of bell-crank system
- High holding force 3,500 N
- Ball catch
- Special version only for equipment category 3D, available for dust Ex zone 22
- Inmetro approval for Brazil to be ordered separately

#### Technical data

Standards	IEC/EN 60947-5-1; EN 1088; EN 50014; EN 50018; EN 50019; EN 50281-1-1; EN 500081-1-1
Enclosure	aluminium die casting, enamelled
Cover	steel, enamelled
Actuator/locking bolt	metal zinc/aluminium
Switch insert	Ex 95
Protection class	IP 67 according to EN 60529
Contact material	silver
Switching system	slow action, positive break NC contact ⊖
Switching elements	change-over contact with double break Zb, galvanically separated contact bridges
Termination	M3 screw clamps
Cable section	max. 2.5 mm <sup>2</sup> (incl. conductor ferrules)
Cable entries	2 x M20 x 1.5 for cable section 5 ... 9 mm
Cable length	-
U <sub>imp</sub>	4 kV
U <sub>i</sub>	250 V
I <sub>the</sub>	6 A
I <sub>e</sub> /U <sub>e</sub>	6 A/250 VAC; 40 mA/24 VDC
Utilisation category	AC-15
Max. fuse rating	6 A gL/gG D-fuse
U <sub>s</sub>	-
Magnet	-
Unlocking	Pneumatic cylinder, max. 3 - 7 bar permitted
Power consumption	-
Ambient temperature	-20 °C ... +65 °C
Mechanical life	> 1 million operations
Holding force F	max. 3500 N
Holding force of integrated ball catch	120 - 400 N, adjustable
Ex certification	⊕ II 2G EEx de IIC T6, II 2D IP67 T80°C
Approvals	DMT 02 ATEX E 255 X



#### Contact variants: switch travel/contacts



#### Ordering details

EEx AZP 415 10/15-3D	Equipment Categ. 3D, dust Ex zone 22
	Contact type 2 NC/2 NO contacts
	Series
	Solenoid interlock
	Ex certified component

# Ex solenoid interlocks

## // Series EEx AZM/AZP 415, actuators

### Features/Options

#### AZM 415-B1

- For sliding guards
- Actuator with return spring
- Tolerates up to max. 6 mm overtravel

#### AZM 415-B2

- Especially suitable for sliding and hinged guards
- Actuating radius on hinged guards  
b = 250 mm, axial misalignment x = 36 mm

#### AZM 415-B3

- Especially suitable for sliding and hinged guards

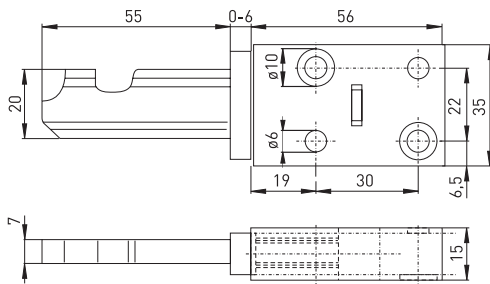
### Features/Options

- Actuating radius on hinged guards  
a = 250 mm, axial misalignment x = 36 mm

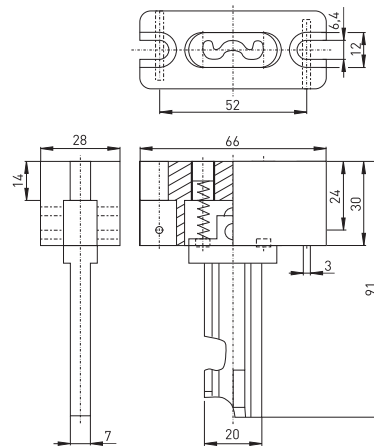
### Note

- The actuators are not included with the switches.
- Removal of the actuator can be prevented by fitting dowel pins in the holes provided.
- The distance between the flange of the actuator and the switch enclosure must be less than 3 mm when the actuator is inserted.

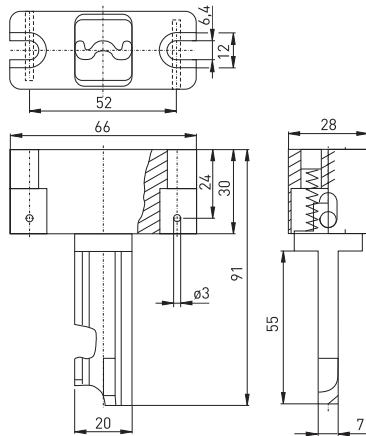
## // Straight actuator AZM 415-B1



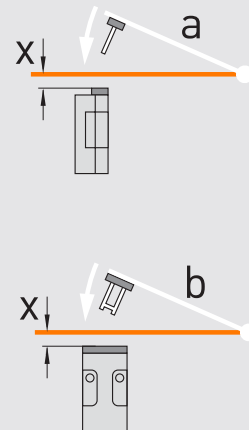
## // Flexible actuator AZM 415-B2



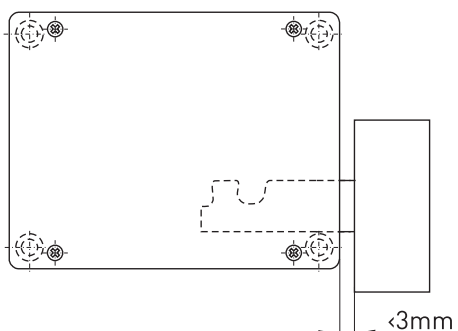
## // Flexible actuator AZM 415-B3



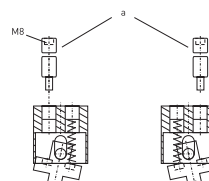
## // Actuating radius



## // Distance between actuator/enclosure



- The axis of the hinge should be x mm above the top edge of the safety switch and in the same plane
- a Actuating radius to the plane of the actuator
- b Actuating radius in line with the plane of the actuator
- x Axial misalignment



# Ex solenoid interlocks

## // Series EEx AZM/AZP 415, actuators

### Features/Options

#### AZM 415-B4pS

- Suitable for all types of guards, no further handles required
- Hinge radius not to be observed
- Shearing force 25,000 N
- Mounting plate to simplify mounting, see accessories
- Lockout tag SZ 415-B4pS to prevent unintentional closing, see accessories

#### AZM 415-B30

- Suitable for all guard types
- Hinge radius not to be observed
- No further handles/levers required on the guard

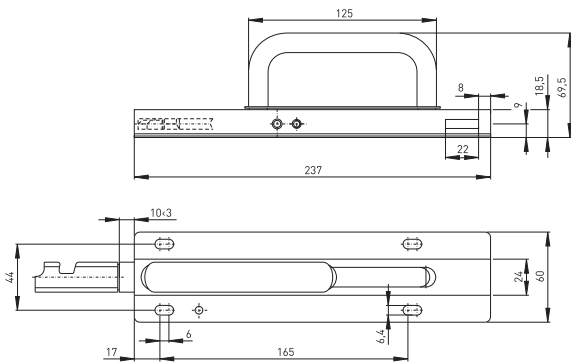
### Features/Options

- Latching actuating handle
- Emergency handle to open guard from within the guarded area:
  1. Press push-button, 2. Turn emergency handle
- Shearing force 25,000 N
- Lockout tag SZ 415-1 or SZ 415-2 to prevent unintentional closing
- For door thickness max. 100 mm

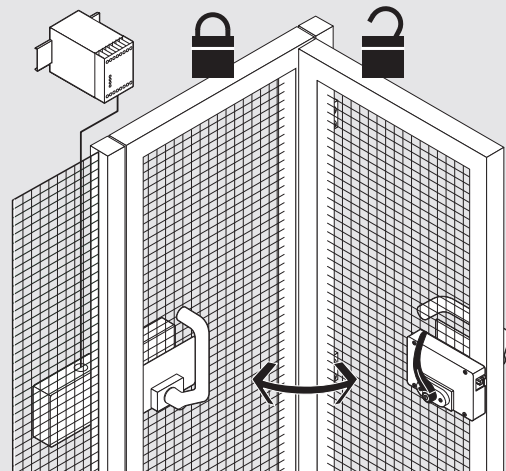
#### AZM 415-B30-01

- With emergency handle, door hinge on right-hand side
- Actuator mounted inside, see yellow marking in drawing
- Only to be used in combination with EEx AZM 415-2Ö/2S-TEI

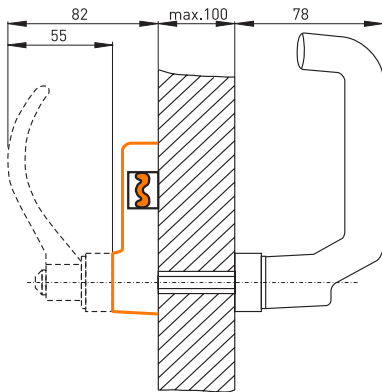
### // Actuator AZM 415-B4pS with grip



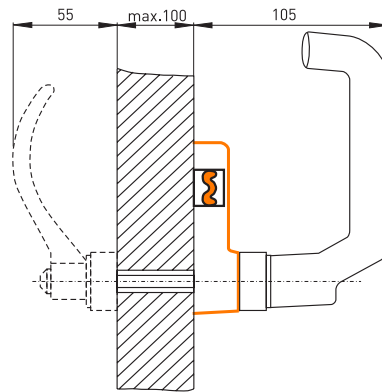
### // Actuator AZM 415-B30



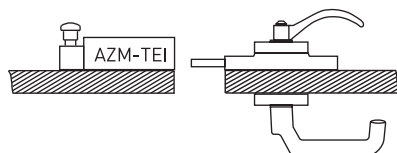
### // Actuator mounted inside



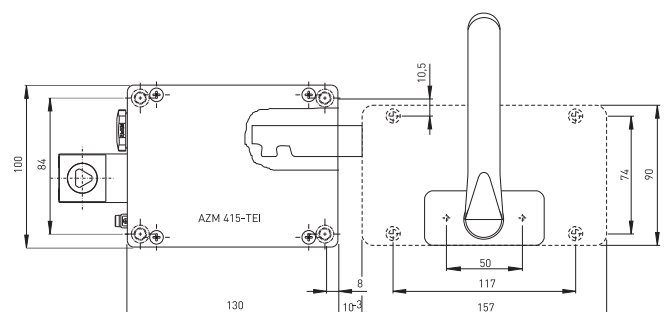
### // Actuator mounted outside



### // Mounting AZM 415-B30-01



### // Actuator AZM 415-B30-01



# Ex solenoid interlocks

## // Series EEx AZM/AZP 415, actuators

### Features/Options

#### AZM 415-B30-02

- Actuator mounted inside, see yellow marking in drawing page 44
- With emergency handle, door hinge on left-hand side
- Only to be used in combination with EEx AZM 415-2Ö/2S-TEI

#### AZM 415-B30-03

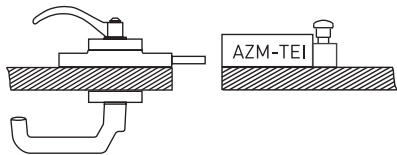
- Actuator mounted inside, see yellow marking in drawing page 44
- Door hinge on right-hand side

### Features/Options

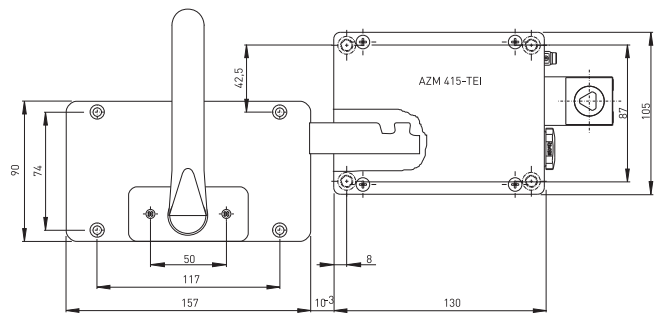
#### AZM 415-B30-04

- Actuator mounted inside, see yellow marking in drawing page 44
- Door hinge on left-hand side

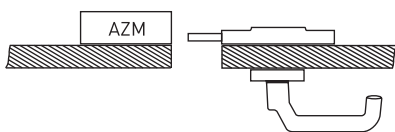
### // Mounting AZM 415-B30-02



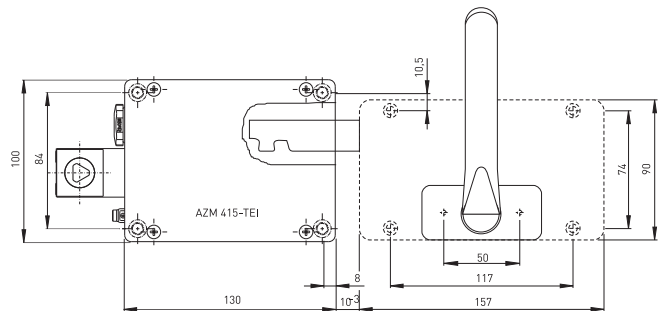
### // Actuator AZM 415-B30-02



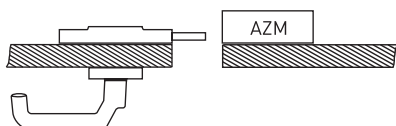
### // Mounting AZM 415-B30-03



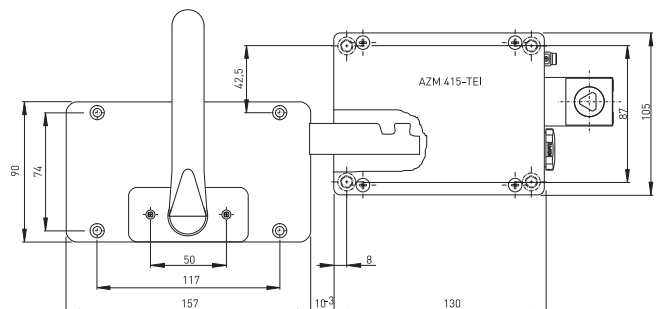
### // Actuator AZM 415-B30-03



### // Mounting AZM 415-B30-04



### // Actuator AZM 415-B30-04



# Ex solenoid interlocks

## // Series EEx AZM/AZP 415, actuators

### Features/Options

#### AZM 415-B30-05

- Actuator mounted outside, see yellow marking in drawing page 44
- Only to be used in combination with EEx AZM 415-2Ö/2S-TE
- Door hinge on right-hand side

#### AZM 415-B30-06

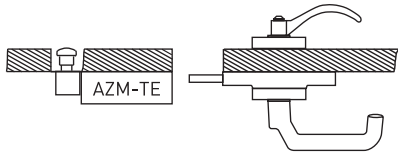
- Only to be used in combination with EEx AZM 415-2Ö/2S-TE
- Actuator mounted outside, see yellow marking in drawing page 44
- Door hinge on left-hand side

### Features/Options

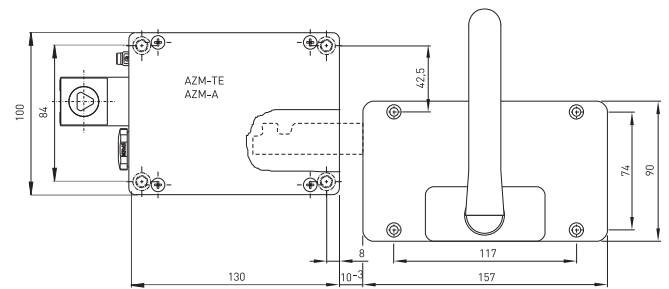
#### AZM 415-B30-07

- Actuator mounted outside, see yellow marking in drawing page 44
- Door hinge on right-hand side

### // Mounting AZM 415-B30-05

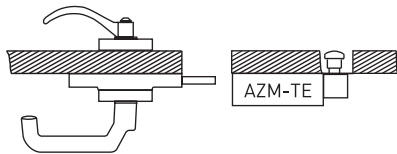


### // Actuator AZM 415-B30-05

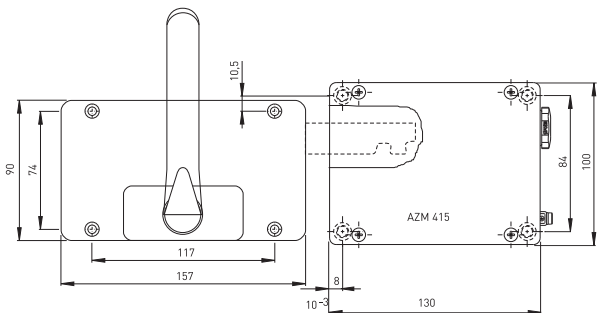


46

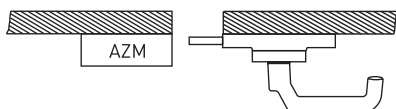
### // Mounting AZM 415-B30-06



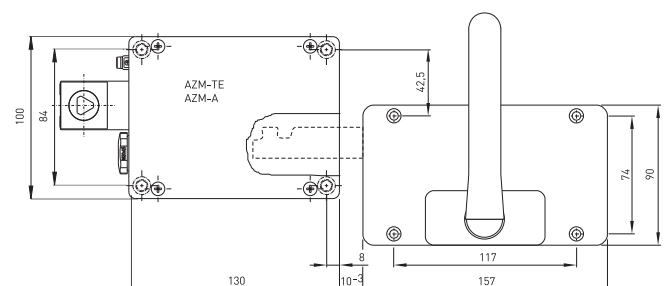
### // Actuator AZM 415-B30-06



### // Mounting AZM 415-B30-07



### // Actuator AZM 415-B30-07



# Ex solenoid interlocks

## // Series EEx AZM/AZP 415, actuators and accessories

### Features/Options

#### AZM 415-B30-08

- Actuator mounted outside, see yellow marking in drawing page 44
- Door hinge on left-hand side

#### Lockout tag SZ 415-1/-2

- To prevent inadvertent closing, e.g. during maintenance, by preventing actuating of the switch
- Suitable for mounting inside and outside the hazardous area
- SZ 415-1 for versions: AZM 415-B30-01, -03, -06 and -08
- SZ 415-2 for versions: AZM 415-B30-02, -04, -05 and -07
- Shown version SZ 415-1, version SZ 415-2 mirror-image

### Features/Options

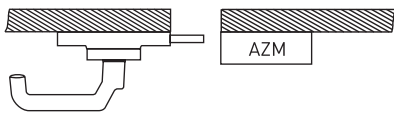
#### Lockout tag SZ 415-B4pS

- For actuator AZM 415-B4pS
- To prevent inadvertent closing, e.g. during maintenance, by preventing actuating of the switch
- With chain to fix on actuator, length of chain 500 mm

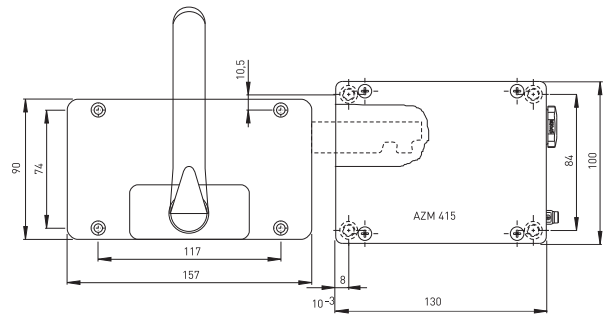
#### Mounting plate MP

- For simple mounting on profile systems, e.g. 40, 60 or 80 mm wide
- Thickness of plate 5 mm
- MP AZM 415-22: Mounting of AZM 415 or AZP 415
- MP AZM 415-B30: Mounting of a door or an emergency handle

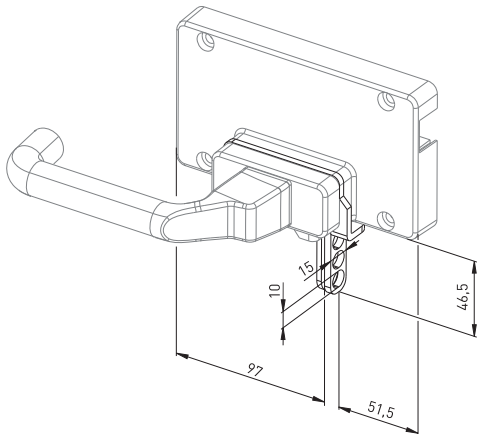
### // Mounting AZM 415-B30-08



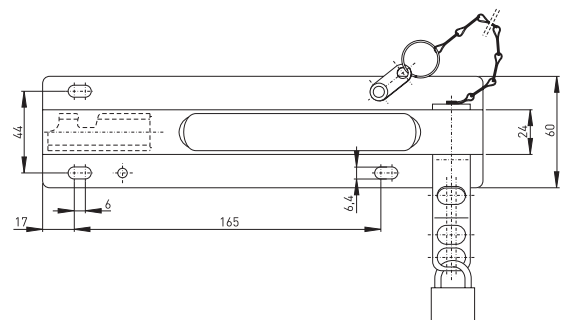
### // Actuator AZM 415-B30-08



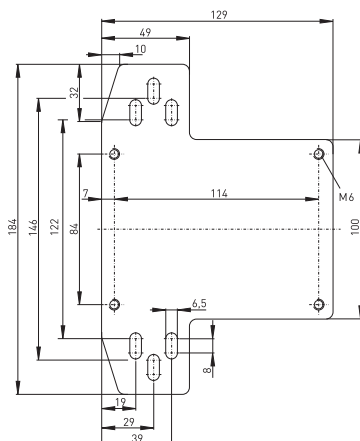
### // Lockout tag SZ 415-1/-2



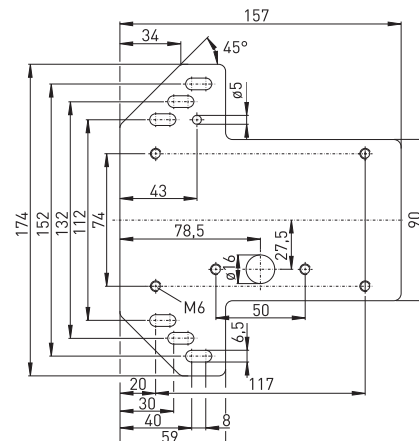
### // Lockout tag SZ 415-B4pS



### // Mounting plate MP AZM 415-22



### // Mounting plate MP AZM 415-B30



## Ex solenoid interlocks

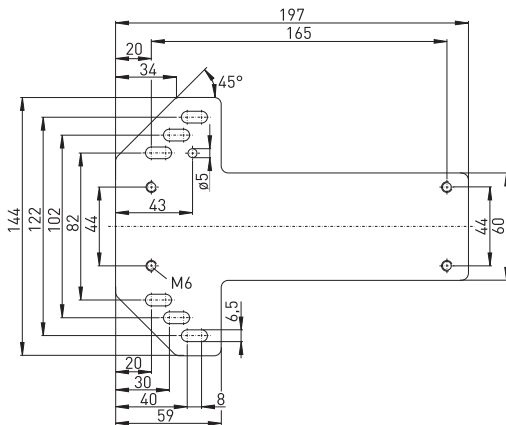
### // Series EEx AZM/AZP 415, accessories

#### Features/Options

##### Mounting plate MP

- For simple mounting on profile systems, e.g. 40, 60 or 80 mm wide
- Thickness of plate 5 mm
- Mounting plate MP AZM 415-B4pS: Mounting of AZM 415-B4pS

### // Mounting plate MP AZM 415-B4pS



PRODUCTION PROCESS COMPONENT PRODUCTION  
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## Ex position switches with safety function

### Thermoplastic enclosure

// Series EEx 13

from page 56

// Series EEx 14

from page 66

// Series EEx 95

from page 74

// Series EEx T 356

from page 80

### Metal enclosure

// Series EEx 335

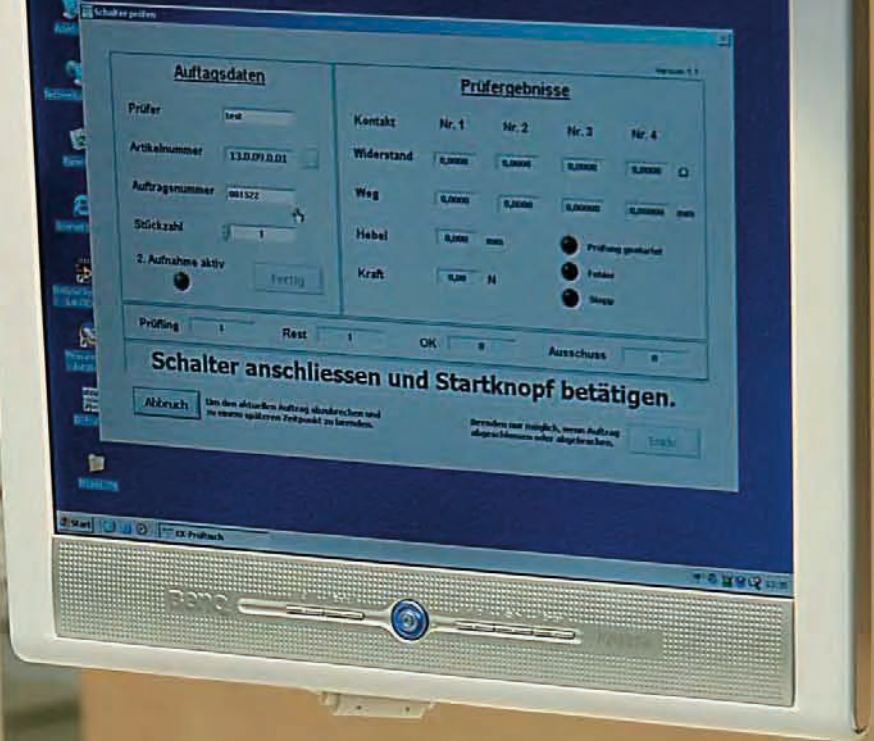
from page 84

// Series EEx 355

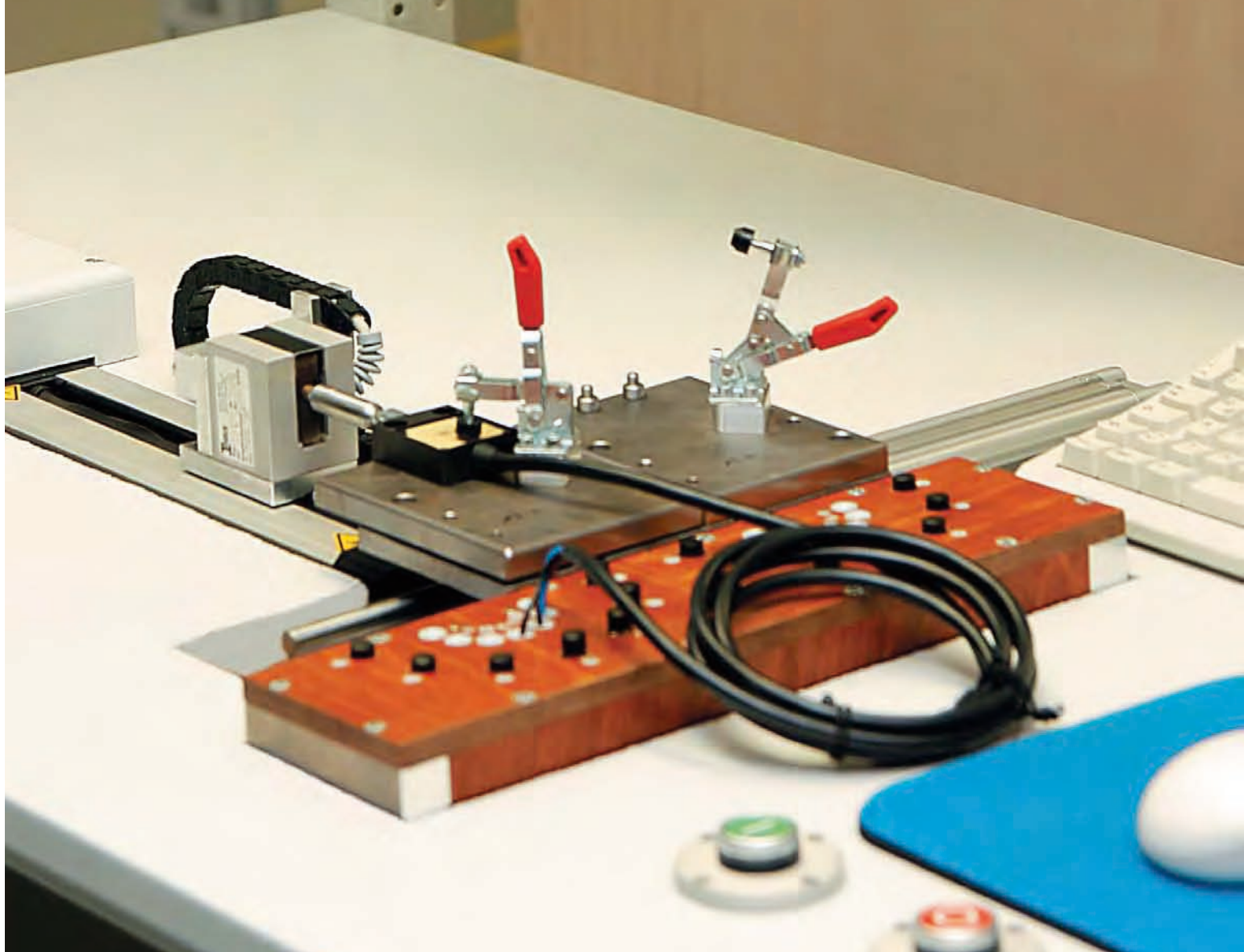
from page 90

// Series EEx 61

from page 96



52



# Ex position switches with safety function

## Range of application

These Ex safety position switches are suitable for sliding and hinged safety guards, which need to be closed to ensure the necessary operational security. In combination with guard door monitors, all Ex switches shown in this chapter achieve Control Category 3 or 4 to EN 954-1.

Further applications for Ex safety position switches are the most varied positioning duties. The variety of requirements to be found in practice can be met in detail by means of a wide range of actuating elements.

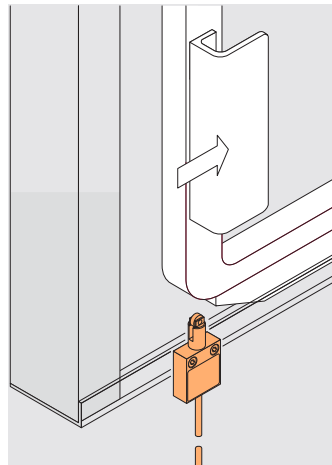
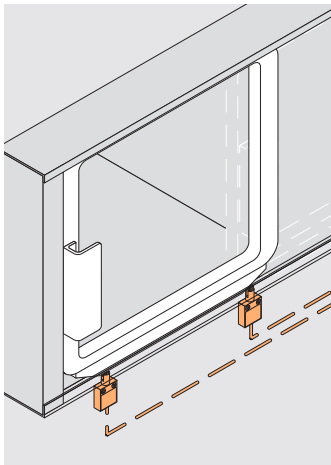
## Design and operating principle

On the Ex safety position switches, the guard device and the positive break NC contact are positively linked. When the guard device is closed, the position switch is not actuated. On sliding guards one switch is actuated and one switch is not actuated so that there is a change when opening and closing the guard door. A choice of various versions with snap or slow action is available.

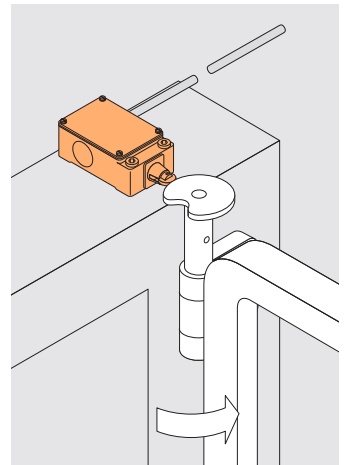
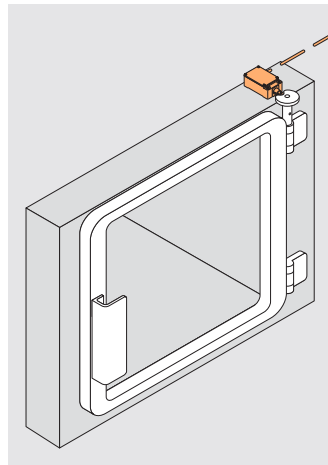
The Ex safety position switches can be mounted in any desired mounting position.

All Ex position switches with safety function shown in this chapter bear the CE mark according to the Machinery Directive 98/37/EC and according to ATEX 94/9/EC. The Ex position switches with safety function per equipment category 3D bear the CE mark without the number of the notified body and have received a CE declaration of manufacturer conformity.

## Application on sliding guards

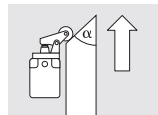


## on hinged guards



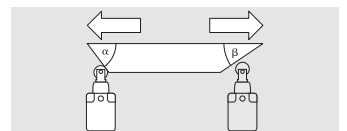
## Legend

$\alpha$ : Actuating angle from below as shown in picture



$\alpha$ : Actuating angle from right of switch axis

$\beta$ : Actuating angle from left of switch axis with reference to lever position as shown in picture







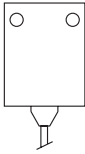

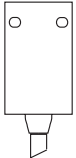


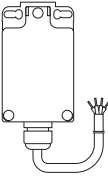


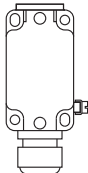

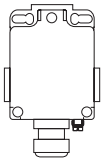



# Selection table

## Ex position switches with safety function

// Series

// Actuator

		↓	↓	↺	↺	↺	
							
<b>EEx 13, from page 56</b> - Thermoplastic enclosure - Cable 		+ W	F	KU WKU	FKU		
<b>EEx 14, from page 66</b> - Thermoplastic enclosure - Cable 		+ W	F	KU WKU	FKU	VKU	
<b>EEx 95, from page 74</b> - Thermoplastic enclosure - Wiring compartment - 1 cable entry - Design according to DIN EN 50 047		W					
<b>EEx T 356, from page 80</b> - Thermoplastic enclosure with metal cover - Cable 		S					
<b>EEx 335, from page 84</b> - Metal enclosure - Wiring compartment - 1 cable entry  		S					
<b>EEx 355, from page 90</b> - Metal enclosure - Wiring compartment - 3 cable entries 		S					
<b>EEx 61, from page 96</b> - Metal enclosure - Cable		W					
+ Standard: plunger without water-tight collar							

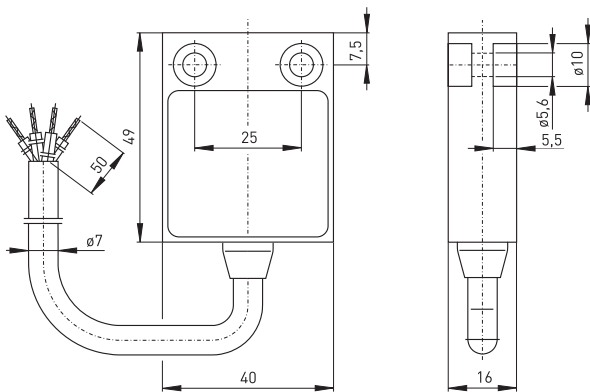
Actuating direction →

	↔	↔	↔	↔	↔	↑	↔	↔	↔	↔	
R WR			FR		WH	WHL	WPH	D	DL		
R WR			FR	VR				D	DL		
R	RL				WH WHM	WHLM	4K WPH WPHM	D D50			
R								4VH		4V7H-2138	
R					1K		3K	4VH 3V4D	4V3H	4V7H-2138	
R					1K		3K	4VH 3V4D	4V3H	4V7H-2138	
					WH	WHL	WPH	D	DL		

# Ex position switches with safety function

## // Series EEx 13

### // EEX 13



#### Features/Options

- Ex zone 1 and 2, as well as 21 and 22
- Thermoplastic enclosure
- Double insulated □
- Slow action ⊖, change-over contact with double break
- Slow action available with contact overlapping
- Suitable for in-line mounting
- With pre-wired cable, cable length 1 metre
- Special version only for equipment category 3D, available for dust Ex zone 22
- Inmetro approval for Brazil to be ordered separately

#### Technical data

Standards	IEC/EN 60947-5-1; EN 1088; EN 50014; EN 50018; EN 50281-1-1
Enclosure	glass-fibre reinforced, shock-proof thermoplastic, self-extinguishing UL 94-V0
Switch insert	-
Protection class	IP 65 according to EN 60529
Contact material	silver
Switching system	slow action, positive break NC contact ⊖
Switching elements	change-over contact with double break Zb, galvanically separated contact bridges
Termination	cable H05VV-F
Cable section	4 x 0.75 mm <sup>2</sup>
Cable length	1, 2, 5 and 10 m
U <sub>imp</sub>	4 kV
U <sub>i</sub>	250 V
I <sub>the</sub>	6 A
I <sub>e</sub> /U <sub>e</sub>	6 A/250 VAC; 0.25 A/230 VDC
Utilisation category	AC-15, DC-13
Max. fuse rating	6 A gL/gG D-fuse
Ambient temperature	-20 °C ... +65 °C
Mechanical life	> 1 million operations
Switching frequency	1800/h
Repeat accuracy	± 0.1 mm
Contact gap	max. 2 x 4.5 mm
Ex certification	⊖ II 2G EEx d IIC T6, II 2D IP65 T80°C
Approvals	PTB 03 ATEX 1068 X



#### Ordering details

EEx 13 WR 10/1S-V-S-1m-3D

- Equipment Categ. 3D, Staub-Ex Zone 22
- Cable length 1 m, (2 m, 5 m, 10 m)
- Cable entry on side
- Mechanical latching
- Contact type 10/1S, (UE)
- Actuator R (H, TK, D, etc. ...)
- Collar
- Series
- Ex certified component

# Ex position switches with safety function

## // Series EEx 13

### Features/Options

- Special cables possible on request
- Gold-plated contacts available on request
- Mechanical latching: locking by actuation, unlocking by pulling the unlocking button

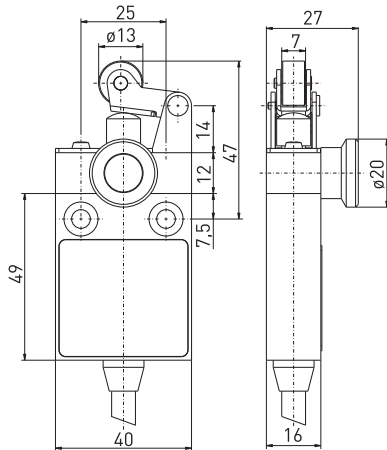
### Features/Options

- Actuating speed 0.5 m/s with an actuating angle of 0°

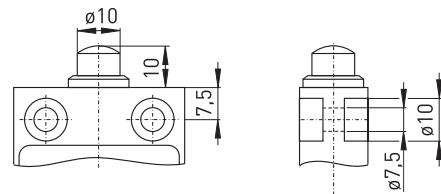
### // Cable entry on side S



### // Mechanical latching V



### // Plunger

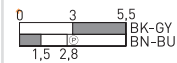


Contact variants: switch travel/contacts

#### Slow action

1 NC/1 NO contact

EEx 13





# Ex position switches with safety function

## // Series EEx 13, actuator

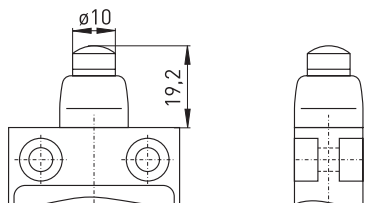
### Features/Options

- Actuating speed 0.5 m/s with an actuating angle of 0°
- Collar to protect against the entry of foreign bodies

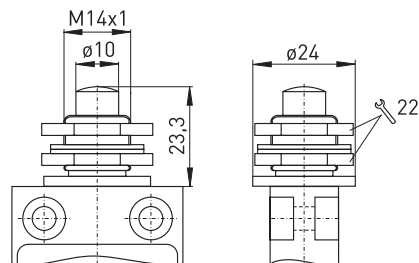
### Features/Options

- Actuating speed 0.5 m/s with an actuating angle of 0°

### // Plunger with collar W



### // Plunger for front mounting F



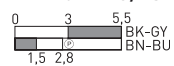
Contact variants: switch travel/contacts

Contact variants: switch travel/contacts

#### Slow action

1 NC/1 NO contact

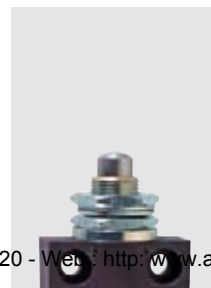
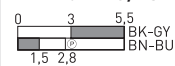
EEx 13 W 10/1S



#### Slow action

1 NC/1 NO contact

EEx 13 F 10/1S



**Features/Options**

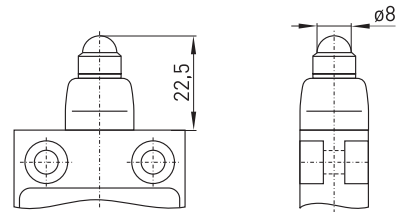
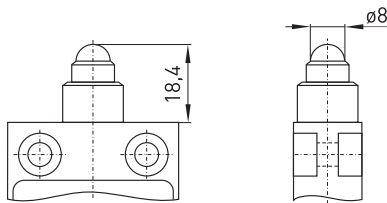
- Actuating speed 0.5 m/s with an actuating angle of 20°
- Can be actuated in line with or from side of switch axis
- Actuator head with captive stainless steel ball actuator
- Exact repeatability of switching point

**Features/Options**

- Actuating speed 0.5 m/s with an actuating angle of 15°
- Can be actuated in line with or from side of switch axis
- Actuator head with captive stainless steel ball actuator
- Exact repeatability of switching point
- Collar to protect against the entry of foreign bodies

// Ball plunger KU

// Ball plunger with collar WKU

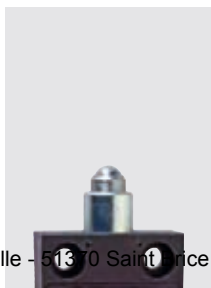


Contact variants: switch travel/contacts

Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<p><b>EEx 13 KU 10/1S</b></p>

	Slow action
1 NC/1 NO contact	<p><b>EEx 13 WKU 10/1S</b></p>



# Ex position switches with safety function

## // Series EEx 13, actuator

### Features/Options

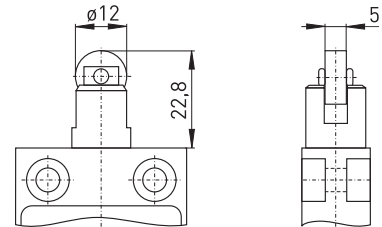
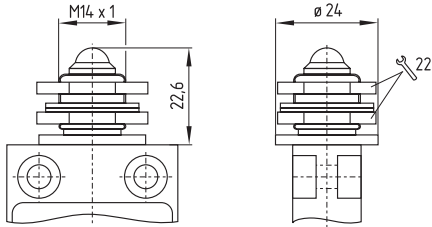
- Actuating speed 0.5 m/s with an actuating angle of 20°
- Can be actuated in line with or from side of switch axis
- Actuator head with captive stainless steel ball actuator
- Ball diameter: 8 mm
- Exact repeatability of switching point

### Features/Options

- Actuating speed 0.5 m/s with an actuating angle of 30°
- Metal roller
- Available with actuator repositioned by 90°

## // Ball plunger for front mounting FKU

## // Roller plunger R



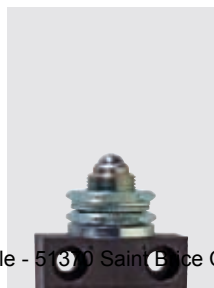
60

Contact variants: switch travel/contacts

Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	EEx 13 FKU 10/1S

	Slow action
1 NC/1 NO contact	EEx 13 R 10/1S



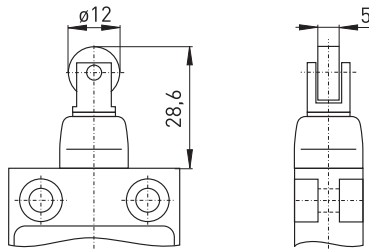
**Features/Options**

- Actuating speed 0.5 m/s with an actuating angle of 25°
- Metal roller
- Available with actuator repositioned by 90°
- Collar to protect against the entry of foreign bodies

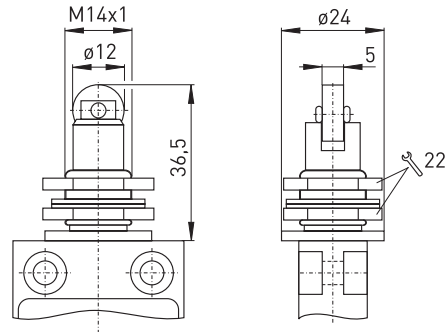
**Features/Options**

- Actuating speed 0.5 m/s with an actuating angle of 25°
- Metal roller
- Available with actuator repositioned by 90°

// Roller plunger with collar WR



// Roller plunger for front mounting FR

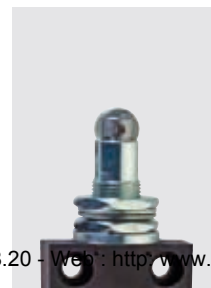
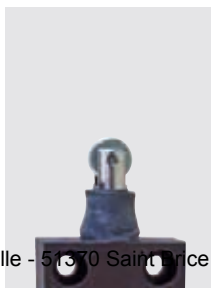


Contact variants: switch travel/contacts

Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<b>EEx 13 WR 10/1S</b>

	Slow action
1 NC/1 NO contact	<b>EEx 13 FR 10/1S</b>



# Ex position switches with safety function

## // Series EEx 13, actuator

### Features/Options

- Actuating speed 0.5 m/s with an actuating angle of  $\alpha = 40^\circ$  and  $\beta = 25^\circ$
- Metal roller
- Available with actuator repositioned by  $180^\circ$
- Collar to protect against the entry of foreign bodies
- With plastic roller available on request

### Note

Actuation from the left should be avoided since this reduces the mechanical life of the position switch.

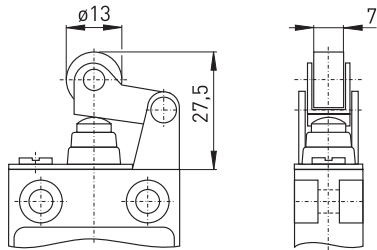
### Features/Options

- Actuating speed 0.5 m/s with an actuating angle of  $\alpha = 40^\circ$  and  $\beta = 25^\circ$
- Metal roller
- Available with actuator repositioned by  $180^\circ$
- Collar to protect against the entry of foreign bodies
- With plastic roller available on request

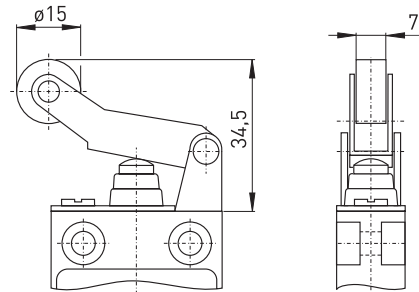
### Note

Actuation from the left should be avoided since this reduces the mechanical life of the position switch.

## // Roller lever with collar WH



## // Long roller lever with collar WHL



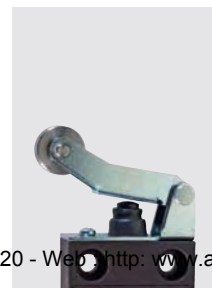
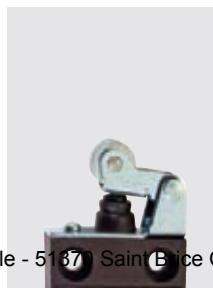
62

### Contact variants: switch travel/contacts

### Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	EEx 13 WH 10/15

	Slow action
1 NC/1 NO contact	EEx 13 WHL 10/15



**Features/Options**

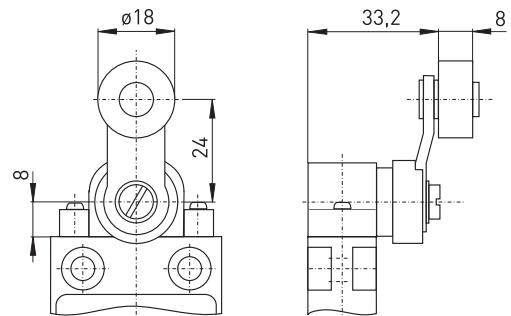
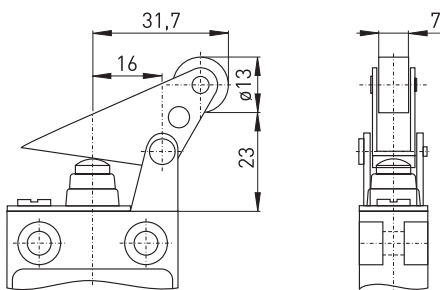
- Actuating speed 0.5 m/s with an actuating angle of  $\alpha = 30^\circ$
- Actuation parallel to switch from below
- Metal roller
- Available with actuator repositioned by  $180^\circ$
- Collar to protect against the entry of foreign bodies
- With plastic roller available on request

**Features/Options**

- Actuating speed 0.5 m/s with an actuating angle of  $45^\circ$
- Wear-resistant thermoplastic roller
- Lever can be repositioned in  $10^\circ$  steps clockwise or counter-clockwise
- Available with actuator repositioned by  $180^\circ$
- With metal roller available on request

// Parallel roller lever with collar WPH

// Rocking roller lever D

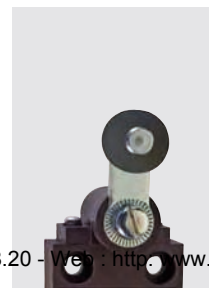


Contact variants: switch travel/contacts

Contact variants: switch travel/contacts

	Slow action								
1 NC/1 NO contact	<b>EEx 13 WPH 10/1S</b>								
	<table border="1"> <tr> <td>0</td> <td>3,2</td> <td>5,4</td> <td>BK-GY</td> </tr> <tr> <td>1,5</td> <td>3</td> <td></td> <td>BN-BU</td> </tr> </table>	0	3,2	5,4	BK-GY	1,5	3		BN-BU
0	3,2	5,4	BK-GY						
1,5	3		BN-BU						

	Slow action												
1 NC/1 NO contact	<b>EEx 13 D 10/1S</b>												
	<table border="1"> <tr> <td>65°</td> <td>35°</td> <td>0°</td> <td>35°</td> <td>65°</td> <td>BK-GY</td> </tr> <tr> <td></td> <td>15°</td> <td>15°</td> <td></td> <td></td> <td>BN-BU</td> </tr> </table>	65°	35°	0°	35°	65°	BK-GY		15°	15°			BN-BU
65°	35°	0°	35°	65°	BK-GY								
	15°	15°			BN-BU								



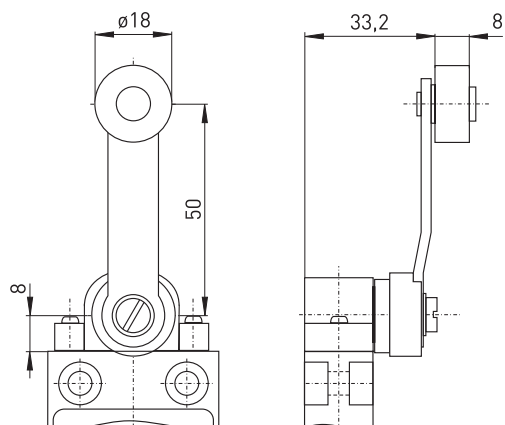
# Ex position switches with safety function

## // Series EEx 13, actuator

### Features/Options

- Actuating speed 0.5 m/s with an actuating angle of 45°
- Wear-resistant thermoplastic roller
- Lever can be repositioned in 10° steps clockwise or counter-clockwise
- Actuator can be repositioned by 180°
- With metal roller available on request

### // Long rocking roller lever DL



Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<b>EEx 13 DL 10°/15°</b> 65° 35° 0° 35° 65° BK-GY 15° 15° BN-BU



PRODUCTION PROCESS ASSEMBLY  
ASSEMBLY OF THE ACTUATOR

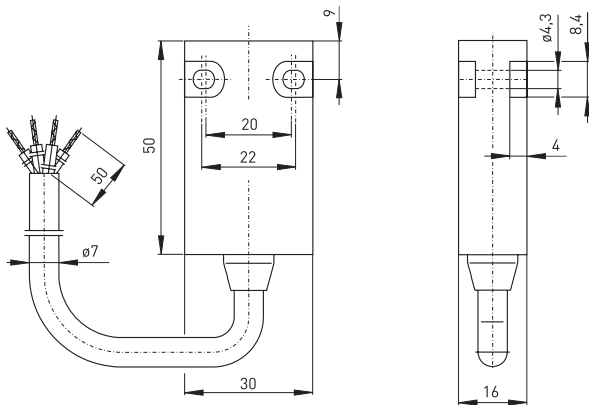




# Ex position switches with safety function

## // Series EEx 14


### // EEX 14



#### Features/Options

- Ex zone 1 and 2, as well as 21 and 22
- Thermoplastic enclosure
- Double insulated □
- Slow action with overlapping contacts available
- Mounting details to DIN EN 50 047
- Suitable for in-line mounting
- With pre-wired cable, cable length 1 metre
- Special version only for equipment category 3D, available for dust Ex zone 22
- Inmetro approval for Brazil to be ordered separately

#### Technical data

Standards	IEC/EN 60947-5-1; EN 1088; EN 50014; EN 50018; EN 50281-1-1
Enclosure	glass-fibre reinforced, shock-proof thermoplastic, self-extinguishing UL 94-V0
Switch insert	-
Protection class	IP 65 according to EN 60529
Contact material	silver
Switching system	slow action, positive break NC contact ⊖
Switching elements	change-over contact with double break Zb or 2 NC contacts, galvanically separated contact bridges
Termination	cable H05VV-F
Cable section	4 x 0.75mm <sup>2</sup>
U <sub>imp</sub>	4 kV
U <sub>i</sub>	250 V
I <sub>the</sub>	6 A
I <sub>e</sub> /U <sub>e</sub>	6 A/250 VAC, 0.25 A/230 VDC
Utilisation category	AC-15, DC-13
Max. fuse rating	6 A gL/gG D-fuse
Ambient temperature	-20 °C ... +65 °C, T5: +75 °C
Mechanical life	> 1 million operations
Switching frequency	1800/h
Repeat accuracy	± 0.1 mm
Contact gap	max. 2 x 4 mm
Ex certification	⊕ II 2G EEx d IIC T6, II 2D IP65 T80°C
Approvals	PTB 03 ATEX 1070 X 
Note	Switch must be protected from mechanical damage!

#### Ordering details

EEx 14 WR 10/1S-RE-S-1m-3D

- Equipment Categ. 3D, Staub-Ex Zone 22
- Cable length 1 m, (2 m, 5 m, 10 m)
- Cable entry on side
- Latching
- Contact type 10/1S, (UE, 20)
- Actuator R (H, TK, D, etc. ...)
- Collar
- Series
- Ex certified component

# Ex position switches with safety function

## // Series EEx 14, actuator

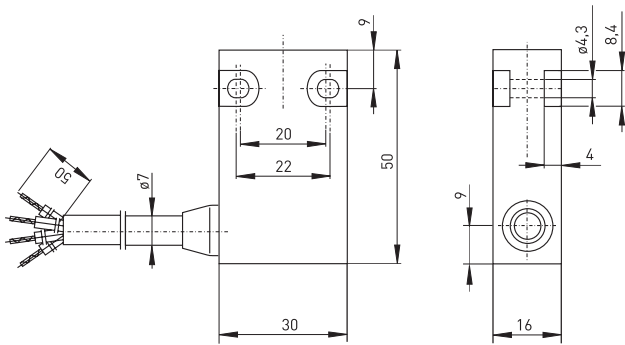
### Features/Options

- Snap action, change-over contact available with double break e.g. EExM 14 R 10/15
- Slow action available with 2 NC contacts
- With gold-plated contacts available on request
- With latching: On-/Off principle

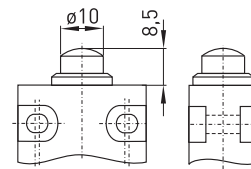
### Features/Options

- Actuating speed 0.5 m/s with an actuating angle of 0°

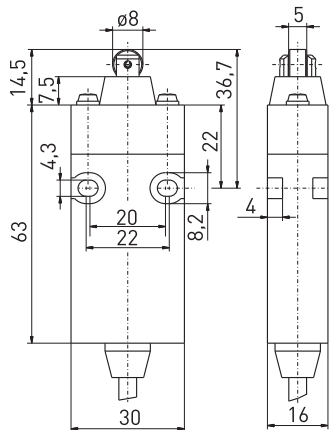
### // Cable entry on side S



### // Plunger



### // With latching RE

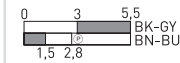


### Contact variants: switch travel/contacts

#### Slow action

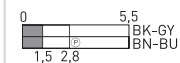
1 NC/1 NO contact

EEx 14 10/15



2 NC contacts

EEx 14 20



# Ex position switches with safety function

## // Series EEx 14, actuator

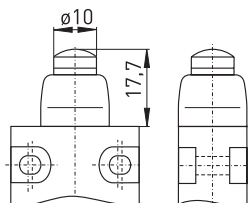
### Features/Options

- Actuating speed 0.5 m/s with an actuating angle of 0°
- Collar to protect against the entry of foreign bodies

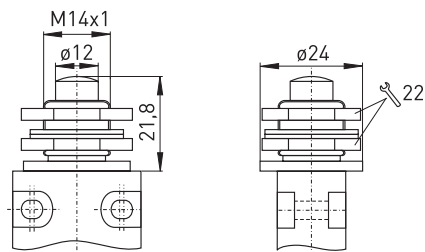
### Features/Options

- Actuating speed 0.5 m/s with an actuating angle of 0°

### // Plunger with collar W



### // Plunger for front mounting F

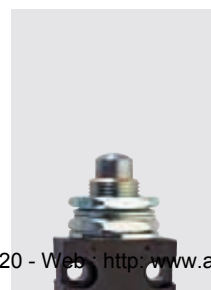


#### Contact variants: switch travel/contacts

#### Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<b>EEx 14 W 10/1S</b> 
2 NC contacts	<b>EEx 14 W 20</b> 

	Slow action
1 NC/1 NO contact	<b>EEx 14 F 10/1S</b> 
2 NC contacts	<b>EEx 14 F 20</b> 



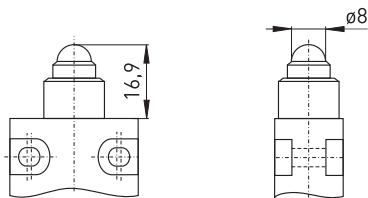
**Features/Options**

- Actuating speed 0.5 m/s with an actuating angle of 20°
- Can be actuated in line with or from side of switch axis
- Actuator head with captive stainless steel ball actuator
- Exact repeatability of switching point

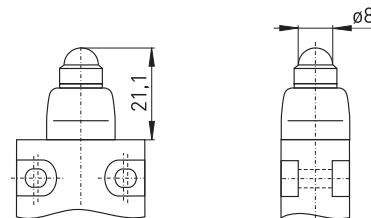
**Features/Options**

- Actuating speed 0.5 m/s with an actuating angle of 20°
- Can be actuated in line with or from side of switch axis
- Actuator head with captive stainless steel ball actuator
- Exact repeatability of switching point
- Collar to protect against the entry of foreign bodies

**// Ball plunger KU**



**// Ball plunger with collar WKU**



Contact variants: switch travel/contacts

Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<p><b>EEx 14 KU 10/1S</b></p> <p>BK-GY BN-BU</p>
2 NC contacts	<p><b>EEx 14 KU 20</b></p> <p>BK-GY BN-BU</p>

	Slow action
1 NC/1 NO contact	<p><b>EEx 14 WKU 10/1S</b></p> <p>BK-GY BN-BU</p>
2 NC contacts	<p><b>EEx 14 WKU 20</b></p> <p>BK-GY BN-BU</p>



# Ex position switches with safety function

## // Series EEx 14, actuator

### Features/Options

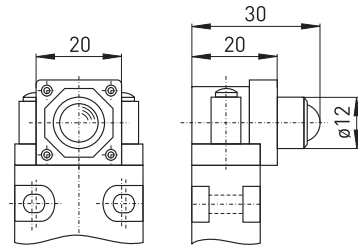
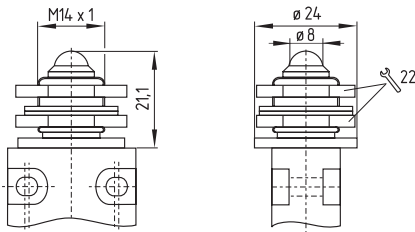
- Actuating speed 0.5 m/s with a vertical actuating angle of 20°
- Can be actuated in line with or from side of switch axis
- Actuator head with captive stainless steel ball actuator
- Exact repeatability of switching point

### Features/Options

- Actuation from any direction
- Actuator head with captive stainless steel ball actuator

## // Ball plunger for front mounting FKU

## // Vertical ball plunger VKU



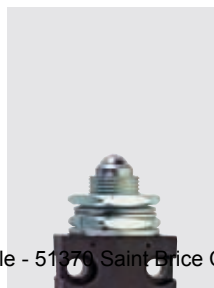
70

### Contact variants: switch travel/contacts

### Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<b>EEx 14 FKU 10/1S</b> 
2 NC contacts	<b>EEx 14 FKU 20</b> 

	Slow action
1 NC/1 NO contact	<b>EEx 14 VKU 10/1S</b> 
2 NC contacts	<b>EEx 14 VKU 20</b> 



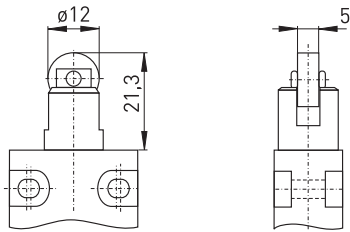
**Features/Options**

- Actuating speed 0.5 m/s with an actuating angle of 30°
- Metal roller
- Available with actuator repositioned by 90°

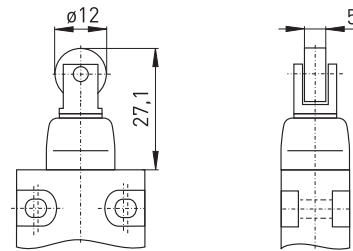
**Features/Options**

- Actuating speed 0.5 m/s with an actuating angle of 25°
- Metal roller
- Available with actuator repositioned by 90°
- Collar to protect against the entry of foreign bodies

// Roller plunger R



// Roller plunger with collar WR

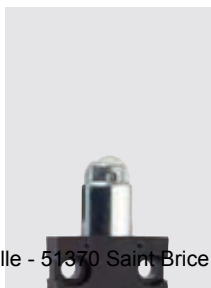


Contact variants: switch travel/contacts

Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<p><b>EEx 14 R 10/1S</b></p>
2 NC contacts	<p><b>EEx 14 R 20</b></p>

	Slow action
1 NC/1 NO contact	<p><b>EEx 14 WR 10/1S</b></p>
2 NC contacts	<p><b>EEx 14 WR 20</b></p>



# Ex position switches with safety function

## // Series EEx 14, actuator

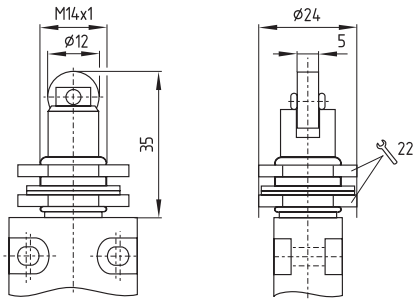
### Features/Options

- Actuating speed 0.5 m/s with an actuating angle of 25°
- Metal roller
- Available with actuator repositioned by 90°

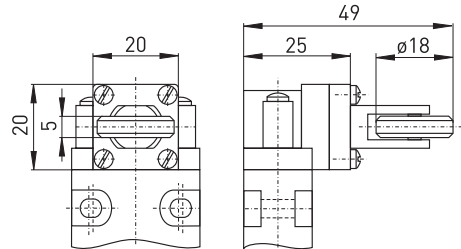
### Features/Options

- Available with actuator repositioned by 90°
- Wear-resistant thermoplastic roller

### // Roller plunger for front mounting FR



### // Vertical roller plunger VR



72

#### Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<b>EEx 14 FR 10/1S</b> 
2 NC contacts	<b>EEx 14 FR 20</b> 

#### Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<b>EEx 14 VR 10/1S</b> 
2 NC contacts	<b>EEx 14 VR 20</b> 



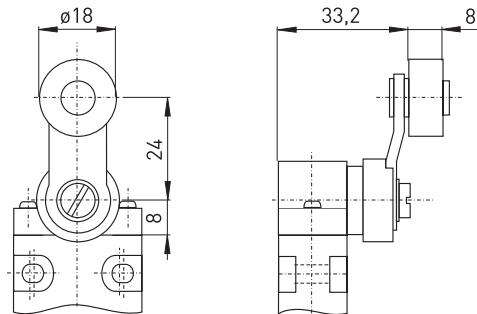
**Features/Options**

- Actuating speed 0.5 m/s with an actuating angle of 45°
- Wear-resistant thermoplastic roller
- Lever can be repositioned in 10° steps clockwise or counter-clockwise
- Actuator can be repositioned by 180°
- With metal roller available on request

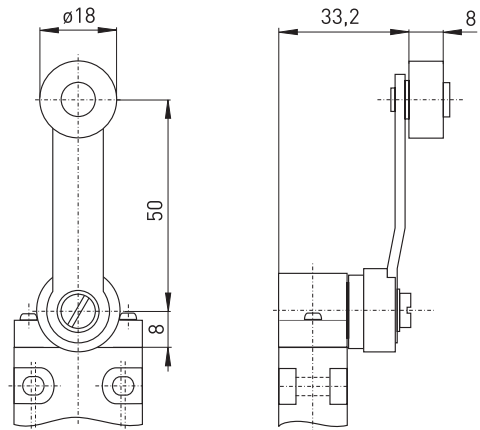
**Features/Options**

- Actuating speed 0.5 m/s with an actuating angle of 45°
- Wear-resistant thermoplastic roller
- Lever can be repositioned in 10° steps clockwise or counter-clockwise
- Actuator can be repositioned by 180°
- With metal roller available on request

// Rocking roller lever D



// Long rocking roller lever DL



Contact variants: switch travel/contacts

Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<p><b>EEx 14 D 10/1S</b></p> <p>70° 22° 0° 22° 70°</p> <p>BK-GY BN-BU</p>
2 NC contacts	<p><b>EEx 14 D 20</b></p> <p>70° 0° 70°</p> <p>BK-GY BN-BU</p>

	Slow action
1 NC/1 NO contact	<p><b>EEx 14 DL 10/1S</b></p> <p>70° 22° 0° 22° 70°</p> <p>BK-GY BN-BU</p>
2 NC contacts	<p><b>EEx 14 DL 20</b></p> <p>70° 0° 70°</p> <p>BK-GY BN-BU</p>






# Ex position switches with safety function

## // Series EEx 95

### Features/Options

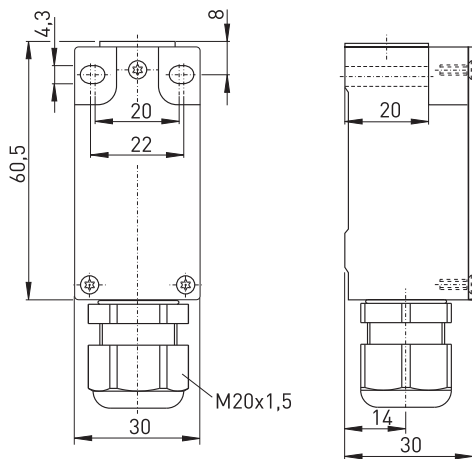
- Ex zone 1 and 2, as well as 21 and 22
- Thermoplastic enclosure
- Design according to DIN EN 50 047
- Wiring compartment
- Double insulated 
- Available with overlapping contacts
- Actuator heads can be repositioned in 4 x 90° steps
- Angle of offset roller lever can be adjusted in 10° steps
- With gold-plated contacts available on request
- Inmetro approval for Brazil to be ordered separately

## // EEX 95



### Technical data

<b>Standards</b>	IEC/EN 60947-5-1; EN 1088; EN 50014; EN 50018; EN 50019; EN 50281-1-1
<b>Design</b>	DIN EN 50 047
<b>Enclosure</b>	glass-fibre reinforced, shock-proof thermoplastic, self-extinguishing UL 94-V0
<b>Switch insert</b>	Ex 95
<b>Protection class</b>	IP 67 according to EN 60529
<b>Contact material</b>	silver
<b>Switching system</b>	slow action, positive break NC contact $\ominus$
<b>Switching elements</b>	change-over contact with double break Zb or 2 NC contacts, galvanically separated contact bridges
<b>Termination</b>	M3 screw clamps
<b>Cable section</b>	max. 1.5 mm <sup>2</sup> (incl. conductor ferrules)
<b>Cable length</b>	-
<b>U<sub>imp</sub></b>	4 kV
<b>U<sub>i</sub></b>	250 V
<b>I<sub>the</sub></b>	6 A
<b>I<sub>e</sub>/U<sub>e</sub></b>	6 A/250 VAC; 0.25 A/230 VDC
<b>Utilisation category</b>	AC-15, DC-13
<b>Max. fuse rating</b>	6 A gL/gG D-fuse
<b>Ambient temperature</b>	-20 °C ... +65 °C
<b>Mechanical life</b>	> 1 million operations
<b>Switching frequency</b>	3600/h
<b>Repeat accuracy</b>	± 0.1 mm
<b>Contact gap</b>	max. 2 x 3.5 mm
<b>Ex certification</b>	$\oplus$ II 2G EEx de IIC T6, II 2D IP67 T80°C
<b>Approvals</b>	DMT 01 ATEX E 118



### Ordering details

**EEx 95 WH 10/1S-3D**

Equipment Categ. 3D, dust  
Ex zone 22  
Contact type 10/1S, (20, UE)  
Actuator H (R, D, DS, etc. ...)  
Collar  
Series  
Ex certified component

# Ex position switches with safety function

## // Series EEx 95, actuator

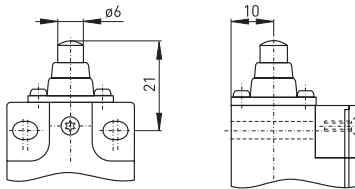
### Features/Options

- Actuator type B to DIN EN 50 047
- Actuator with collar

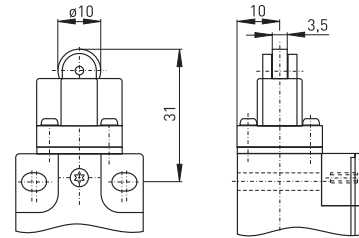
### Features/Options

- Actuator type C to DIN EN 50 047
- Wear-resistant thermoplastic roller
- Metal roller available on request
- Actuator heads can be repositioned in 4 x 90° steps

## // Plunger W



## // Roller plunger R

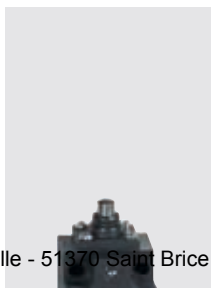


### Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<b>EEx 95 W 10/1S</b> 
1 NC/1 NO contact with overlapping	<b>EEx 95 W UE</b> 
2 NC contacts	<b>EEx 95 W 20</b> 

### Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<b>EEx 95 R 10/1S</b> 
1 NC/1 NO contact with overlapping	<b>EEx 95 R UE</b> 
2 NC contacts	<b>EEx 95 R 20</b> 



# Ex position switches with safety function

## // Series EEx 95, actuator

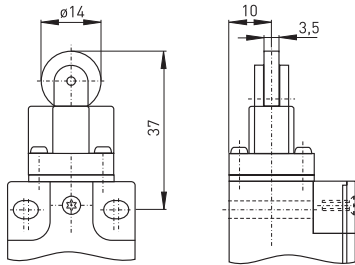
### Features/Options

- Wear-resistant thermoplastic roller
- Metal roller available on request
- Actuator heads can be repositioned in 4 x 90° steps

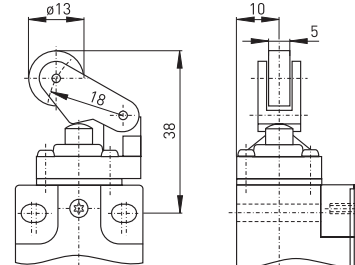
### Features/Options

- Actuating speed 0.5 m/s with an actuating angle of  $\alpha = 40^\circ$  and  $\beta = 25^\circ$
- Actuator type E to DIN EN 50 047
- Actuator with collar
- Wear-resistant thermoplastic roller
- Actuator heads can be repositioned in 4 x 90° steps
- Metal roller available on request

### // Long roller plunger RL



### // Roller lever WH



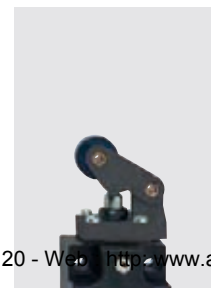
76

#### Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<b>EEx 95 RL 10/1S</b> 
1 NC/1 NO contact with overlapping	<b>EEx 95 RL UE</b> 
2 NC contacts	<b>EEx 95 RL 2Ö</b> 

#### Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<b>EEx 95 WH 10/1S</b> 
1 NC/1 NO contact with overlapping	<b>EEx 95 WH UE</b> 
2 NC contacts	<b>EEx 95 WH 2Ö</b> 



**Features/Options**

- Actuating speed 0.5 m/s with an actuating angle of  $\alpha = 40^\circ$  and  $\beta = 25^\circ$
- Actuator with collar
- Wear-resistant thermoplastic roller
- Actuator heads can be repositioned in 4 x 90° steps
- Metal roller available on request

**Note**

Actuation from the left should be avoided since this reduces the mechanical life of the position switch.

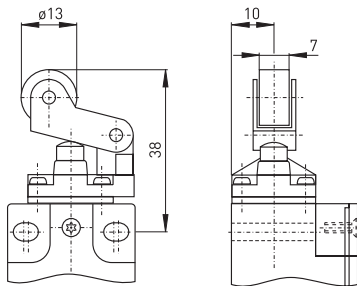
**Features/Options**

- Actuating speed 0.5 m/s with an actuating angle of  $\alpha = 40^\circ$
- Actuator with collar
- Wear-resistant thermoplastic roller
- Actuator heads can be repositioned in 4 x 90° steps
- Metal roller available on request

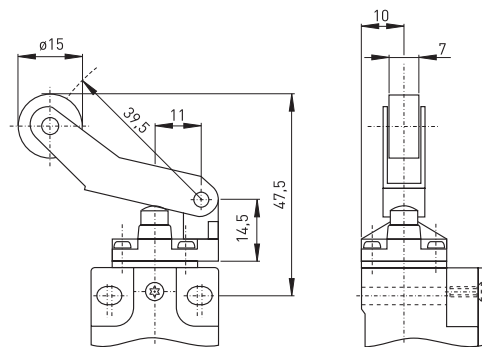
**Note**

Actuation from the left should be avoided since this reduces the mechanical life of the position switch.

// Metal roller lever WHM



// Long metal roller lever WHLM

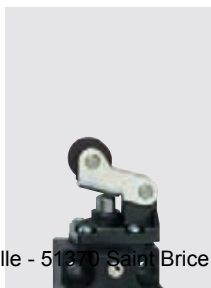


Contact variants: switch travel/contacts

Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<p><b>EEx 95 WHM 1Ö/1S</b></p>
1 NC/1 NO contact with overlapping	<p><b>EEx 95 WHM UE</b></p>
2 NC contacts	<p><b>EEx 95 WHM 2Ö</b></p>

	Slow action
1 NC/1 NO contact	<p><b>EEx 95 WHLM 1Ö/1S</b></p>
1 NC/1 NO contact with overlapping	<p><b>EEx 95 WHLM UE</b></p>
2 NC contacts	<p><b>EEx 95 WHLM 2Ö</b></p>



# Ex position switches with safety function

## // Series EEx 95, actuator

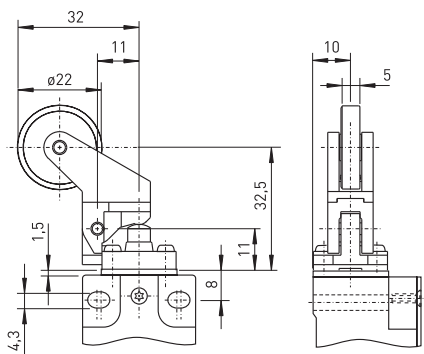
### Features/Options

- Actuating speed 0.5 m/s with an actuating angle of  $\alpha = 40^\circ$
- Actuation parallel to switch from left
- Wear-resistant thermoplastic roller
- Actuator heads can be repositioned in 4 x 90° steps

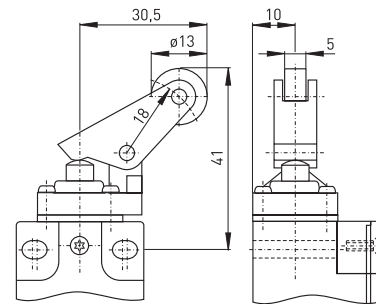
### Features/Options

- Actuating speed 0.5 m/s with an actuating angle of  $\alpha = 30^\circ$
- Actuation parallel to switch from below
- Actuator with collar
- Wear-resistant thermoplastic roller
- Actuator heads can be repositioned in 4 x 90° steps
- Metal roller available on request

### // Thermoplastic roller lever 4K



### // Parallel roller lever WPH



78

#### Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<b>EEx 95 4K 1Ö/1S</b> 
1 NC/1 NO contact with overlapping	<b>EEx 95 4K UE</b> 
2 NC contacts	<b>EEx 95 4K 2Ö</b> 

#### Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<b>EEx 95 WPH 1Ö/1S</b> 
1 NC/1 NO contact with overlapping	<b>EEx 95 WPH UE</b> 
2 NC contacts	<b>EEx 95 WPH 2Ö</b> 



**Features/Options**

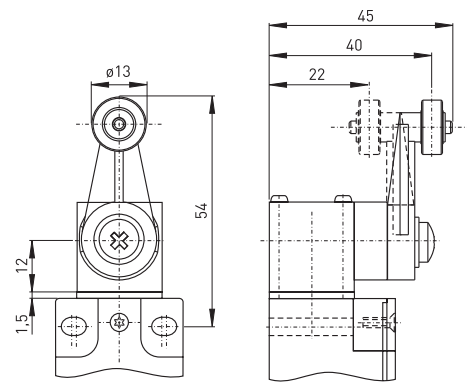
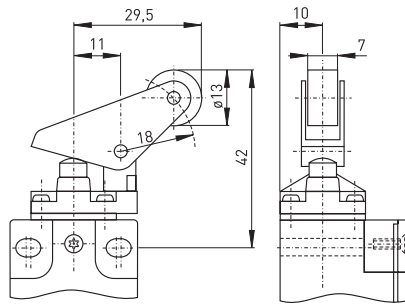
- Actuating speed 0.5 m/s with an actuating angle of  $\alpha = 30^\circ$
- Actuation parallel to switch from below
- Actuator with collar
- Wear-resistant thermoplastic roller
- Actuator heads can be repositioned in 4 x 90° steps
- Metal roller available on request

**Features/Options**

- Lever angle adjustable in 10° steps
- Wear-resistant thermoplastic roller
- Actuator heads can be repositioned in 4 x 90° steps
- Metal roller available on request

// Metal parallel roller lever WPHM

// Rocking roller lever D

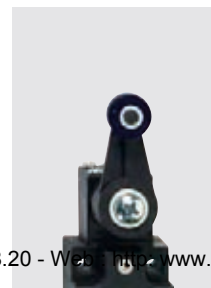


Contact variants: switch travel/contacts

Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<p><b>EEx 95 WPHM 1Ö/1S</b></p>
1 NC/1 NO contact with overlapping	<p><b>EEx 95 WPHM UE</b></p>
2 NC contacts	<p><b>EEx 95 WPHM 2Ö</b></p>

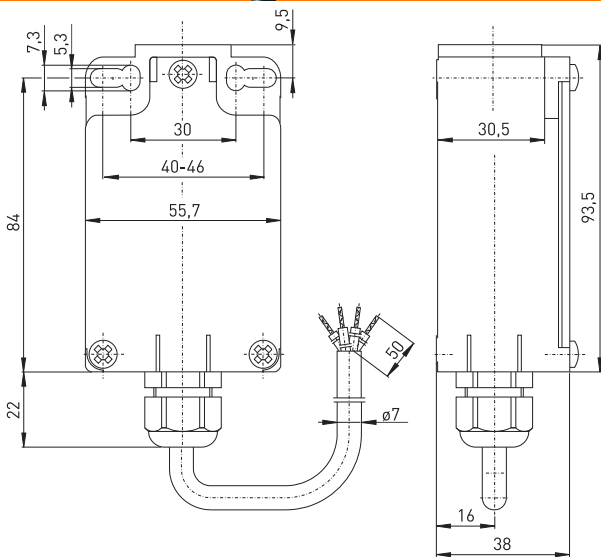
	Slow action
1 NC/1 NO contact	<p><b>EEx 95 D 1Ö/1S</b></p>
1 NC/1 NO contact with overlapping	<p><b>EEx 95 D UE</b></p>
2 NC contacts	<p><b>EEx 95 D 2Ö</b></p>



# Ex position switches with safety function

## // Series EEx T 356

### // EEX T 356



#### Features/Options

- Ex zone 1 and 2, as well as 21 and 22
- Thermoplastic enclosure with metal cover
- Mounting dimensions and switching points to EN 50041
- Pre-wired cable available in various lengths
- Actuator heads can be repositioned in 4 x 90° steps
- Angle of offset roller lever can be adjusted in 10° steps
- Special version only for equipment category 3D, available for dust Ex zone 22

#### Technical data

<b>Standards</b>	IEC/EN 60947-5-1; EN 1088; EN 50014; EN 50018; EN 50019; EN 50281-1-1
<b>Enclosure</b>	glass-fibre reinforced, shock-proof thermoplastic, self-extinguishing
<b>Cover</b>	steel enamelled
<b>Switch insert</b>	EEx 13
<b>Protection class</b>	IP 65 according to IEC/EN 60529
<b>Contact material</b>	silver
<b>Switching system</b>	slow action, positive break NC contact ⊖
<b>Switching elements</b>	change-over contact with double break Zb, galvanically separated contact bridges
<b>Termination</b>	cable H05VV-F
<b>Cable section</b>	4 x 0.75 mm <sup>2</sup>
<b>Cable length</b>	2 oder 5 m
<b>U<sub>imp</sub></b>	4 kV
<b>U<sub>i</sub></b>	250 V
<b>I<sub>the</sub></b>	6 A
<b>I<sub>e</sub>/U<sub>e</sub></b>	6 A/250 VAC; 0.25 A/230 VDC
<b>Utilisation category</b>	AC-15, DC-13
<b>Max. fuse rating</b>	6 A gL/gG D-fuse
<b>Ambient temperature</b>	-20 °C ... +65 °C
<b>Mechanical life</b>	> 1 million operations
<b>Switching frequency</b>	1800/h
<b>Repeat accuracy</b>	± 0.1 mm
<b>Contact gap</b>	max. 2 x 4.5 mm
<b>Ex certification</b>	⊕ II 2G EEx d IIC T6, II 2D IP65 T80°C
<b>Approvals</b>	PTB 03 ATEX 1068 X* *referring to the switch insert



#### Ordering details

EEx T 356 S 10/1S-3D

Equipment Categ. 3D, dust Ex zone 22  
 Contact type 10/1S  
 Actuator S (R, 4VH, 4V7H, etc. ...)  
 Series  
 Ex certified component

# Ex position switches with safety function

## // Series EEx T 356, actuator

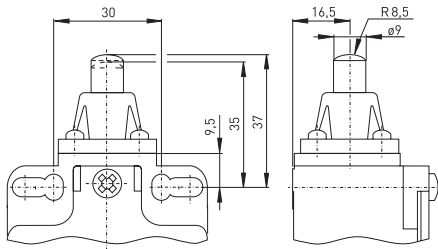
### Features/Options

- Actuator type B to DIN EN 50 041
- Actuating speed 0.5 m/s with an actuating angle of  $\alpha = 0^\circ$

### Features/Options

- Actuator type C to DIN EN 50 041
- Actuating speed 0.5 m/s with an actuating angle of  $\alpha = 30^\circ$

### // Plunger S

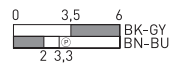


Contact variants: switch travel/contacts

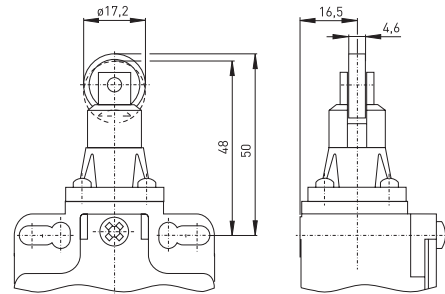
#### Slow action

1 NC/1 NO contact

EEx T 356 S 10/15



### // Roller plunger R

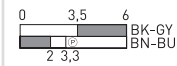


Contact variants: switch travel/contacts

#### Slow action

1 NC/1 NO contact

EEx T 356 R 10/15





# Ex position switches with safety function

## // Series EEx T 356, actuator

### Features/Options

- Actuator type A to DIN EN 50 041
- Actuating speed 2.5 m/s with an actuating angle of  $\alpha = 30^\circ$
- Wear-resistant thermoplastic roller
- Actuator heads can be repositioned in 4 x 90° steps

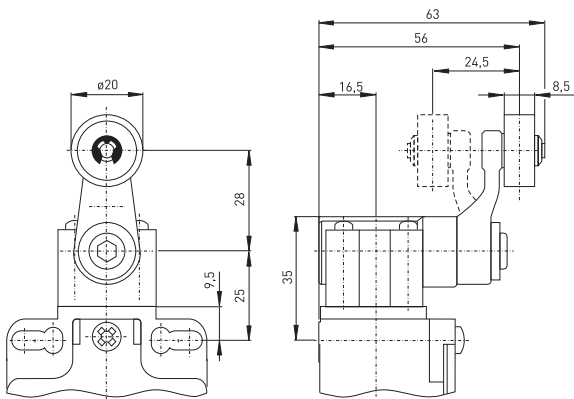
### Features/Options

- Actuating speed 2.5 m/s with an actuating angle of  $\alpha = 30^\circ$
- Wear-resistant thermoplastic roller
- Actuator heads can be repositioned in 4 x 90° steps
- For safety duties  $\ominus$ , positive break, ordering suffix -2138

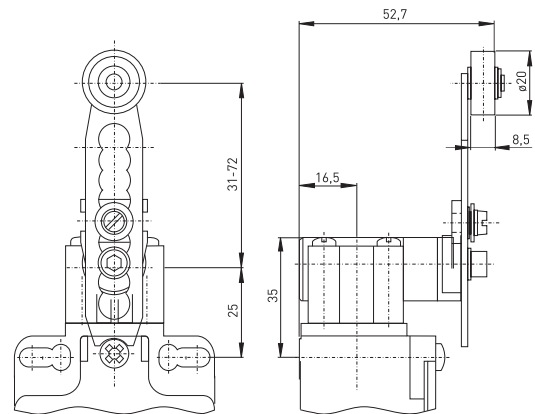
### Note

Positive break angle  $\oplus$  only valid for EEx T4V7H 356 10/1S-2138

## // Rocking roller lever 4VH



## // Adjustable rocking lever 4V7H-2138

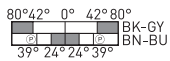


Contact variants: switch travel/contacts

### Slow action

1 NC/1 NO contact

EEx T 356 4VH 10/1S

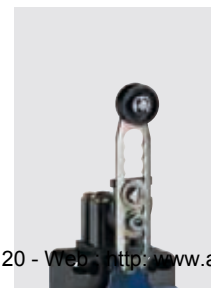
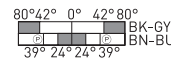


Contact variants: switch travel/contacts

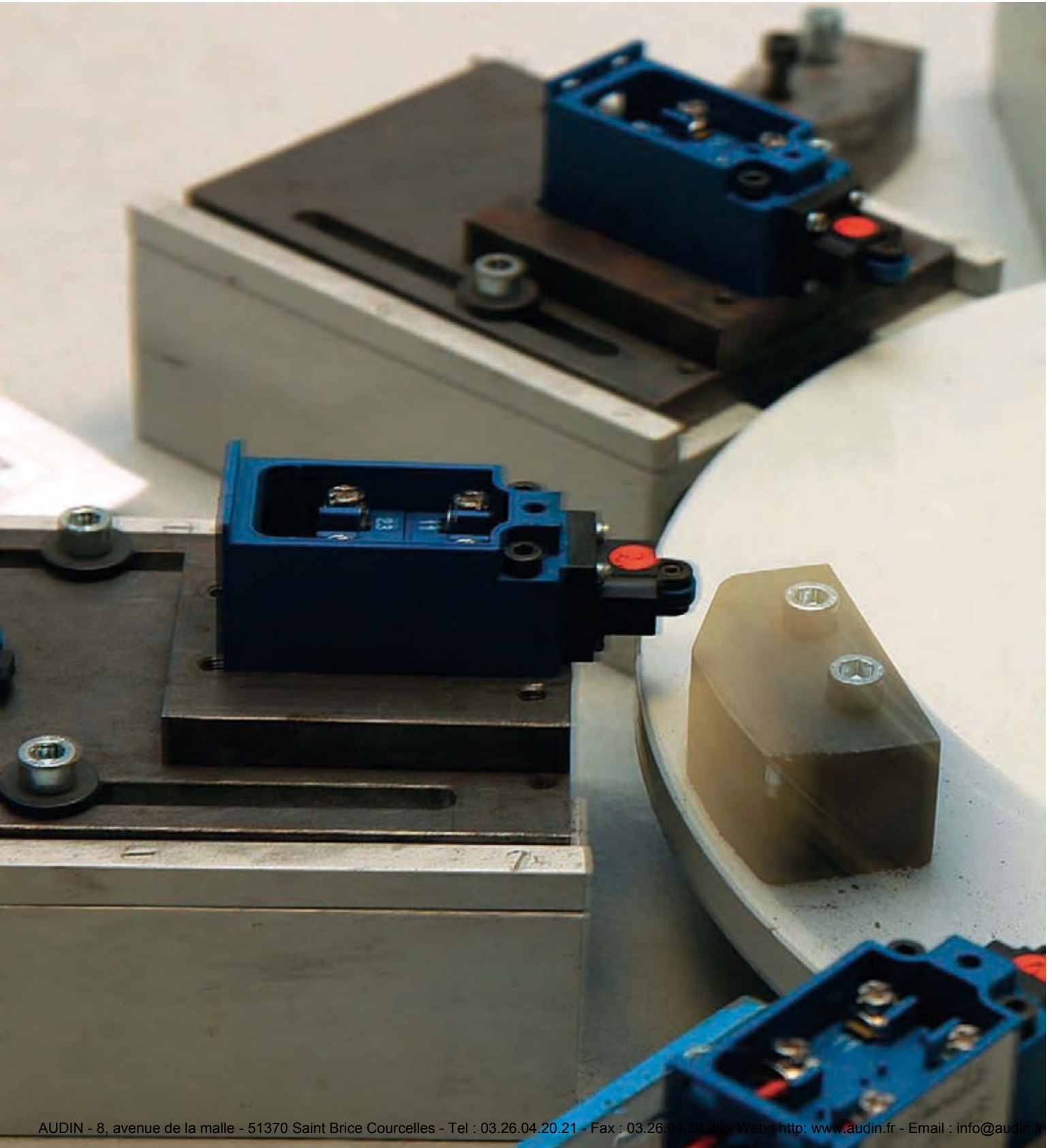
### Slow action

1 NC/1 NO contact

EEx T 356 4V7H 10/1S-2138



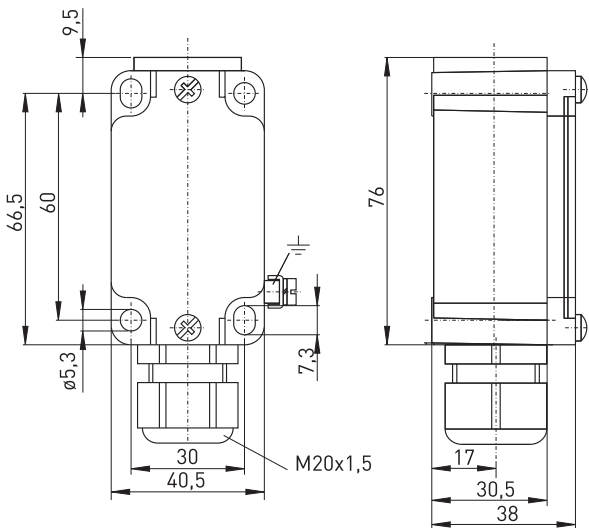
PRODUCTION PROCESS QUALITY MANAGEMENT  
LIFE TEST ACTUATOR MECHANIC



# Ex position switches with safety function

## // Series EEx 335

### // EEX 335



#### Features/Options

- Ex zone 1 and 2, as well as 21 and 22
- Design according to DIN EN 50041
- Available with contact overlapping
- Wiring compartment
- Actuator heads can be repositioned in 4 x 90° steps
- Angle of offset roller lever can be adjusted in 10° steps
- Special version only for equipment category 3D, available for dust Ex zone 22
- With gold-plated contacts available on request
- Gost approval for Russia to be ordered separately

#### Technical data

<b>Standards</b>	IEC/EN 60947-5-1; EN 1088; EN 50014; EN 50018; EN 50019; EN 50281-1-1
<b>Design</b>	DIN EN 50 041
<b>Enclosure</b>	zinc die casting, enamelled
<b>Switch insert</b>	Ex 95
<b>Protection class</b>	IP 65 according to EN 60529
<b>Contact material</b>	silver
<b>Switching system</b>	slow action, positive break NC contact ⊖
<b>Switching elements</b>	change-over contact with double break Zb or 2 NC contacts, galvanically separated contact bridges
<b>Termination</b>	M3 screw clamps
<b>Cable section</b>	max. 1.5 mm <sup>2</sup> (incl. conductor ferrules)
<b>Cable length</b>	-
<b>U<sub>imp</sub></b>	4 kV
<b>U<sub>i</sub></b>	250 V
<b>I<sub>the</sub></b>	6 A
<b>I<sub>e</sub>/U<sub>e</sub></b>	6 A/400 VAC; 0.25 A/230 VDC
<b>Utilisation category</b>	AC-15, DC-13
<b>Max. fuse rating</b>	6 A gL/gG D-fuse
<b>Ambient temperature</b>	-20 °C ... +60 °C
<b>Mechanical life</b>	> 1 million operations
<b>Switching frequency</b>	1800/h
<b>Repeat accuracy</b>	± 0.1 mm
<b>Contact gap</b>	max. 2 x 3.5 mm
<b>Ex certification</b>	⊕ II 2G EEx de IIC T6, II 2D IP65 T80°C
<b>Approvals</b>	DMT 01 ATEX E 178



#### Ordering details

<b>EEx 335 S 10/15-3D</b>	
Series	Equipment Categ. 3D, dust Ex zone 22
	Contact type 10/15, (20, UE)
	Actuator S (R, 4VH, 4V7H-2138, etc.)
	Ex certified component

# Ex position switches with safety function

## // Series EEx 335, actuator

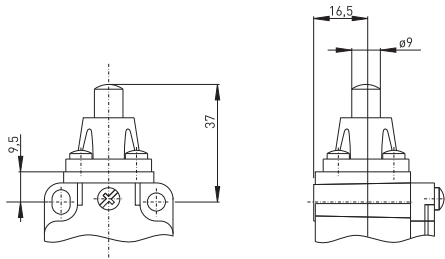
### Features/Options

- Actuator type B to DIN EN 50 041
- Actuating speed 0.5 m/s with an actuating angle of  $\alpha = 0^\circ$

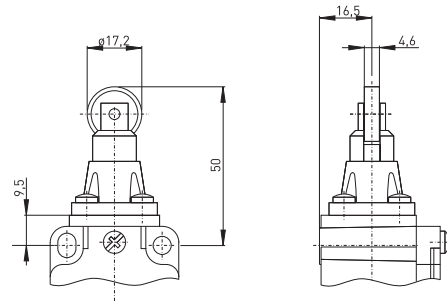
### Features/Options

- Actuator type C to DIN EN 50 041
- Actuating speed 0.5 m/s with an actuating angle of  $\alpha = 30^\circ$

### // Plunger S



### // Roller plunger R



#### Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<b>EEx 335 S 10/1S</b> 
1 NC/1 NO contact with overlapping	<b>EEx 335 S UE</b> 
2 NC contacts	<b>EEx 335 S 20</b> 

#### Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<b>EEx 335 R 10/1S</b> 
1 NC/1 NO contact with overlapping	<b>EEx 335 R UE</b> 
2 NC contacts	<b>EEx 335 R 20</b> 



# Ex position switches with safety function

## // Series EEx 335, actuator

### Features/Options

- Actuating speed 0.5 m/s with an actuating angle of  $\alpha = 30^\circ$
- Actuation parallel to switch from right
- Wear-resistant thermoplastic roller
- Actuator heads can be repositioned in 4 x 90° steps

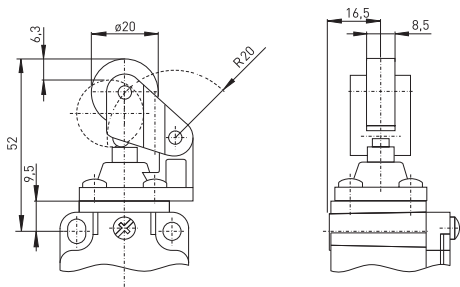
### Note

Actuation from the left should be avoided since this reduces the mechanical life of the position switch.

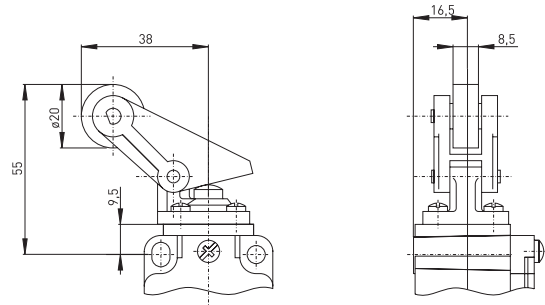
### Features/Options

- Actuating speed 0.5 m/s with an actuating angle of  $\alpha = 30^\circ$
- Actuation parallel to switch from below
- Wear-resistant thermoplastic roller
- Actuator heads can be repositioned in 4 x 90° steps

### // Roller lever 1K



### // Angled roller lever 3K



86

#### Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<b>EEx 335 1K 10/1S</b> 
1 NC/1 NO contact with overlapping	<b>EEx 335 1K UE</b> 
2 NC contacts	<b>EEx 335 1K 20</b> 

#### Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<b>EEx 335 3K 10/1S</b> 
1 NC/1 NO contact with overlapping	<b>EEx 335 3K UE</b> 
2 NC contacts	<b>EEx 335 3K 20</b> 



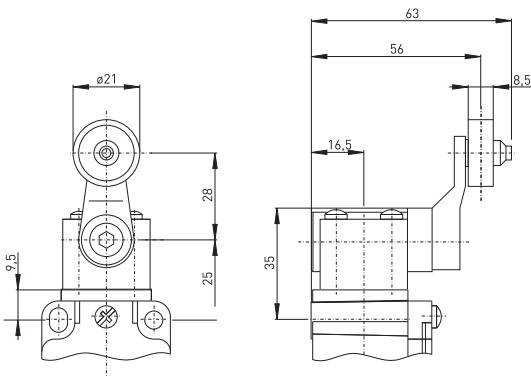
**Features/Options**

- Actuator type A to DIN EN 50 041
- Actuating speed 2.5 m/s with an actuating angle of  $\alpha = 30^\circ$
- Wear-resistant thermoplastic roller
- Actuator heads can be repositioned in 4 x 90° steps

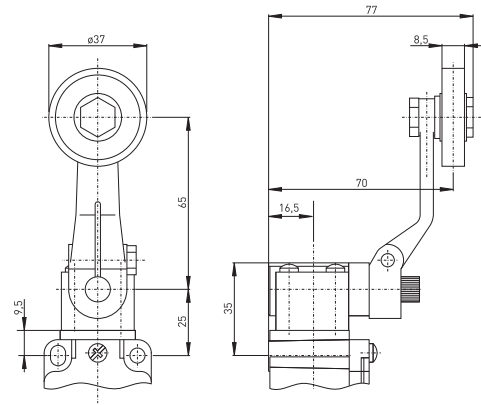
**Features/Options**

- Actuating speed 2.5 m/s with an actuating angle of  $\alpha = 30^\circ$
- Wear-resistant thermoplastic roller
- Actuator heads can be repositioned in 4 x 90° steps

**// Rocking roller lever 4VH**



**// Long rocking roller lever 4V3H**



Contact variants: switch travel/contacts

Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<b>EEx 335 4VH 10/1S</b> 85° 25°0°25° 85° 23-24 30°15°15°30° 11-12
1 NC/1 NO contact with overlapping	<b>EEx 335 4VH UE</b> 85° 20°0°20° 85° 23-24 40°25°25°40° 15-16
2 NC contacts	<b>EEx 335 4VH 20</b> 85° 30° 0° 30° 85° 11-12 15°15° 21-22

	Slow action
1 NC/1 NO contact	<b>EEx 335 4V3H 10/1S</b> 85° 25°0°25° 85° 23-24 30°15°15°30° 11-12
1 NC/1 NO contact with overlapping	<b>EEx 335 4V3H UE</b> 85° 20°0°20° 85° 23-24 40°25°25°40° 15-16
2 NC contacts	<b>EEx 335 4V3H 20</b> 85° 30° 0° 30° 85° 11-12 15°15° 21-22



# Ex position switches with safety function

## // Series EEx 335, actuator

### Features/Options

- Actuating speed 2.5 m/s with an actuating angle of  $\alpha = 30^\circ$
- Wear-resistant thermoplastic roller
- Actuator heads can be repositioned in 4 x 90° steps
- For safety duties  $\ominus$ , positive break, ordering suffix -2138

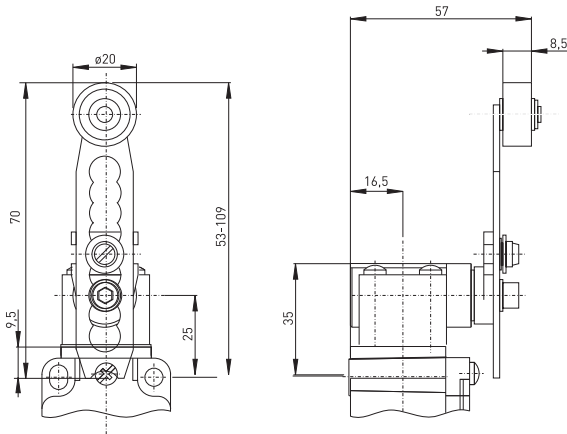
### Note

Positive break angle  $\ominus$  only valid for EEx T4V7H 356 1Ö/1S-2138

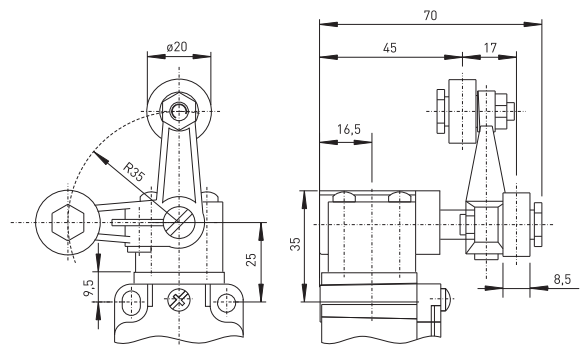
### Features/Options

- Actuating speed 2.5 m/s with an actuating angle of  $\alpha = 30^\circ$
- Wear-resistant thermoplastic roller
- Actuator heads can be repositioned in 4 x 90° steps

## // Adjustable rocking lever 4V7H-2138



## // Forked lever latching 3V4D



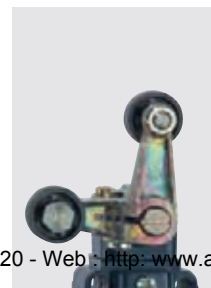
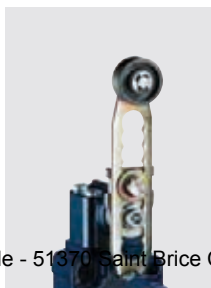
88

### Contact variants: switch travel/contacts

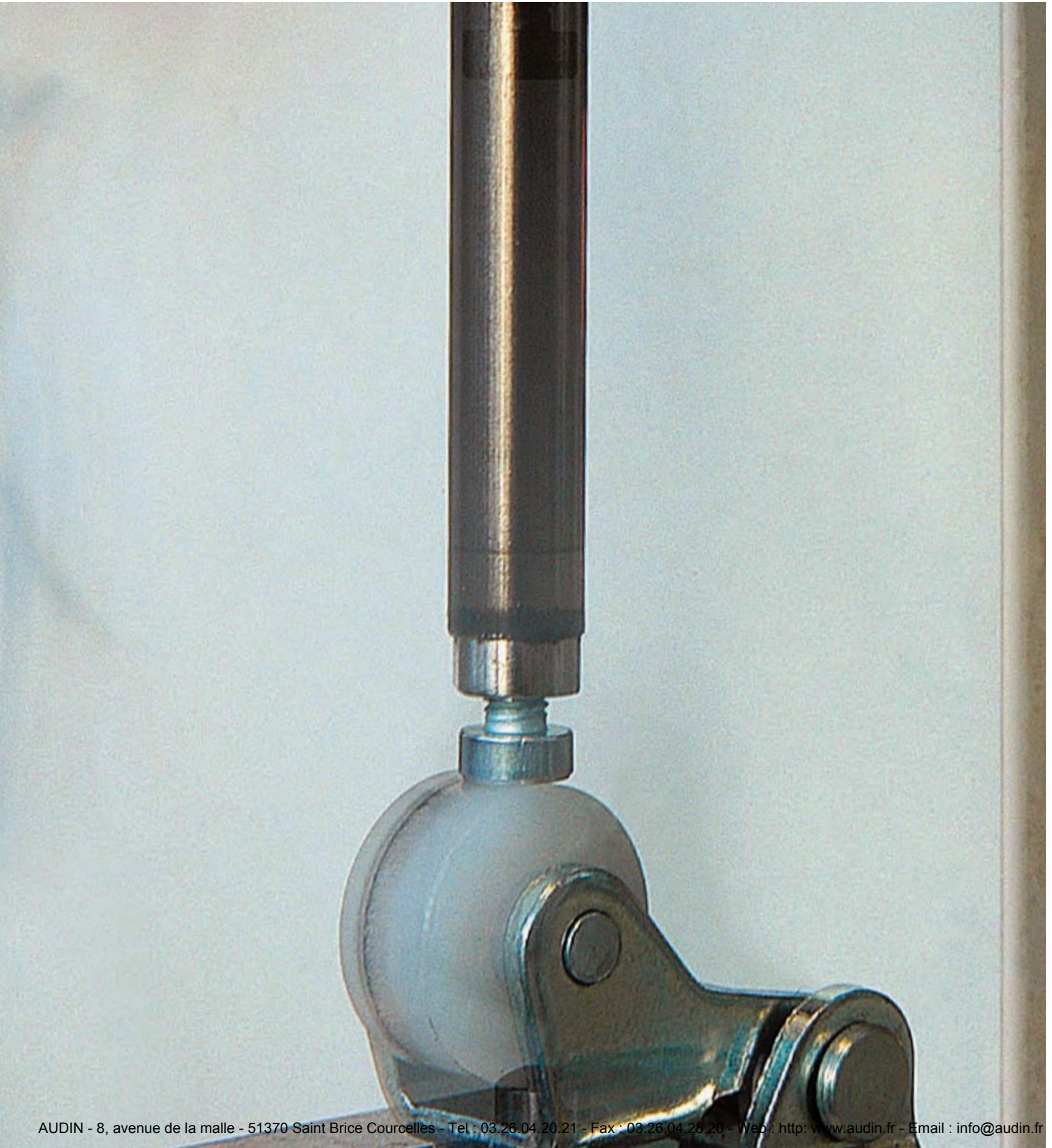
### Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	EEx 335 4V7H 1Ö/1S-2138 
1 NC/1 NO contact with overlapping	EEx 335 4V7H UE-2138 
2 NC contacts	EEx 335 4V7H 2Ö-2138 

	Slow action
1 NC/1 NO contact	EEx 335 3V4D 1Ö/1S 
1 NC/1 NO contact with overlapping	EEx 335 3V4D UE 
2 NC contacts	EEx 335 3V4D 2Ö 



PRODUCTION PROCESS QUALITY MANAGEMENT  
LIFE TEST OF ACTUATOR





# Ex position switches with safety function

## // Series EEx 355

### Features/Options

- Ex zone 1 and 2, as well as 21 and 22
- Available with contact overlapping
- 3 cable entries
- Actuating elements can be repositioned by  $4 \times 90^\circ$
- Rocking lever can be positioned in  $10^\circ$  steps
- Special version only for equipment category 3D, available for dust Ex zone 22
- With gold-plated contacts available on request
- Inmetro approval for Brazil and Gost approval for Russia to be ordered separately

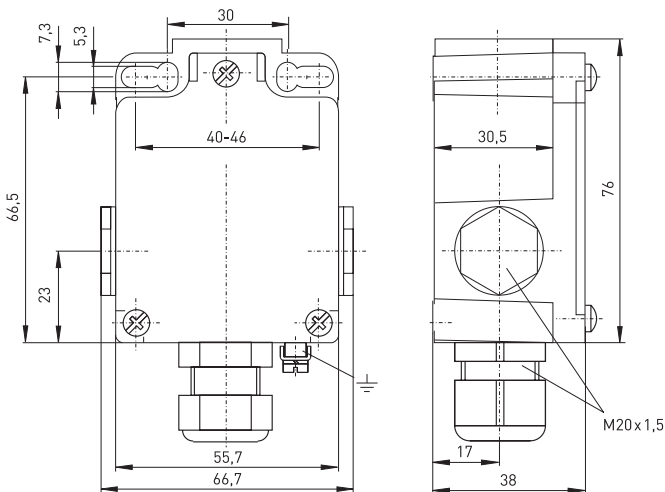
## // EEX 355



### Technical data

<b>Standards</b>	IEC/EN 60947-5-1; EN 1088; EN 50014; EN 50018; EN 50019; EN 50281-1-1
<b>Design</b>	mounting dimensions and switching points to DIN EN 50 041
<b>Enclosure</b>	zinc die casting, enamelled
<b>Switch insert</b>	Ex 95
<b>Protection class</b>	IP 67 according to EN 60529
<b>Contact material</b>	silver
<b>Switching system</b>	slow action, positive break NC contact $\ominus$
<b>Switching elements</b>	change-over contact with double break Zb or 2 NC contacts, galvanically separated contact bridges
<b>Termination</b>	M3 screw clamps
<b>Cable section</b>	max. $1.5 \text{ mm}^2$ (incl. conductor ferrules)
<b>Cable length</b>	-
<b><math>U_{imp}</math></b>	4 kV
<b><math>U_i</math></b>	250 V
<b><math>I_{the}</math></b>	6 A
<b><math>I_e/U_e</math></b>	6 A/400 VAC; 0.25 A/230 VDC
<b>Utilisation category</b>	AC-15, DC-13
<b>Max. fuse rating</b>	6 A gL/gG D-fuse
<b>Ambient temperature</b>	$-20^\circ\text{C} \dots +60^\circ\text{C}$
<b>Mechanical life</b>	> 1 million operations
<b>Switching frequency</b>	1800/h
<b>Repeat accuracy</b>	$\pm 0.1 \text{ mm}$
<b>Contact gap</b>	max. $2 \times 3.5 \text{ mm}$
<b>Ex certification</b>	$\oplus$ II 2G EEx de IIC T6, II 2D IP67 T80°C

### Approvals



### Ordering details

**EEx 355 S 10/1S-3D**

Equipment Categ. 3D, dust  
Ex zone 22  
Contact type 10/1S, (20, UE)  
Actuator S (R, 4VH, 4V7H-2138, etc.)  
Series  
Ex certified component

# Ex position switches with safety function

## // Series EEx 355, actuator

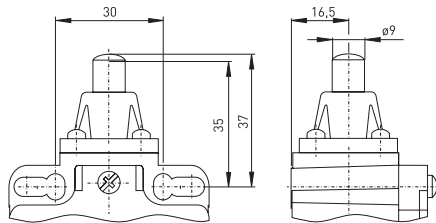
### Features/Options

- Actuator type B to DIN EN 50 041
- Actuating speed 0.5 m/s with an actuating angle of  $\alpha = 0^\circ$

### Features/Options

- Actuator type C to DIN EN 50 041
- Actuating speed 0.5 m/s with an actuating angle of  $\alpha = 30^\circ$

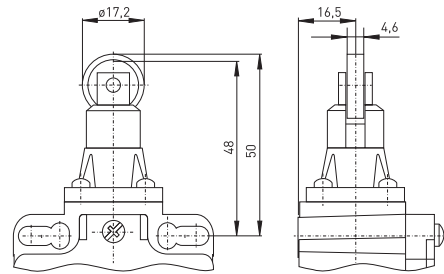
## // Plunger S



Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<b>EEx 355 S 10/1S</b> 
1 NC/1 NO contact with overlapping	<b>EEx 355 S UE</b> 
2 NC contacts	<b>EEx 355 S 20</b> 

## // Roller plunger R



Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<b>EEx 355 R 10/1S</b> 
1 NC/1 NO contact with overlapping	<b>EEx 355 R UE</b> 
2 NC contacts	<b>EEx 355 R 20</b> 



# Ex position switches with safety function

## // Series EEx 355, actuator

### Features/Options

- Actuating speed 0.5 m/s with an actuating angle of  $\alpha = 30^\circ$
- Actuation parallel to switch from right
- Wear-resistant thermoplastic roller
- Actuator heads can be repositioned in 4 x 90° steps

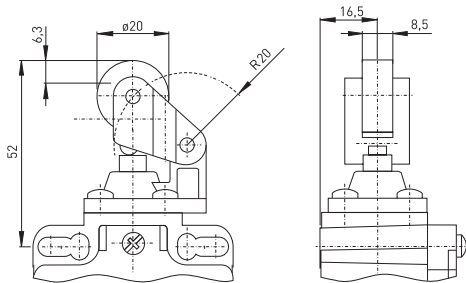
### Note

Actuation from the left should be avoided since this reduces the mechanical life of the position switch.

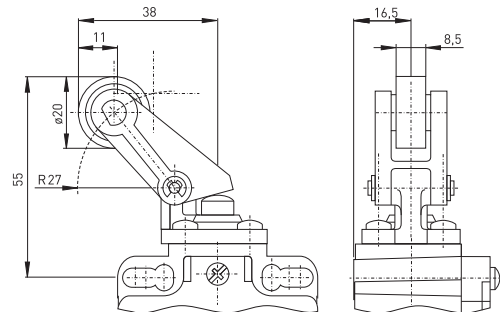
### Features/Options

- Actuating speed 0.5 m/s with an actuating angle of  $\alpha = 30^\circ$
- Actuation parallel to switch from below
- Wear-resistant thermoplastic roller
- Actuator heads can be repositioned in 4 x 90° steps

### // Roller lever 1K



### // Angled roller lever 3K



92

Contact variants: switch travel/contacts

Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<b>EEx 355 1K 10/1S</b> 
1 NC/1 NO contact with overlapping	<b>EEx 355 1K UE</b> 
2 NC contacts	<b>EEx 355 1K 20</b> 

	Slow action
1 NC/1 NO contact	<b>EEx 355 3K 10/1S</b> 
1 NC/1 NO contact with overlapping	<b>EEx 355 3K UE</b> 
2 NC contacts	<b>EEx 355 3K 20</b> 



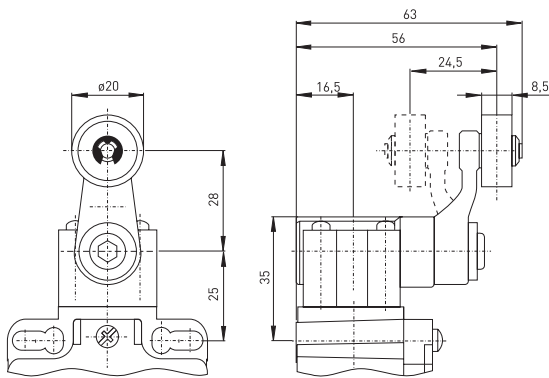
**Features/Options**

- Actuator type A to DIN EN 50 041
- Actuating speed 2.5 m/s with an actuating angle of  $\alpha = 30^\circ$
- Wear-resistant thermoplastic roller
- Actuator heads can be repositioned in 4 x 90° steps

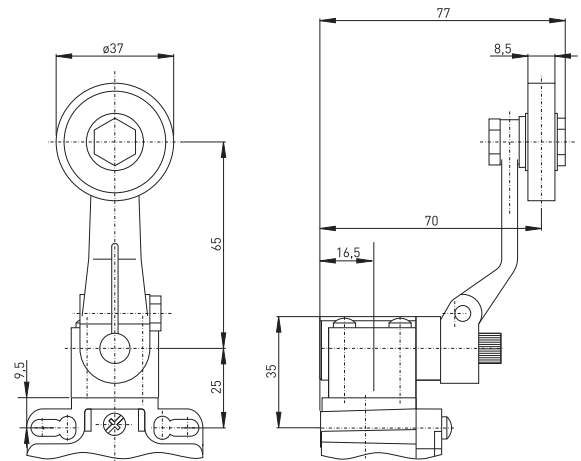
**Features/Options**

- Actuating speed 2.5 m/s with an actuating angle of  $\alpha = 30^\circ$
- Wear-resistant thermoplastic roller
- Actuator heads can be repositioned in 4 x 90° steps

// Rocking roller lever 4VH



// Long rocking roller lever 4V3H



Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<p><b>EEx 355 4VH 10/1S</b></p> <p>85° 25°0°25° 85°   23-24            30°15°15°30° 11-12</p>
1 NC/1 NO contact with overlapping	<p><b>EEx 355 4VH UE</b></p> <p>85° 20°0°20° 85°   23-24            40°25°25°40° 15-16</p>
2 NC contacts	<p><b>EEx 355 4VH 20</b></p> <p>85° 30° 0° 30° 85°   11-12            15°15° 21-22</p>

Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<p><b>EEx 355 4V3H 10/1S</b></p> <p>85° 25°0°25° 85°   23-24            30°15°15°30° 11-12</p>
1 NC/1 NO contact with overlapping	<p><b>EEx 355 4V3H UE</b></p> <p>85° 20°0°20° 85°   23-24            40°25°25°40° 15-16</p>
2 NC contacts	<p><b>EEx 355 4V3H 20</b></p> <p>85° 30° 0° 30° 85°   11-12            15°15° 21-22</p>



# Ex position switches with safety function

## // Series EEx 355, actuator

### Features/Options

- Actuating speed 2.5 m/s with an actuating angle of  $\alpha = 30^\circ$
- Wear-resistant thermoplastic roller
- Actuator heads can be repositioned in 4 x 90° steps
- For safety duties  $\ominus$ , positive break, ordering suffix -2138

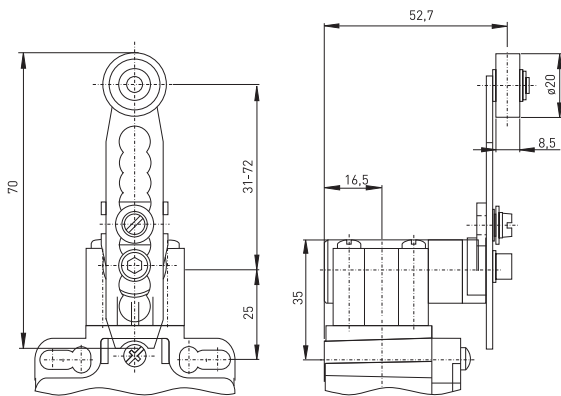
### Note

Positive break angle  $\oplus$  only valid for EEx T4V7H 356 1Ö/1S-2138

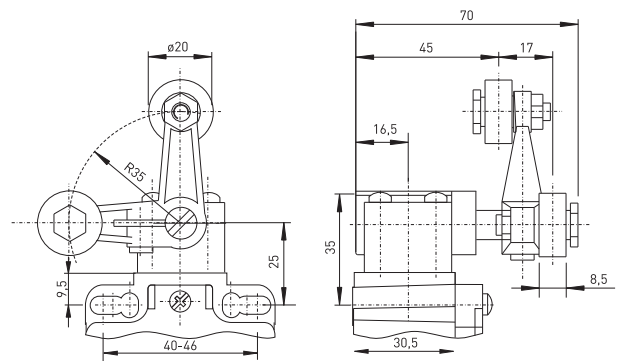
### Features/Options

- Actuating speed 2.5 m/s with an actuating angle of  $\alpha = 30^\circ$
- Wear-resistant thermoplastic roller
- Actuator heads can be repositioned in 4 x 90° steps

## // Adjustable rocking lever 4V7H-2138



## // Forked lever latching 3V4D



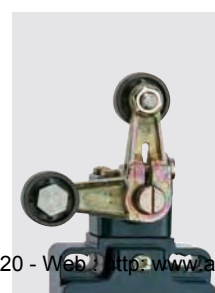
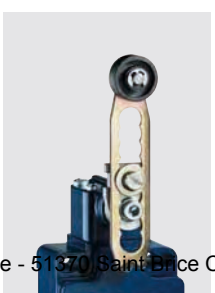
94

Contact variants: switch travel/contacts

Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	EEx 355 4V7H 1Ö/1S-2138 
1 NC/1 NO contact with overlapping	EEx 355 4V7H UE-2138 
2 NC contacts	EEx 355 4V7H 2Ö-2138 

	Slow action
1 NC/1 NO contact	EEx 355 3V4D 1Ö/1S 
1 NC/1 NO contact with overlapping	EEx 355 3V4D UE 
2 NC contacts	EEx 355 3V4D 2Ö 



PRODUCTION PROCESS ASSEMBLY  
MOULDED SWITCHES



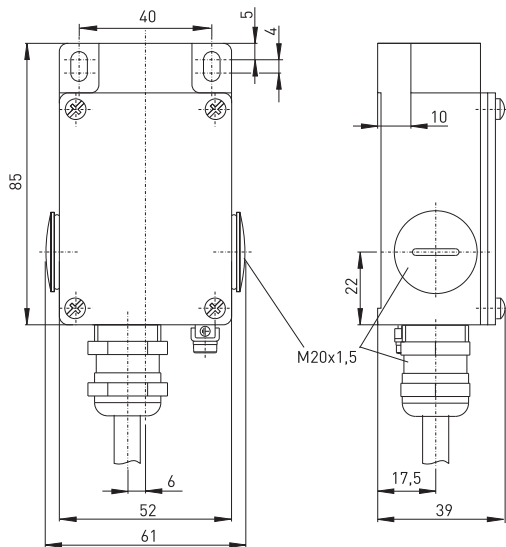
# Ex position switches with safety function

## // Series EEx 61

### Features/Options

- Ex zone 1 and 2, as well as 21 and 22
- Metal enclosure
- Pre-wired cable available in various lengths
- Available with actuator heads repositioned by 4 x 90°

## // EEX 61



## Technical data

<b>Standards</b>	IEC/EN 60947-5-1; EN 1088; EN 50014; EN 50018; EN 50019; EN 50281-1-1
<b>Design</b>	-
<b>Enclosure</b>	aluminium die casting, enamelled
<b>Cover</b>	steel, enamelled
<b>Switch insert</b>	EEx 14
<b>Protection class</b>	IP 65 according to IEC/EN 60529
<b>Contact material</b>	silver
<b>Switching system</b>	slow action, positive break NC contact ⊖
<b>Switching elements</b>	change-over contact with double break Zb or 2 NC contacts, galvanically separated contact bridges
<b>Termination</b>	cable H05VV-F
<b>Cable section</b>	4 x 0.75 mm <sup>2</sup>
<b>Cable length</b>	3 m
<b>U<sub>imp</sub></b>	4 kV
<b>U<sub>i</sub></b>	250 V
<b>I<sub>the</sub></b>	6 A
<b>I<sub>e</sub>/U<sub>e</sub></b>	6 A/250 VAC; 0.25 A/230 VDC
<b>Utilisation category</b>	AC-15, DC-13
<b>Max. fuse rating</b>	6 A gL/gG D-fuse
<b>Ambient temperature</b>	-20 °C ... +65 °C
<b>Mechanical life</b>	> 1 million operations
<b>Switching frequency</b>	1800/h
<b>Repeat accuracy</b>	± 0.1 mm
<b>Contact gap</b>	max. 2 x 4.5 mm
<b>Ex certification</b>	⊕ II 2G EEx d IIC T6, II 2D IP65 T80°C
<b>Approvals</b>	PTB 03 ATEX 1070 X* *referring to the switch insert

## Ordering details

**EEx 61 W 10/1S**

Contact type 10/1S  
Actuator W (WH, WHL, WPH, etc. ...)  
Series  
Ex certified component

# Ex position switches with safety function

## // Series EEx 61, actuator

### Features/Options

- Actuating speed 0.5 m/s with an actuating angle of 15°
- Exact repeatability of switching point
- Collar to protect against the entry of foreign bodies

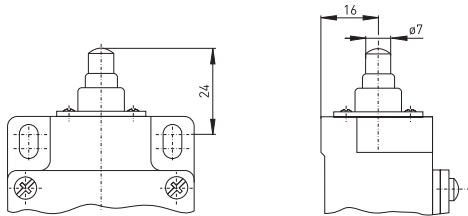
### Features/Options

- Actuating speed 0.5 m/s with an actuating angle of  $\alpha = 40^\circ$  and  $\beta = 25^\circ$
- Wear-resistant thermoplastic roller
- Available with actuator repositioned by  $4 \times 90^\circ$
- Collar to protect against the entry of foreign bodies
- With metal roller available on request

### Note

Actuation from the left should be avoided since this reduces the mechanical life of the position switch.

## // Plunger W

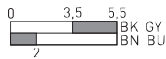


Contact variants: switch travel/contacts

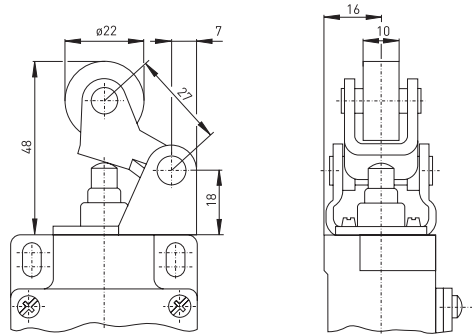
### Slow action

1 NC/1 NO contact

EEx 61 W 10/1S



## // Roller lever with collar WH

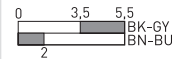


Contact variants: switch travel/contacts

### Slow action

1 NC/1 NO contact

EEx 61 WH 10/1S





# Ex position switches with safety function

## // Series EEx 61, actuator

### Features/Options

- Actuating speed 0.5 m/s with an actuating angle of  $\alpha = 30^\circ$
- Wear-resistant thermoplastic roller
- Available with actuator repositioned by  $4 \times 90^\circ$
- Collar to protect against the entry of foreign bodies
- With metal roller available on request

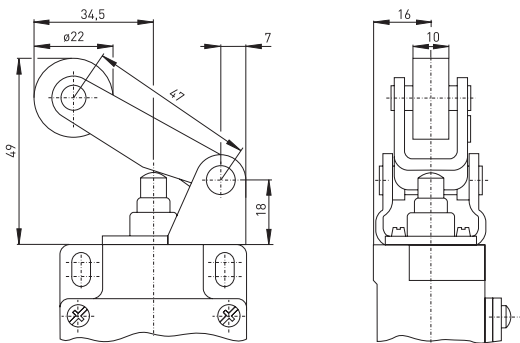
### Features/Options

- Actuating speed 0.5 m/s with an actuating angle of  $\alpha = 30^\circ$
- Actuation parallel to switch from below
- Wear-resistant thermoplastic roller
- Available with actuator repositioned by  $4 \times 90^\circ$
- Collar to protect against the entry of foreign bodies
- With metal roller available on request

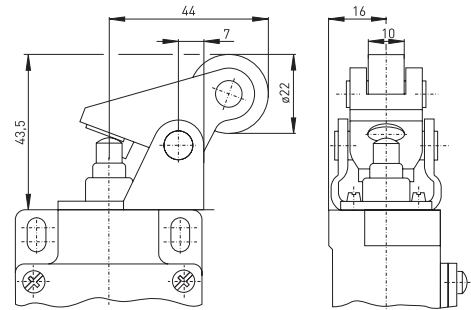
### Note

Actuation from the left should be avoided since this reduces the mechanical life of the position switch.

### // Long roller lever with collar WHL



### // Parallel roller lever with collar WPH



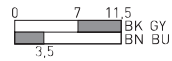
98

Contact variants: switch travel/contacts

#### Slow action

1 NC/1 NO contact

EEx 61 WHL 1Ö/1S

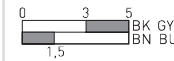


Contact variants: switch travel/contacts

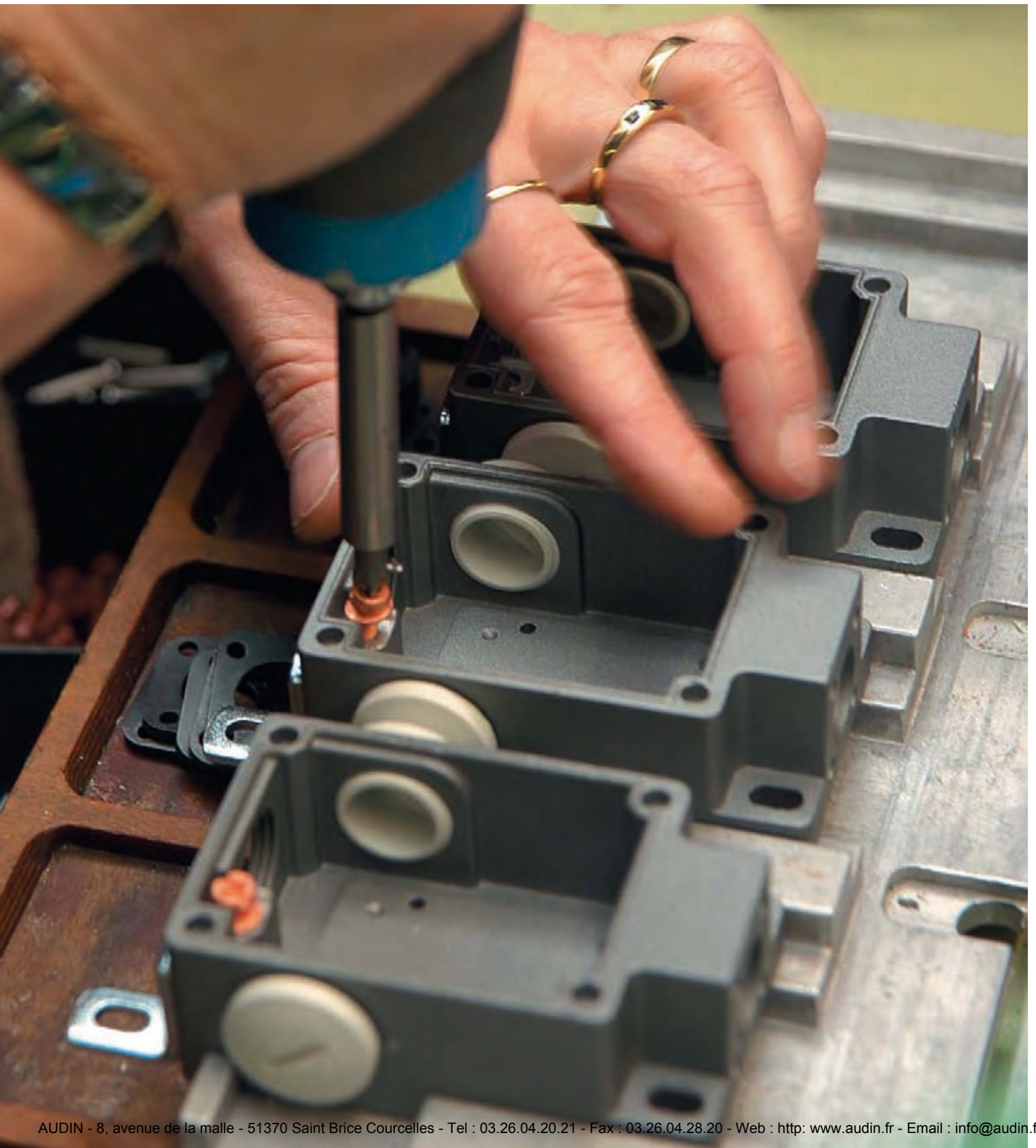
#### Slow action

1 NC/1 NO contact

EEx 61 WPH 1Ö/1S



PRODUCTION PROCESS ASSEMBLY  
MOUNTING OF GROUND SCREW





## Ex safety switches for hinged guards

### Thermoplastic enclosure

// Series EEx 95 T.C

from page 104

// Series EEx 13 SB

from page 105

// Series EEx 95 SB

from page 106

### Metal enclosure

// Series EEx 335 V.S

from page 108

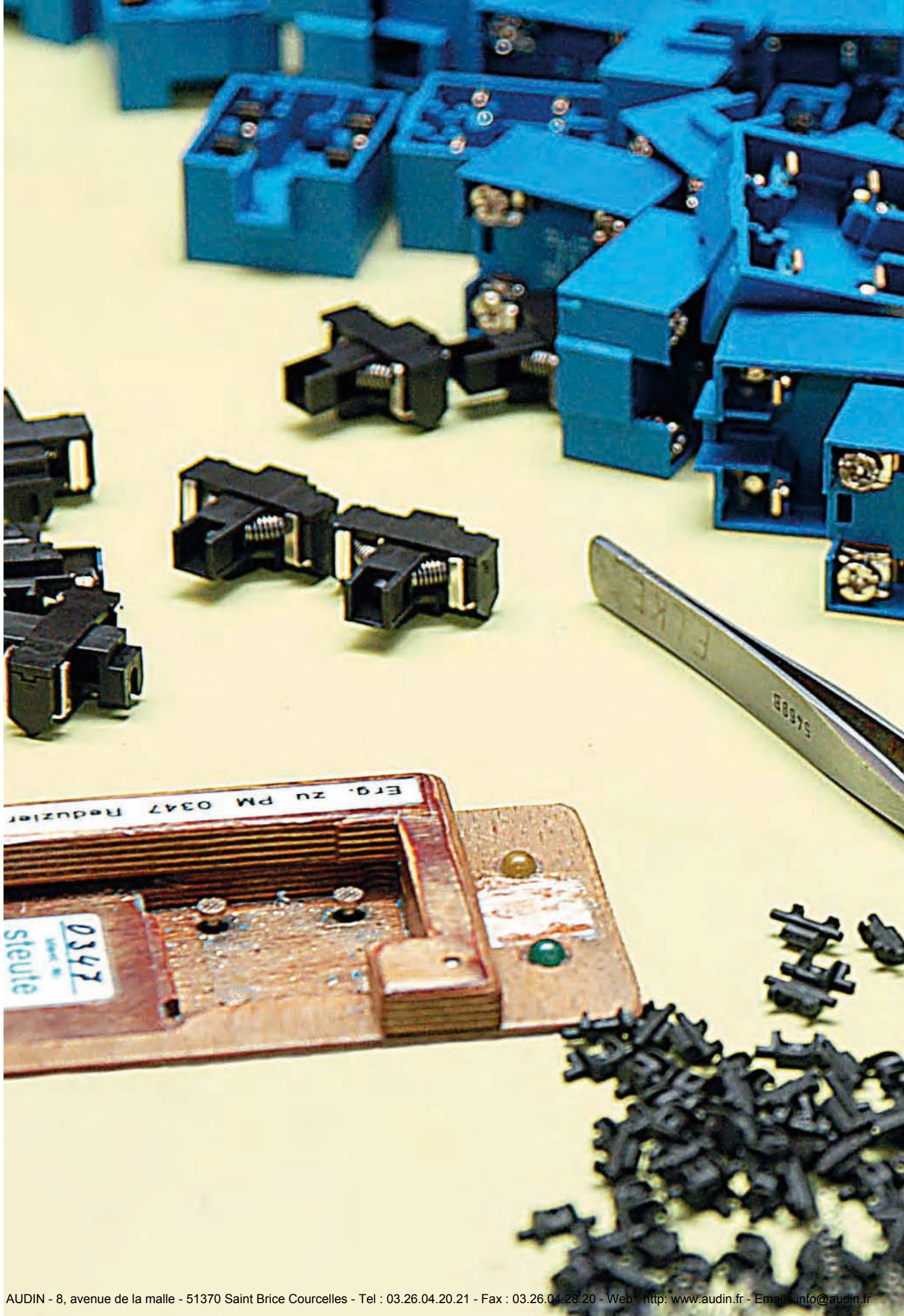
// Series EEx 355 V.S

from page 109

101



EEx 13 SB



# Ex safety switches for hinged guards

## Range of application

These Ex safety switches are suitable for hinged safety guards, which need to be closed in order to guarantee the necessary operational safety.

The variety of requirements to be found in practice can be met by means of the wide range of safety switches for hinged guard doors.

Depending on the particular version of the switch, small doors and service flaps, as well as heavy hinged doors on machinery and plants, can be protected in such a way as to provide for easy set-up and maintenance.

## Design and operating principle

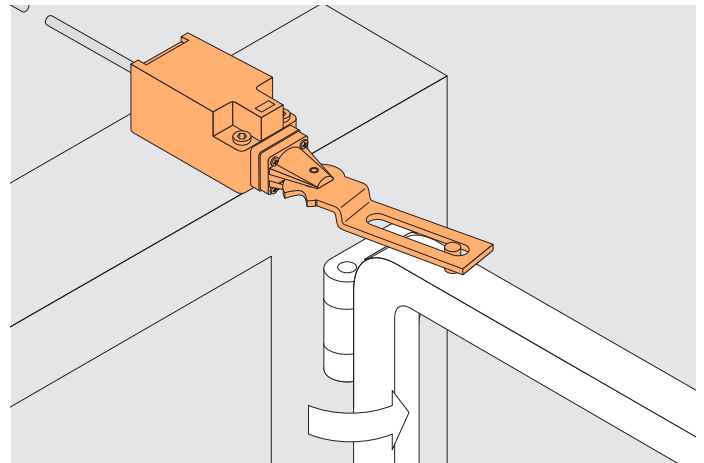
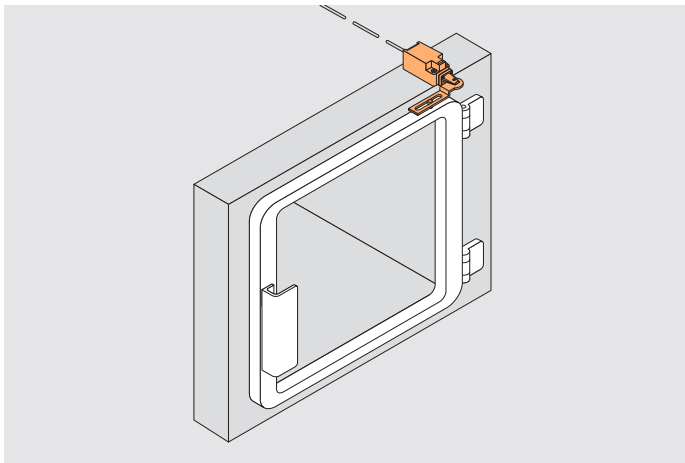
A general advantage of the Ex safety switches shown here is the integral cam within the safety switch. The requirements of EN 1088, such as positive linkage between cam and actuator, as well as protection against tampering, are thus fulfilled.

This combination within the switch provides a cost advantage for the user in avoiding the necessity of mounting a specially designed cam. These safety switches are provided with slow action.

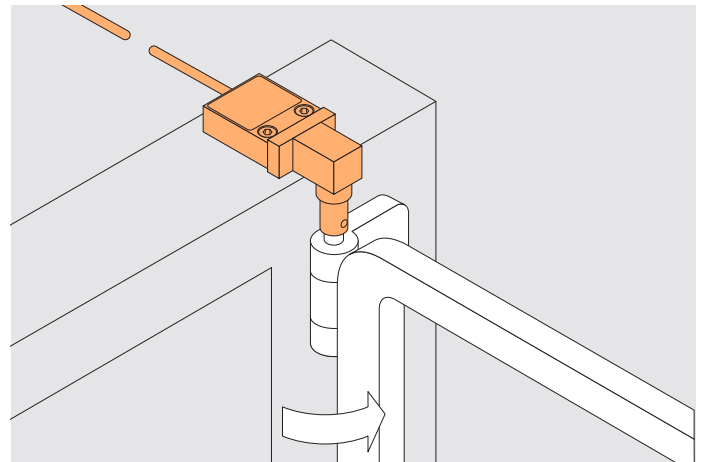
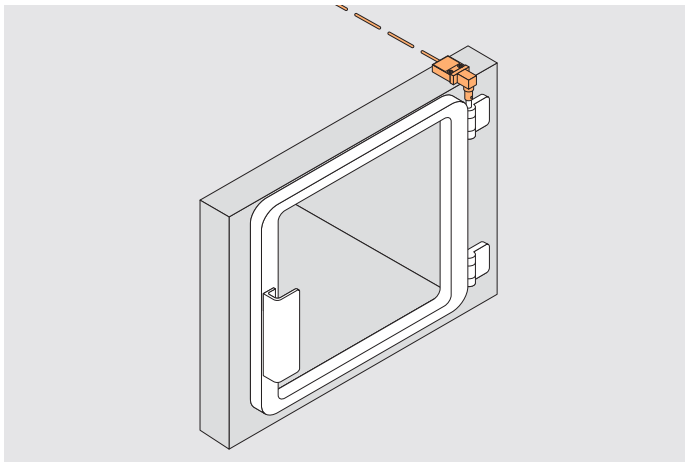
All Ex safety switches for hinged guards shown in this chapter bear the CE mark according to the Machinery Directive 98/37/EC and according to ATEX 94/9/EC. The Ex safety switches for hinged guards per equipment category 3D bear the CE mark without the number of the notified body and have received a CE declaration of manufacturer conformity.

## Application

### safety flap switch on sliding guard



### safety hinge switch on sliding guard



# Ex safety switches for hinged guards

## // Series EEx 95 T.C

### Features/Options

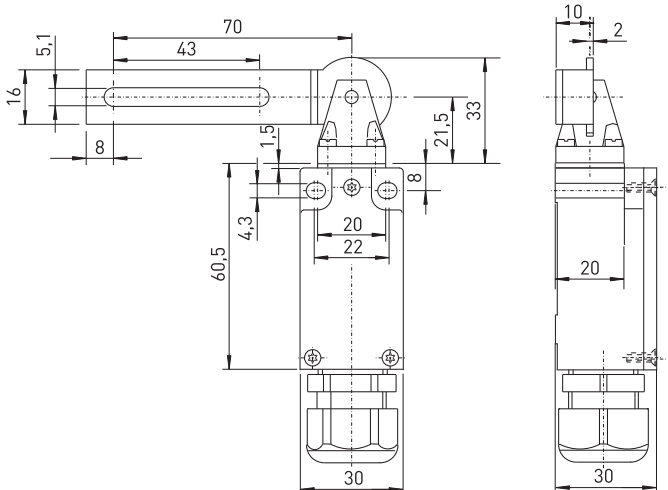
- Ex zone 1 and 2, as well as 21 and 22
- Double insulated  $\square$
- Slow action  $\ominus$ , change-over contact with double break
- Cable entry M20 x 1.5
- Wiring compartment
- With gold-plated contacts available on request
- Mounting details to EN 50 047
- Actuator head can be repositioned in factory in 4 x 90° steps
- Special version only for equipment category 3D, available for dust Ex zone 22

## // EEX 95 T.C



### Technical data

<b>Standards</b>	IEC/EN 60947-5-1; EN 1088; BG-GS-ET-15; EN 50 014; EN 50 018; EN 50 019; EN 50281-1-1
<b>Design</b>	mounting details to DIN EN 50 047
<b>Enclosure</b>	glass-fibre reinforced, shock-proof thermoplastic, self-extinguishing UL 94-V0
<b>Switch insert</b>	Ex 95
<b>Protection class</b>	IP 67 according to IEC/EN 60529
<b>Contact material</b>	silver
<b>Switching system</b>	slow action, positive break NC contact $\ominus$
<b>Switching elements</b>	change-over contact with double break Zb or 2 NC contacts, galvanically separated contact bridges
<b>Termination</b>	M3 screw clamps
<b>Cable section</b>	max. 1.5 mm <sup>2</sup> (incl. conductor ferrules)
<b>Cable length</b>	-
<b>Cable entry</b>	M20 x 1.5
<b>U<sub>imp</sub></b>	4 kV
<b>U<sub>i</sub></b>	250 V
<b>I<sub>the</sub></b>	6 A
<b>I<sub>e</sub>/U<sub>e</sub></b>	6 A/250 VAC; 0.25 A/230 VDC
<b>Utilisation category</b>	AC-15, DC-13
<b>Max. fuse rating</b>	6 A gL/gG D-fuse
<b>Ambient temperature</b>	-20 °C ... +60 °C
<b>Mechanical life</b>	> 1 million operations
<b>Ex certification</b>	$\oplus$ II 2G EEx de IIC T6, II 2D IP67 T80°C
<b>Approvals</b>	DMT 01 ATEX E 118



### Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<b>EEx 95 T5C 10/1S</b> 
1 NC/1 NO contact with overlapping	<b>EEx 95 T5C UE</b> 
2 NC contacts	<b>EEx 95 T5C 2Ö</b> 

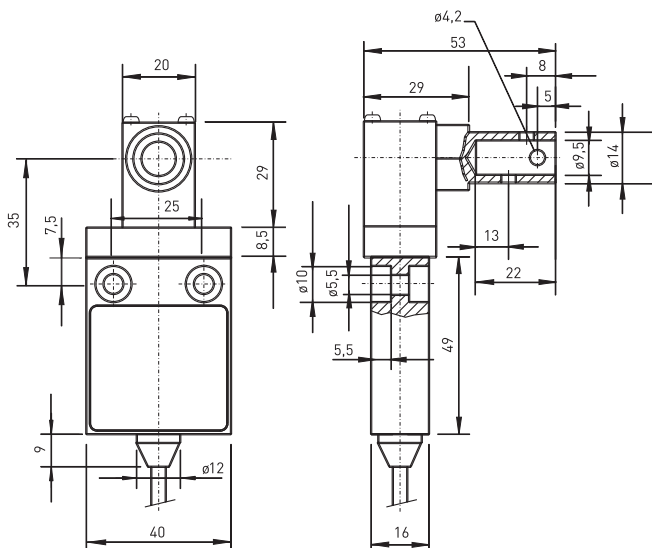
### Ordering details

<b>EEx 95 T5C 10/1S-3D</b>	Equipment Categ. 3D, dust Ex zone 22
	Contact type 10/1S, (2Ö, UE)
	Actuator T5C, 5 Ride-side version (3 Left-side, 4 Swivel doors)
	Series
	Ex certified component

# Ex safety switches for hinged guards

## // Series EEx 13 SB

### // EEX 13 SB



#### Features/Options

- Ex zone 1 and 2, as well as 21 and 22
- Double insulated □
- Version with cable entry on side available
- With pre-wired cable, cable length 1 metre
- With gold-plated contacts available on request
- Shaft bore  $\varnothing$  10 mm available
- Actuating shaft can be turned 360°
- Special version only for equipment category 3D, available for dust Ex zone 22
- Inmetro approval for Brazil to be ordered separately

#### Technical data

<b>Standards</b>	IEC/EN 60947-5-1; EN 1088; BG-GS-ET-15; EN 50 014; EN 50 018; EN 50 019; EN 50281-1-1
<b>Enclosure</b>	glass-fibre reinforced, shock-proof thermoplastic, self-extinguishing UL 94-V0
<b>Switch insert</b>	-
<b>Protection class</b>	IP 65 according to IEC/EN 60529
<b>Contact material</b>	silver
<b>Switching system</b>	slow action, positive break NC contact $\ominus$
<b>Switching elements</b>	change-over contact with double break Zb or 2 NC contacts, galvanically separated contact bridges
<b>Termination</b>	cable H05VV-F
<b>Cable section</b>	4 x 0.75 mm <sup>2</sup>
<b>Cable length</b>	1 m
<b>Cable entry</b>	-
<b>U<sub>imp</sub></b>	4 kV
<b>U<sub>i</sub></b>	250 V
<b>I<sub>the</sub></b>	6 A
<b>I<sub>e</sub>/U<sub>e</sub></b>	6 A/250 VAC; 4 A/24 VDC
<b>Utilisation category</b>	AC-15, DC-13
<b>Max. fuse rating</b>	6 A gL/gG D-fuse
<b>Ambient temperature</b>	-20 °C ... +65 °C
<b>Mechanical life</b>	> 1 million operations
<b>Ex certification</b>	⊕ II 2G EEx d IIC T6, II 2D IP65 T80°C
<b>Approvals</b>	PTB 03 ATEX 1068 X

105



#### Contact variants: switch travel/contacts

	<b>Slow action</b>
1 NC/1 NO contact	<b>EEx 13 SB 10/15</b>
	180° 15° 0° 15° 180° BK-GY BN-BU

#### Ordering details

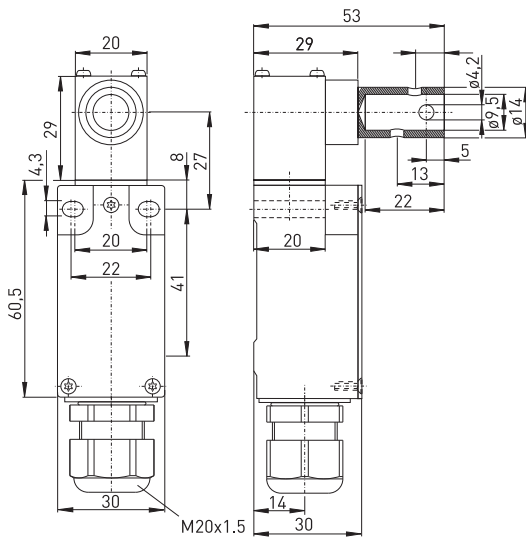
<b>EEx 13 SB 10/15-S-1m-3D</b>
Equipment Categ. 3D, dust Ex zone 22
Cable length 1 m, (2 m, 5 m, 10 m)
Cable outlet on side
Contact type 10/15
Actuator SB
Series
Ex certified component



# Ex safety switches for hinged guards

## // Series EEx 95 SB

### // EEX 95 SB



#### Features/Options

- Ex zone 1 and 2, as well as 21 and 22
- Double insulated □
- Slow action ⊖, change-over contact with double break
- With gold-plated contacts available on request
- Mounting details to EN 50 047
- Actuator head can be repositioned in factory in 4 x 90° steps
- Shaft bore ø 10 mm available
- Actuating shaft can be turned 360°
- Special version only for equipment category 3D, available for dust Ex zone 22

#### Technical data

<b>Standards</b>	IEC/EN 60947-5-1; EN 1088; BG-GS-ET-15; EN 50 014; EN 50 018; EN 50 019; EN 50281-1-1
<b>Design</b>	mounting details to DIN EN 50 047
<b>Enclosure</b>	glass-fibre reinforced, shock-proof thermoplastic, self-extinguishing UL 94-V0
<b>Switch insert</b>	Ex 95
<b>Protection class</b>	IP 67 according to IEC/EN 60529
<b>Contact material</b>	silver
<b>Switching system</b>	slow action, positive break NC contact ⊖
<b>Switching elements</b>	change-over contact with double break Zb or 2 NC contacts, galvanically separated contact bridges
<b>Termination</b>	M3 screw clamps
<b>Cable section</b>	max. 1.5 mm <sup>2</sup> (incl. conductor ferrules)
<b>Cable length</b>	-
<b>Cable entry</b>	M20 x 1.5
<b>U<sub>imp</sub></b>	4 kV
<b>U<sub>i</sub></b>	250 V
<b>I<sub>the</sub></b>	6 A
<b>I<sub>e</sub>/U<sub>e</sub></b>	6 A/250 VAC; 0.25 A/230 VDC
<b>Utilisation category</b>	AC-15, DC-13
<b>Max. fuse rating</b>	6 A gL/gG D-fuse
<b>Ambient temperature</b>	-20 °C ... +60 °C
<b>Mechanical life</b>	> 1 million operations
<b>Ex certification</b>	⊕ II 2G EEx de IIC T6, II 2D IP67 T80°C
<b>Approvals</b>	DMT 01 ATEX E 118

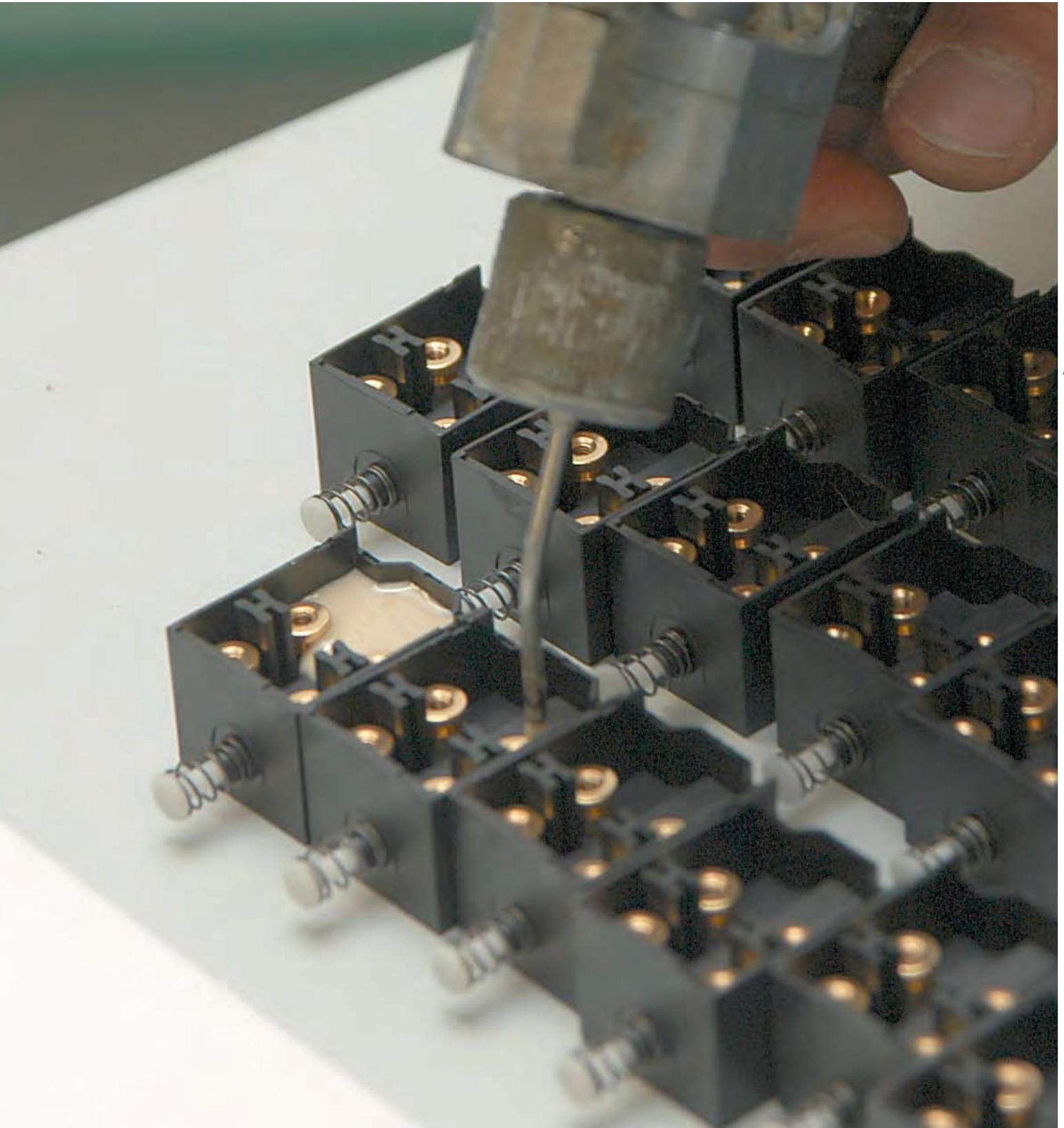
#### Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<b>EEx 95 SB 10/1S</b> 180° 16°0°16° 180° 23-24 20°10°10°20° 11-12
2 NC contacts	<b>EEx 95 SB 20</b> 180° 20°0°20° 180° 11-12 10° 10° 21-22
1 NC/1 NO contact with overlapping	<b>EEx 95 SB UE</b> 180° 11°0°11° 180° 23-24 27°17°17°27° 15-16

#### Ordering details

<b>EEx 95 SB 10/1S-3D</b>	Equipment Categ. 3D, dust Ex zone 22
	Contact type 10/1S, (20, UE)
	Actuator SB
	Series
	Ex certified component

PRODUCTION PROCESS MOUNTING  
MOULDING OF SWITCH INSERTS FOR POSITION SWITCHES



# Ex safety switches for hinged guards

## // Series EEx 335 V.S

### Features/Options

- Ex zone 1 and 2, as well as 21 and 22
- Wiring compartment
- With gold-plated contacts available on request
- Mounting details to DIN EN 50 041
- Actuator head can be repositioned in 4 x 90° steps
- Actuating shaft can be turned 360°
- Shaft bore  $\varnothing$  10 mm
- Special version only for equipment category 3D, available for dust Ex zone 22
- Gost approval for Russia to be ordered separately

## // EEX 335 V.S

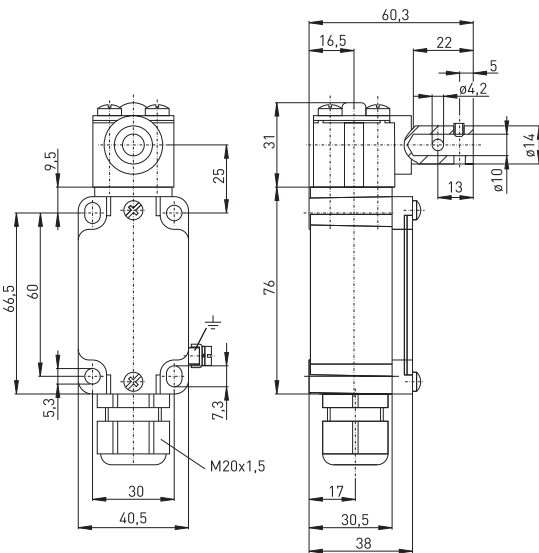


### Technical data

<b>Standards</b>	IEC/EN 60947-5-1; EN 1088; BG-GS-ET-15; EN 50 014; EN 50 018; EN 50 019; EN 50281-1-1
<b>Design</b>	mounting details to DIN EN 50 041
<b>Enclosure</b>	zinc die casting, enamelled
<b>Switch insert</b>	Ex 95
<b>Protection class</b>	IP 65 according to IEC/EN 60529
<b>Contact material</b>	silver
<b>Switching system</b>	slow action, positive break NC contact $\ominus$
<b>Switching elements</b>	change-over contact with double break Zb or 2 NC contacts, galvanically separated contact bridges
<b>Termination</b>	M3 screw clamps
<b>Cable section</b>	max. 1.5 mm <sup>2</sup> (incl. conductor ferrules)
<b>Cable length</b>	-
<b>Cable entry</b>	M20 x 1.5
<b>U<sub>imp</sub></b>	4 kV
<b>U<sub>i</sub></b>	250 V
<b>I<sub>the</sub></b>	6 A
<b>I<sub>e</sub>/U<sub>e</sub></b>	6 A/250 VAC; 0.25 A/230 VDC
<b>Utilisation category</b>	AC-15, DC-13
<b>Max. fuse rating</b>	6 A gL/gG D-fuse
<b>Ambient temperature</b>	-20 °C ... +60 °C
<b>Mechanical life</b>	> 1 million operations
<b>Ex certification</b>	⊕ II 2G EEx de IIC T6, II 2D IP65 T80°C
<b>Approvals</b>	DMT 01 ATEX E 178



108



### Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<b>EEx 335 V.S 1Ö/1S</b> 180° 10°0°10° 180° 23-24 11-12 12° 8°8°12°
2 NC contacts	<b>EEx 335 V.S 2Ö</b> 180° 12°0°12° 180° 11-12 21-22 8°8°

### Ordering details

<b>EEx 335 V10S 1Ö/1S-3D</b>	Equipment Categ. 3D, dust Ex zone 22
	Contact type 1Ö/1S, (2Ö)
	Actuator V10S shaft bore $\varnothing$ 10 mm
	Series
	Ex certified component

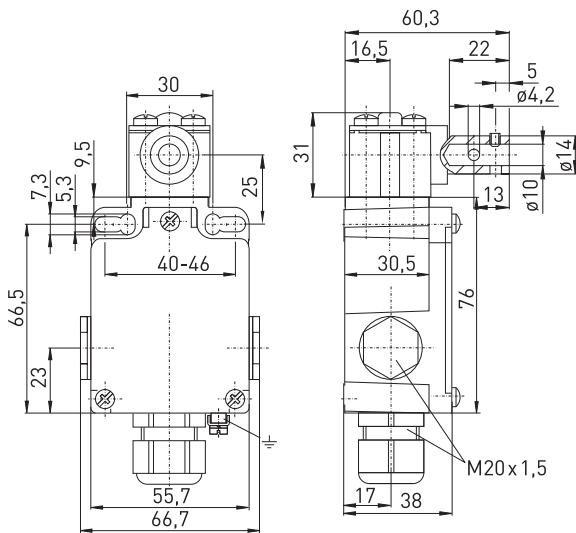
# Ex safety switches for hinged guards

## // Series EEx 355 V.S

### Features/Options

- Ex zone 1 and 2, as well as 21 and 22
- With gold-plated contacts available on request
- Mounting details to DIN EN 50 041
- Actuator head can be repositioned in 4 x 90° steps
- Actuating shaft can be turned 360°
- Shaft bore  $\varnothing$  10 mm
- Special version only for equipment category 3D, available for dust Ex zone 22
- Inmetro approval for Brazil and Gost approval for Russia to be ordered separately

## // EEX 355 V.S



## Technical data

<b>Standards</b>	IEC/EN 60947-5-1; EN 1088; BG-GS-ET-15; EN 50 014; EN 50 018; EN 50 019; EN 50281-1-1
<b>Design</b>	mounting details to DIN EN 50 041
<b>Enclosure</b>	zinc die casting, enamelled
<b>Switch insert</b>	Ex 95
<b>Protection class</b>	IP 67 according to IEC/EN 60529
<b>Contact material</b>	silver
<b>Switching system</b>	slow action, positive break NC contact $\ominus$
<b>Switching elements</b>	change-over contact with double break Zb or 2 NC contacts, galvanically separated contact bridges
<b>Termination</b>	M3 screw clamps
<b>Cable section</b>	max. 1.5 mm <sup>2</sup> (incl. conductor ferrules)
<b>Cable length</b>	-
<b>Cable entry</b>	M20 x 1.5
<b>U<sub>imp</sub></b>	4 kV
<b>U<sub>i</sub></b>	250 V
<b>I<sub>the</sub></b>	6 A
<b>I<sub>e</sub>/U<sub>e</sub></b>	6 A/250 VAC; 0.25 A/230 VDC
<b>Utilisation category</b>	AC-15, DC-13
<b>Max. fuse rating</b>	6 A gL/gG D-fuse
<b>Ambient temperature</b>	-20 °C ... +60 °C
<b>Mechanical life</b>	> 1 million operations
<b>Ex certification</b>	⊕ II 2G EEx de IIC T6, II 2D IP65 T80°C
<b>Approvals</b>	BVS 04 ATEX E 126



109

### Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<b>EEx 355 V.S 1Ö/1S</b> 180° 10° 0° 10° 180°  23-24 11-12 12° 8° 8° 12°
2 NC contacts	<b>EEx 355 V.S 2Ö</b> 180° 12° 0° 12° 180°  11-12 21-22 8° 8°

### Ordering details

<b>EEx 355 V10S 1Ö/1S-3D</b>	Equipment Categ. 3D, dust Ex zone 22
	Contact type 1Ö/1S, (2Ö)
	Actuator V10S shaft bore $\varnothing$ 10 mm
	Series
	Ex certified component





## Ex magnetic safety sensors

Cylindrical form

// Series EEx RC Si M30

from page 114

Rectangular form

// Series EEx RC Si 56

from page 116

Safety relay module

// Series SRM 21 RT2

from page 118



# Ex magnetic safety sensors

## Range of application

The Ex magnetic safety sensors of the EEx RC Si series are suitable for monitoring the position of sliding, hinged and removable protective doors. They can only be used for safety duties to DIN VDE 0660-209 in combination with a safety guard monitor for protection up to Control Category 4 to EN 954-1.

The use of magnetic safety sensors is of particular advantage in cases where extremely dirty conditions can occur or high hygienic standards need to be maintained. This is provided by the simplicity of cleaning the units. A further advantage is the facility for concealed mounting behind non-magnetic materials.

Working surfaces and storage areas can be arranged without the need for dust-collecting edges or other functionally required cutouts or projections. The magnetic safety sensors of the EEx RC Si series can also be applied in cases where a precise approach is not possible and greater tolerances are required.

## Design and operating principle

These devices comprise a multi-channel magnetic safety sensor and an actuating magnet. The magnetic safety sensors are actuated by a coded magnet without any mechanical contact. The devices can be selected with one NC and one NO contact or with two NC contacts. All described magnetic safety sensors are supplied with a pre-wired cable.

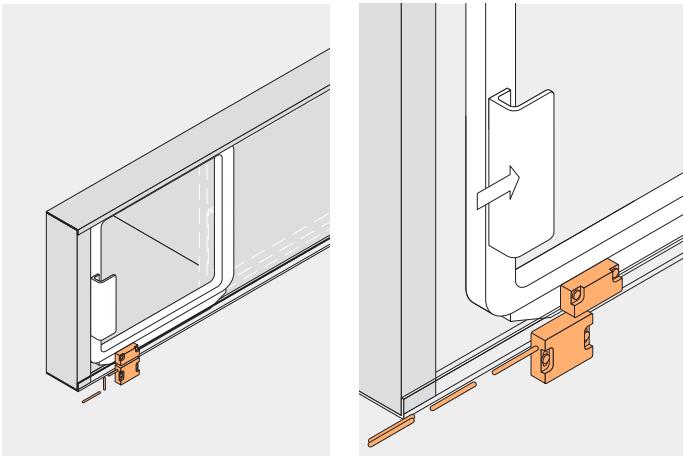
The magnetic safety sensors of the RC Si series are protected to protection class IP 67.

The mounting site of magnetic safety sensors must be free of magnetic fields.

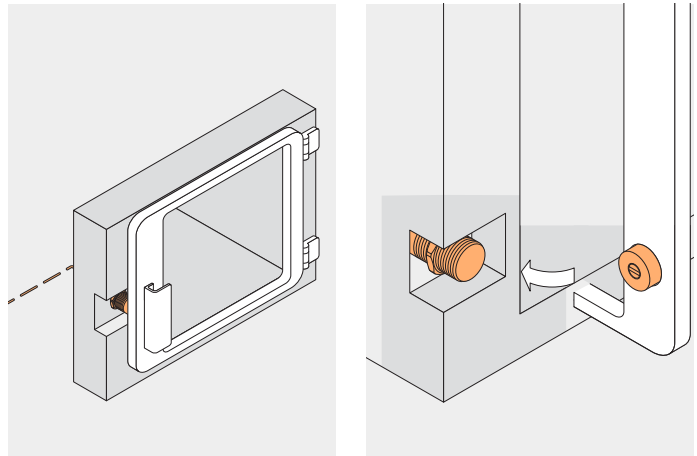
All Ex magnetic safety sensors shown in this chapter bear the CE mark according to the Machinery Directive 98/37/EC and according to ATEX 94/9/EC. The Ex safety switches for hinged guards per equipment category 3G/D bear the CE mark without the number of the notified body and have received a CE declaration of manufacturer conformity.

## Application

### On sliding doors



### On hinged doors

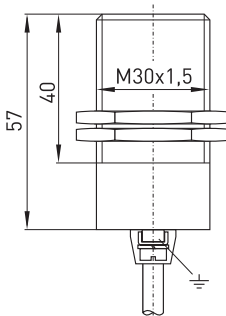




# Ex magnetic safety sensors, cylindrical form

## // Series EEx RC Si M30

### // EEX RC SI M30



#### Features/Options

- Ex zone 1 and 2, as well as 21 and 22
- Metal enclosure
- Available in stainless steel enclosure
- Reed contacts, coded
- Actuation from front
- Switching distance up to 8 mm
- Special version only for equipment category 3D, available for dust Ex zone 22
- Inmetro approval for Brazil to be ordered separately

#### Technical data

<b>Standards</b>	IEC/EN 60947-5-3; EN 954-1; EN 1088 EN 50014; EN 60079-18; EN 50281-1-1
<b>Enclosure</b>	aluminium brass, nikked or stainless steel 1.4571
<b>Actuator</b>	EEx MC 30
<b>Protection class</b>	IP 67 according to IEC/EN 60529
<b>Contact material</b>	-
<b>Switching system</b>	Reed contacts
<b>Contact types</b>	1NC/1 NO contact or 2 NC contacts
<b>Termination</b>	Pre-wired cable H05 VV-F 5G
<b>Cable section</b>	5 x 0.5 mm <sup>2</sup>
<b>Cable length</b>	1 m
<b>U<sub>imp</sub></b>	-
<b>Power consumption</b>	-
<b>Outputs</b>	-
<b>Utilisation category</b>	-
<b>I<sub>e</sub>/U<sub>e</sub></b>	-
<b>Switching voltage</b>	max. 30 VDC
<b>Switching current</b>	max. 125 mA, with LED: 20 mA
<b>Switching capacity</b>	max. 6 W/VA
<b>Voltage drop at I<sub>max</sub></b>	2.5 V, with LED: 3 V
<b>Short-circuit current</b>	max. 750 mA for 50 ms, with LED: 30 mA
<b>Max. fuse rating</b>	-
<b>Switching frequency</b>	max. 5 Hz
<b>Ambient temperature</b>	-20 °C ... +70 °C
<b>Mechanical life</b>	> 10 million operations
<b>Electrical life</b>	-
<b>Switching capacity</b>	-
<b>s<sub>ao</sub></b>	8 mm
<b>s<sub>ar</sub></b>	24 mm
<b>Ex certification</b>	⊕ II 2G EEx mb II T6, II 2D IP67 T80°C
<b>Approvals</b>	PTB 05 ATEX 2024 X

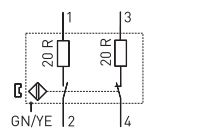


#### Contact variants: switch travel/contacts

##### Bi-directional actuation

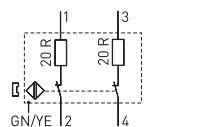
1 NC/1 NO contact

EEx RC Si M30 10/1S



2 NC contacts

EEx RC Si M30 20



#### Ordering details

EEx RC Si M30 10/1S-NIRO-B-LED-3G/D

Equipm. cat. 3G/D, gas Ex z. 2 a. dust Ex z. 22
Built-in LED
B Mounting thread M16 x 1.5
Stainless steel enclosure
1 NC/1 NO contact (20)
Series, Enclosure diameter M30
Safety
Magnetic sensor
Ex certified component

# Ex magnetic safety sensors, cylindrical form

## // Series EEx RC Si M30, Actuator

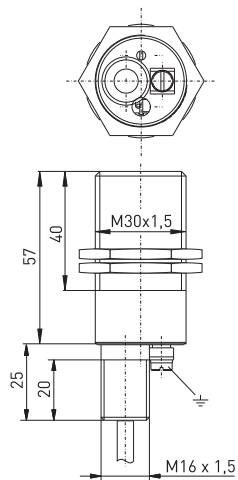
### Features/Options

- EEx RC Si M30-NIRO: stainless steel enclosure 1.4571, actuator available with stainless steel enclosure 1.4571: MC30-NIRO
- EEx RC Si M30-B: variant with mounting thread M16 x 1.5

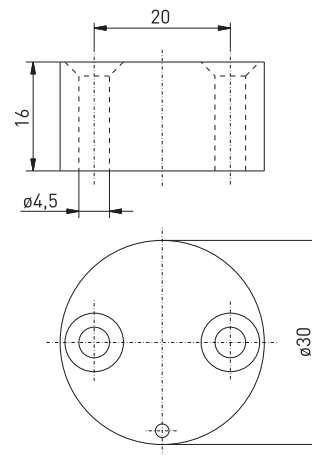
### Note

The actuator is not included in the delivery of the switches.

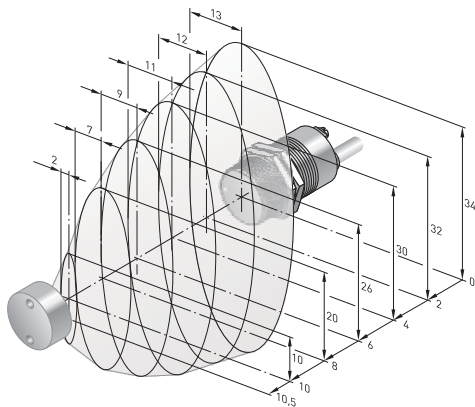
### // Mounting thread B



### // Actuating magnet EEx MC 30



### // Switching capacity



# Ex magnetic safety sensors, rectangular form

## // Series EEx RC Si 56

### Features/Options

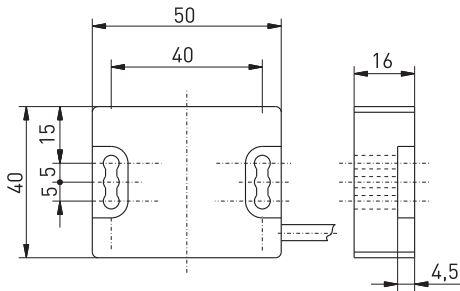
- Ex zone 1 and 21 in preparation
- Thermoplastic enclosure
- Long life
- Reed contacts, coded
- Actuation from front
- Switching distance up to 7 mm
- With pre-wired cable, cable length 1 metre

### // EEX RC SI 56



### Technical data

<b>Standards</b>	IEC/EN 60947-5-3; EN 954-1; EN 1088 EN 50014; EN 60079-18; EN 50281-1-1
<b>Enclosure</b>	glass-fibre reinforced thermoplastic
<b>Actuator</b>	EEx MC 56
<b>Protection class</b>	IP 67 according to IEC/EN 60529
<b>Contact material</b>	-
<b>Switching system</b>	Reed contacts
<b>Contact types</b>	1NC/1 NO contact or 2 NC contacts
<b>Termination</b>	Pre-wired cable AWG 24 UL
<b>Cable section</b>	4 x 0.22 mm <sup>2</sup>
<b>Cable length</b>	1 m
<b>U<sub>imp</sub></b>	-
<b>Power consumption</b>	-
<b>Outputs</b>	-
<b>Utilisation category</b>	-
<b>I<sub>e</sub>/U<sub>e</sub></b>	-
<b>Switching voltage</b>	max. 30 VDC
<b>Switching current</b>	max. 125 mA, with LED: 20 mA
<b>Switching capacity</b>	max. 6 W/VA
<b>Voltage drop at I<sub>max</sub></b>	2.5 V, with LED: 3 V
<b>Short-circuit current</b>	max. 750 mA for 50 ms, with LED: 30 mA
<b>Max. fuse rating</b>	-
<b>Switching frequency</b>	max. 5 Hz
<b>Ambient temperature</b>	-20 °C ... +70 °C
<b>Mechanical life</b>	> 10 million operations
<b>Electrical life</b>	-
<b>Switching capacity</b>	7 mm
<b>s<sub>ao</sub></b>	23 mm
<b>s<sub>ar</sub></b>	2 mm
<b>Axial misalignment</b>	2 mm
<b>Ex certification</b>	Ⓢ II 3G EEx nC II T6, II 3D IP67 T80°C
<b>Approvals</b>	-

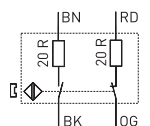


### Contact variants: switch travel/contacts

#### Bi-directional actuation

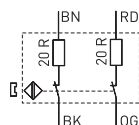
1 NC/1 NO contact

EEx RC Si 56 10/1S



2 NC contacts

EEx RC Si 56 20



### Ordering details

EEx RC Si 56 10/1S-LED-3G/D

Equipm. cat. 3G/D,  
gas Ex z. 2 a. dust  
Ex z. 22  
Built-in LED  
1 NC/1 NO contact (20)  
Series, Enclosure diameter M30  
Safety  
Magnetic sensor  
Ex certified component

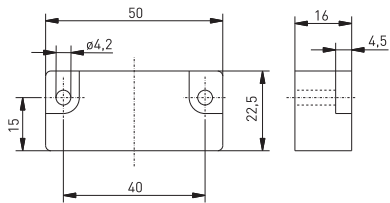
# Ex magnetic safety sensors, rectangular form

## // Series EEx RC Si 56, Actuator

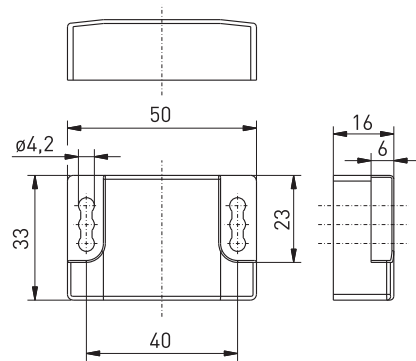
### Note

The actuator is not included in the delivery of the switches.

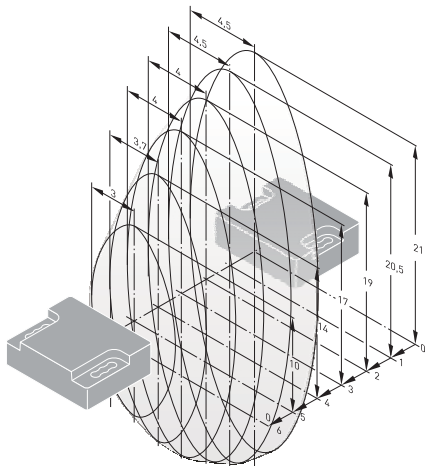
### // Actuating magnet EEx MC 56



### // Actuating magnet EEx MC 56-3



### // Switching capacity



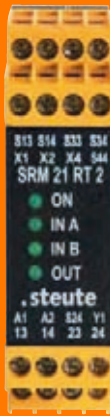
# Safety relay module

## // Series SRM 21 RT2

### Features/Options

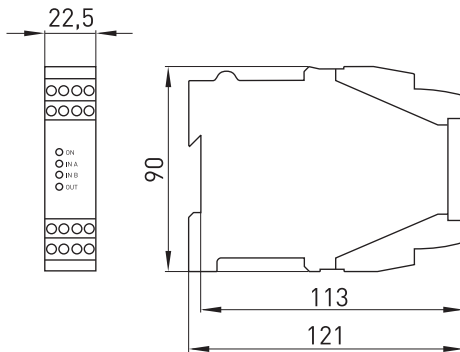
- Enclosure width: 22.5 mm
- 2 NC contacts or NC/NO combination can be connected
- Feedback circuit
- 2 enabling paths
- 1 transistor output
- Manual or automatic reset
- Switching position indication by LED

## // SRM 21 RT2



## Technical data

<b>Standards</b>	IEC/EN 60204 -1, EN 60947-5-1, EN 954-1, BG-GS-ET 20
<b>Enclosure</b>	black polycarbonate; polyamide terminal clamps, top hat section rail mounting to EN 50022
<b>Termination</b>	screw terminals with + and - screws
<b>Cable section</b>	1x 2.5 mm <sup>2</sup> /2x 1.5 mm <sup>2</sup> strand including conductor ferrules, 1x 4 mm <sup>2</sup> /2x 2.5 mm <sup>2</sup> massive
<b>Protection class</b>	Enclosure IP 40. Terminal block IP 20 to IEC 60529, shock protection to VBG 4
<b>U<sub>e</sub></b>	24 VDC ±15%
<b>Power consumption</b>	ca. 2.5 W
<b>Inputs</b>	1 NC/1 NO contact or 2 NC contacts 1 feedback input, 1 reset input
<b>Outputs</b>	2 enabling paths: positive-guided contacts, 1 transistor output as signalling contact
<b>Utilisation category</b>	AC-15; DC-13
<b>I<sub>e</sub>/U<sub>e</sub></b>	
<b>enabling paths</b>	3 A/230 V; 2 A/24 V
<b>Max. output current</b>	
<b>transistor output I<sub>a</sub></b>	20 mA
<b>Max. fuse rating</b>	
<b>U<sub>e</sub></b>	2 A gL/gG D-fuse
<b>Enabling paths</b>	6 A gL/gG D-fuse
<b>Classification</b>	stop category 0. Control category 4
<b>Dropout delay</b>	< 20 ms
<b>Mechanical life</b>	> 50 million operations
<b>LED indications</b>	4: operation, authorisation, inputs A and B
<b>Degree of pollution</b>	3 to DIN VDE 0110
<b>Overvoltage category</b>	III
<b>Ambient temperature</b>	0 °C ... +55 °C
<b>Approvals</b>	



### Ordering details

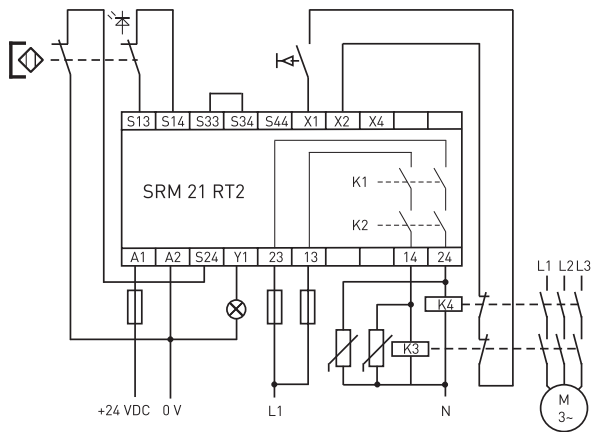
### SRM 21 RT2

- 2 inputs
- automatic reset
- manual reset
- 1 transistor output
- 2 enabling paths
- Safety relay module

# Safety relay module

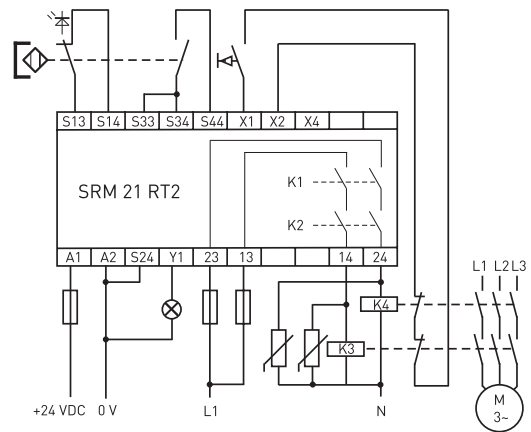
## // Series SRM 21 RT2, wiring examples

### // Wiring example



- 2-channel: monitoring of one magnetic safety sensor with 2 NC contacts
- Feedback circuit
- Cross-wire detection
- With manual reset/start
- Y1 high upon authorisation
- Control Category 4

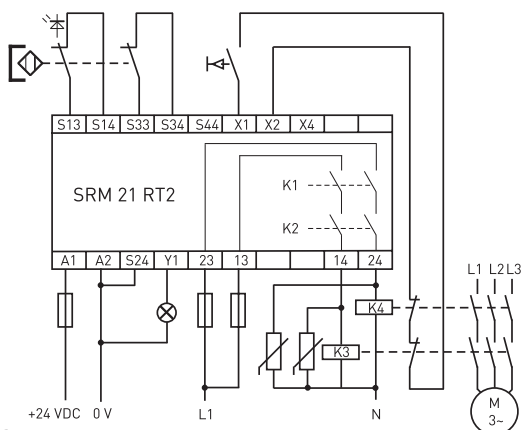
### // Wiring example



- 2-channel: monitoring of one magnetic safety sensor with 2 NC contacts
- Feedback circuit
- Without cross-wire detection
- With manual reset/start
- Y1 high upon authorisation
- Control Category 4

119

### // Wiring example



- 2-channel: monitoring of one magnetic safety sensor with 1 NC and 1 NO contact
- Feedback circuit
- Without cross-wire detection
- With manual reset/start
- Y1 high upon authorisation
- Control Category 4



## Ex emergency pull-wire switches

### One-side actuation

// Series EEx ZS 71

from page 126

// Series EEx ZS 73

from page 128

// Series EEx ZS 75

from page 130

// Series EEx ZS 80

from page 132

### Two-side actuation

// Series EEx ZS 73 S

from page 134

// Series EEx ZS 75 S

from page 136

// Mounting notes

from page 138

// Pre-stress and actuating forces

from page 140

// Accessories

from page 142

121





# Ex emergency pull-wire switches

## Range of application

Ex emergency pull-wire switches are of great importance for the man-machine interface in the area of industrial applications. They are, for example, applied on transport and conveyor systems. After manual actuation, work and functional processes are initiated or switched off.

Once the new harmonised European standard EN 60947-5-5 concerning functional aspects and design guidelines for emergency-stop devices has come into effect, new requirements will have to be met by these command devices. All Ex emergency pull-wire switches described in this chapter meet the requirements of this standard.

## Design and operating principle

On Ex emergency pull-wire switches the emergency-stop command can be initiated from any point along the pull-wire. They have a positive linkage between the NC contacts and the pull-wire. The emergency pull-wire switches are brought into the operational state

by pre-tensioning the pull-wire, i.e. the NC contacts are then closed and the NO contacts are open. All devices are equipped with wire-breakage detection. The accessories required for installation are listed at the end of this chapter.

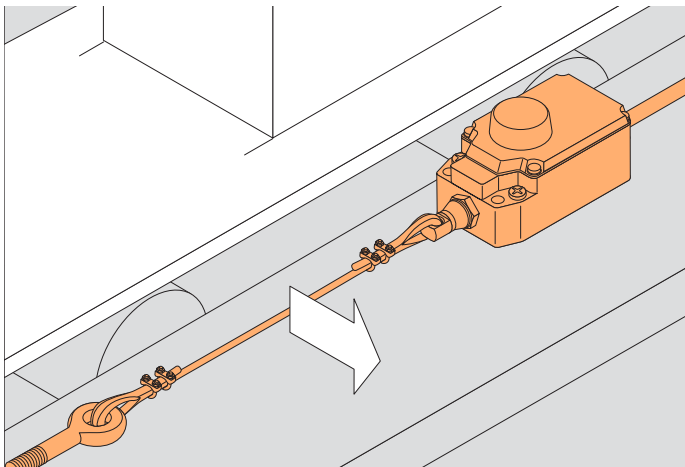
Ex emergency pull-wire switches without mechanical latching VD or VS do not conform to the IEC 609745-5-5. It is possible to meet the requirements of these two standards by suitable measurement of the circuitry and control technology.

There are devices with one- and two-side actuation. The wire length, the number of contacts and the mounting position, in the middle or on one side of the system, are the main features when selecting an emergency pull-wire switch.

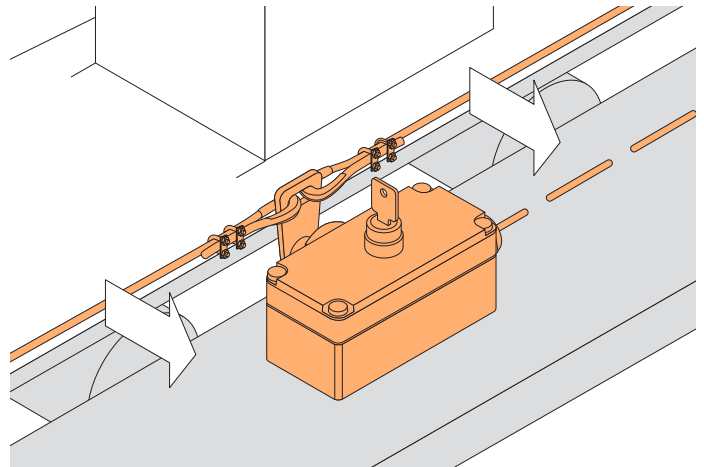
All Ex emergency pull-wire switches shown in this chapter bear the CE mark according to the Machinery Directive 98/37/EC and according to ATEX 94/9/EC. The Ex safety switches for hinged guards per equipment category 3D bear the CE mark without number of the notified body and have received a CE declaration of manufacturer conformity.

## Application

### one-side actuation



### two-side actuation




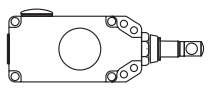

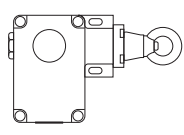
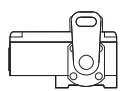

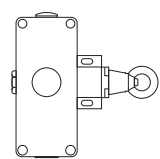
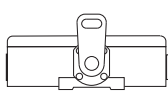

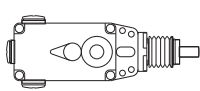


## Selection table

### Ex emergency pull-wire switches

// Series

// Maximum pull-wire length

		// Maximum pull-wire length		
		→	↔	
				
<b>EEx ZS 71, from page 126</b> - One-side actuation - 2 contacts 		20 m	-	
<b>EEx ZS 73, from page 128 and 134</b> - One-side actuation: EEx ZS 73 - Two-side actuation: EEx ZS 73 S - 2 contacts 		50 m	2 x 50 m	
<b>EEx ZS 75, from page 130 and 136</b> - One-side actuation: EEx ZS 75 - Two-side actuation: EEx ZS 75 S - 4 contacts 		50 m	2 x 50 m	
<b>EEx ZS 80, from page 132</b> - One-side actuation - 2 contacts 		75 m	-	



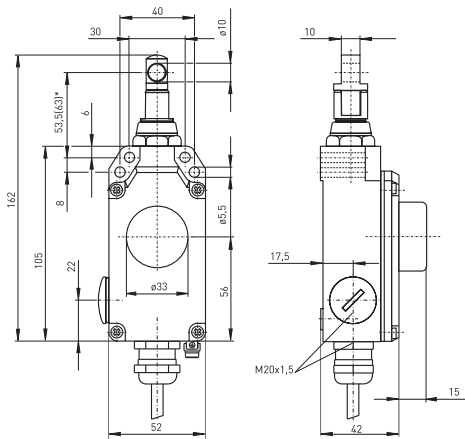
# Ex emergency pull-wire switches, one-side actuation

## // Series EEx ZS 71

### Features/Options

- Ex zone 1 and 2, as well as 21 and 22
- 2 contacts
- Small design
- Wire length up to 20 m
- 2 various spring force variants (actuating forces):  
55 N for max. 5 m, 200 N for 5-20 m
- Wire pull and breakage detection
- Special version only for equipment category 3D,  
available for dust Ex zone 22
- Inmetro approval for Brazil to be ordered separately

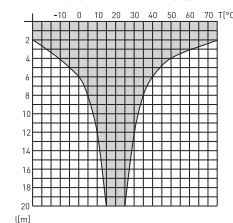
## // EEX ZS 71



\* 63 mm for version with 200 N pre-stress force

## Technical data

Standards	IEC/EN 60947-5-1, IEC/EN 60947-5-5, EN 50014, EN 50018, EN 50281-1-1
Enclosure	aluminium die casting, enamel finish
Cover	glass-fibre reinforced, shock-proof thermoplastic, ultramid
Switch insert	EEx 14
Protection class	EEx ZS 71 VD, EEx ZS 71 WVD: IP 65; EEx ZS 71 VS and EEx ZS 71 WVS: IP 54 to IEC/EN 60529
Contact material	silver
Switching system	slow action, positive break NC contacts ⊕
Switching elements	change-over contact with double break or 2 NC contacts
Termination	Termination cable H05VV-F
Cable section	4 x 0.75mm <sup>2</sup> (incl. conductor ferrules)
Cable length	3 m
U <sub>imp</sub>	4 kV
U <sub>i</sub>	250 V
I <sub>the</sub>	6 A
Utilisation category	AC-15, DC-13
I <sub>e</sub> /U <sub>e</sub>	6 A/250 VAC, 0.25 A/230 VDC
Max. fuse rating	6 A gL/gG D-fuse
Ambient temperature	-20 °C ... +65 °C, +75 °C for T5
Mechanical life	> 1 million operations
Max. wire length	20 m
Features	wire pull and breakage detection
Ex certification	⊕ II 2G EEx d IIC T6, II 2D IP65 T80°C PTB 06 ATEX 1065 X
Approvals	IECEX, INMETRO
Recommended wire length	Graph showing recommended wire length (m) vs. ambient temperature (T [°C]). The graph shows a curve that starts at 20m for -10°C and decreases to approximately 10m at 70°C.



### Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	EEx ZS 71 10/1S 5 3 0 3 5 BK-GY BN-BU ⊕ 4 1,5 1,5 4 ⊕
2 NC contacts	EEx ZS 71 20 5 0 5 BK-GY BN-BU ⊕ 4 1,5 1,5 4 ⊕

### Ordering details

EEx ZS 71 10/1S WVD-A/55 N-3D	Ex zone 22
	55 N Pre-stress force (200 N)
	A Position indicator
	VD Push button release
	(VS key release, blank without latching)
	W Watertight collar
	1 NC/1 NO contact (20)
	Series
	Emergency pull-wire switch
	Ex certified component

At 3 m distance intermediate wire supports are required. One wire thimble is provided. Details related to pre-stress and actuating forces are indicated on page 138.

# Ex emergency pull-wire switches, one-side actuation

## // Series EEx ZS 71, variants

### Features/Options

- Indicator lamps for zone 22 for 24VDC are indicated at the end of this chapter
- Indicator lamp position in the left side cable entry
- Collar W to protect against the entry of foreign bodies

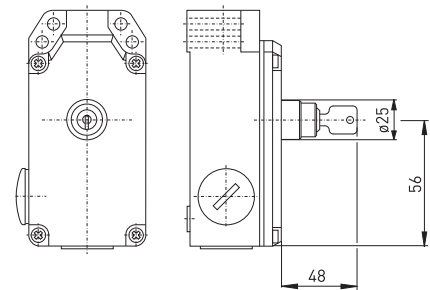
### Features/Options

- Ex emergency pull-wire switches are also available without mechanical latching
- Version for equipment category 3D, dust Ex zone 22 is equipped with a wiring compartment

### // Watertight collar W



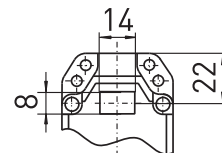
### // Key release VS



### // Position indicator A



### // Position indicator A





# Ex emergency pull-wire switches, one-side actuation

## // Series EEx ZS 73, variants

### Features/Options

- Indicator lamps for zone 22 for 24VDC are indicated at the end of this chapter
- Indicator lamp position in the left side cable entry, other positions possible on request
- Collar W to protect against the entry of foreign bodies
- EEx ZS 73 NIRO: pull-wire unit and screws made of stainless steel 1.4305, hard-coated enclosure with enamel finish

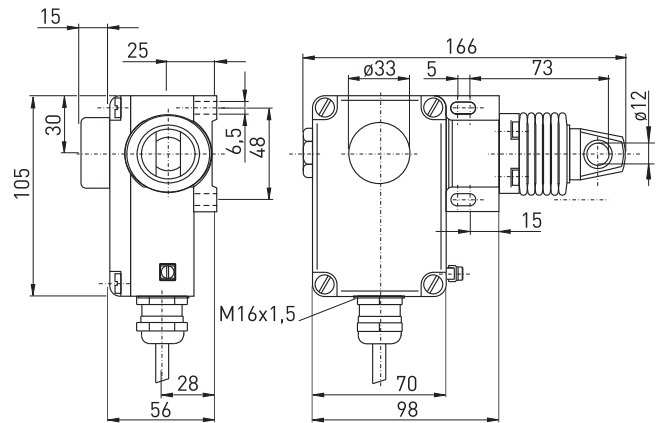
### Features/Options

- With 2 cable entries available on request for zone 22
- Ex emergency pull-wire switches are also available without mechanical latching
- Version for equipment category 3D, dust Ex zone 22 is equipped with a wiring compartment

### // Watertight collar W



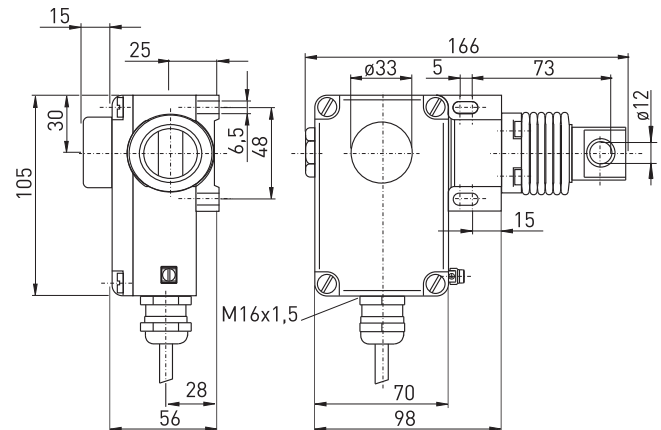
### // Watertight collar W



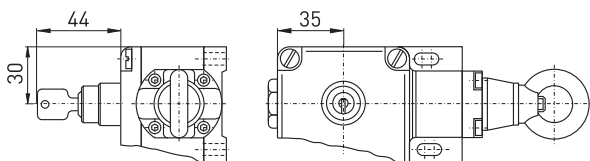
### // EEx ZS 73 NIRO



### // EEx ZS 73 NIRO



### // Key release VS





# Ex emergency pull-wire switches, one-side actuation

## // Series EEx ZS 75

### Features/Options

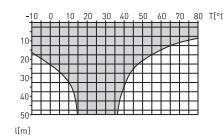
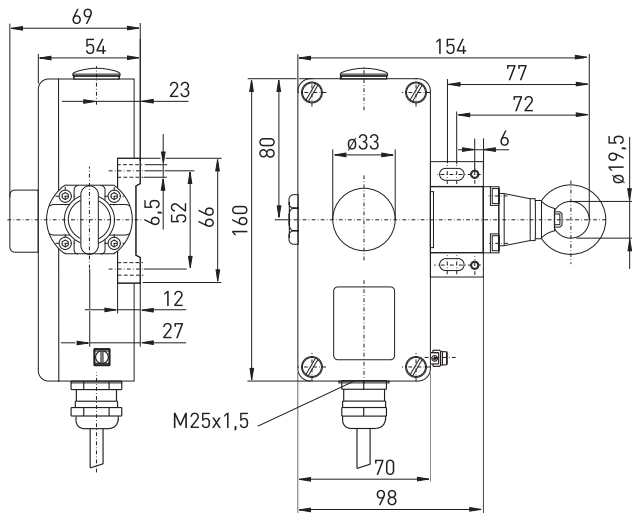
- Ex zone 1 and 2, as well as 21 and 22
- 2 or 4 contacts
- Wire length up to 50 m
- 4 various spring force variants (actuating forces), adjustable actuating force: 295-390 N for 30-50 m, 195-275 N for 20-30 m, 120-180 N for 10-20 m, 80-100 N for max. 10 m
- Wire pull and breakage detection
- Special version only for equipment category 3D, available for dust Ex zone 22
- Inmetro approval for Brazil to be ordered separately

## // EEX ZS 75



### Technical data

<b>Standards</b>	IEC/EN 60947-5-1, IEC/EN 60947-5-5, EN 50014, EN 50018, EN 50281-1-1
<b>Enclosure</b>	aluminium die casting, enamel finish
<b>Cover</b>	aluminium die casting, enamel finish
<b>Switch insert</b>	EEx 14
<b>Protection class</b>	EEx ZS 75 WVD: IP 65; EEx ZS 75 VD, EEx ZS 75 VS and EEx ZS 75 WVS: IP 54 to IEC/EN 60529
<b>Contact material</b>	silver
<b>Switching system</b>	slow action, positive break NC contacts ⊖
<b>Switching elements</b>	change-over contact with double break or 2 NO/2 NC or 4 NC contacts
<b>Termination</b>	Termination cable H05VV-F
<b>Cable section</b>	4 x 0.75mm <sup>2</sup> (incl. conductor ferrules) per switch insert
<b>Cable length</b>	3 m
<b>U<sub>imp</sub></b>	4 kV
<b>U<sub>i</sub></b>	250 V
<b>I<sub>the</sub></b>	6 A
<b>Utilisation category</b>	AC-15, DC-13
<b>I<sub>e</sub>/U<sub>e</sub></b>	6 A/250 VAC, 0.25 A/230 VDC
<b>Max. fuse rating</b>	6 A gL/gG D-fuse
<b>Ambient temperature</b>	-20 °C ... +65 °C, +75 °C bei T5
<b>Mechanical life</b>	> 1 million operations
<b>Max. wire length</b>	50 m
<b>Features</b>	wire pull and breakage detection
<b>Ex certification</b>	⊕ II 2G EEx d IIC T6, II 2D IP65 T80°C PTB 06 ATEX 1067 X
<b>Approvals</b>	IECEX
<b>Recommended wire length</b>	



### Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	EEx ZS 75 10/1S 
2 NC/2 NO contact	EEx ZS 75 20/2S 
4 NC contacts	EEx ZS 75 40 

### Ordering details

EEx ZS 75 10/1S WVD/80-100 N-3D	Ex Zone 22 Pre-stress force (120-180 N, 195-275 N, 295-390 N) VD Push button release (VS key release, blank without mechanical latching) W Watertight collar 1 NC/1 NO contact (20/2S, 40) Series Emergency pull-wire switch Ex certified component
---------------------------------	--

At 5 m distance intermediate wire supports are required. One wire thimble is provided. Details related to pre-stress and actuating forces are indicated on page 138.



# Ex emergency pull-wire switches, one-side actuation

## // Series EEx ZS 75, variants

### Features/Options

- Indicator lamps for zone 22 for 24VDC are indicated at the end of this chapter
- Indicator lamp position on the left side, other positions possible on request
- Collar W to protect against the entry of foreign bodies

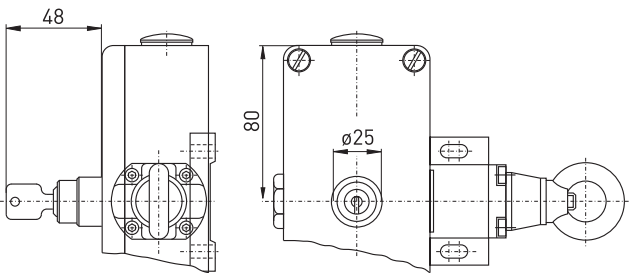
### Features/Options

- Ex emergency pull-wire switches are also available without mechanical latching
- Version for equipment category 3D, dust Ex zone 22 is equipped with a wiring compartment

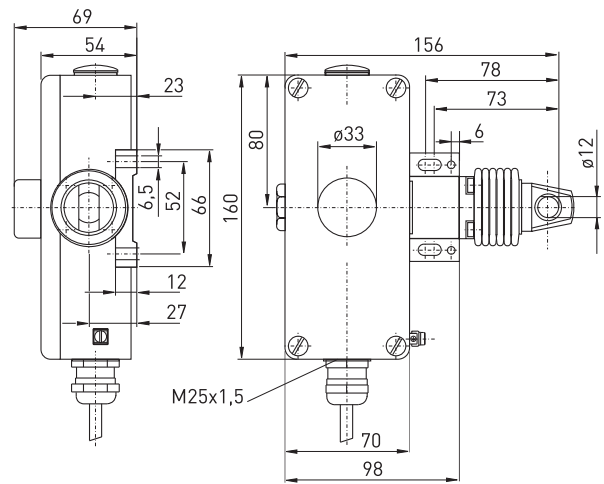
### // Watertight collar W



### // Key release VS



### // Watertight collar W



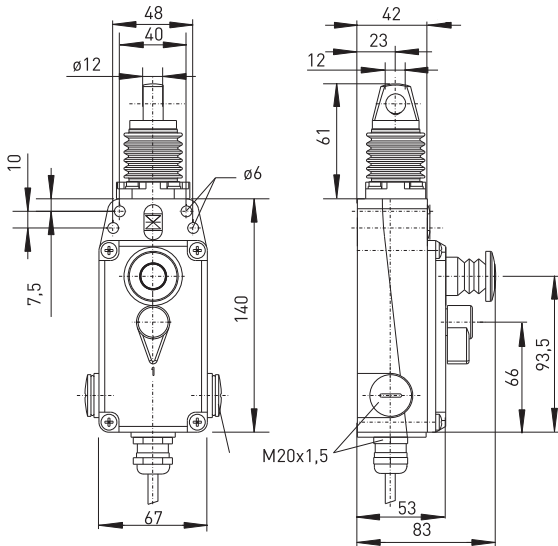
# Ex emergency pull-wire switches, one-side actuation

## // Series EEx ZS 80

### Features/Options

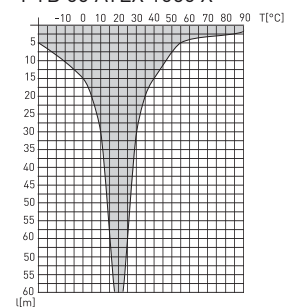
- Ex zone 1 and 2, as well as 21 and 22
- 2 contacts
- Position indicator and integrated emergency-stop push button
- Wire length up to 75 m
- Pretensioning force 100 N
- Lever for release and position indication
- Wire pull and breakage detection
- Special version only for equipment category 3D, available for dust Ex zone 22
- Inmetro approval for Brazil to be ordered separately

## // EEX ZS 80



## Technical data

Standards	IEC/EN 60947-5-1, IEC/EN 60947-5-5, EN 418 EN 50014, EN 50018, EN 50281-1-1
Enclosure	aluminium die casting, enamel finish
Cover	glass-fibre reinforced, shock-proof thermoplastic, ultramid
Switch insert	EEx 14
Protection class	IP 67 to IEC/EN 60529
Contact material	silver
Switching system	slow action, positive break NC contacts ⊕
Switching elements	1 NC/1 NO contact or 2 NC contacts with double break
Termination	cable H05VV-F
Cable section	4 x 0.75mm <sup>2</sup> (incl. conductor ferrules)
Cable length	3 m
U <sub>imp</sub>	4 kV
U <sub>i</sub>	250 V
I <sub>the</sub>	6 A
Utilisation category	AC-15, DC-13
I <sub>e</sub> /U <sub>e</sub>	6 A/250 VAC, 0.25 A/230 VDC
Max. fuse rating	6 A gL/gG D-fuse
Ambient temperature	-20 °C ... +65 °C, +75 °C bei T5
Mechanical life	> 1 million operations
Max. wire length	75 m
Features	wire pull and breakage detection
Ex certification	⊕ II 2G EEx d IIC T6, II 2D IP65 T80°C
Approvals	PTB 06 ATEX 1050 X
Recommended wire length	



### Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	EEx ZS 80 10/1S 
2 NC contacts	EEx ZS 80 20 

### Ordering details

#### EEx ZS 80 10/1S WVD-3D

dust Ex zone 22  
 VD Lever release  
 W Watertight collar  
 1 NC/1 NO contact (20)  
 Series  
 Emergency pull-wire switch  
 Ex certified component

At 5 m distance intermediate wire supports are required. One wire thimble is provided. Details related to pre-stress and actuating forces are indicated on page 138.

QUALITY MANAGEMENT

IMPACT TEST ON AN EMERGENCY PULL-WIRE SWITCH



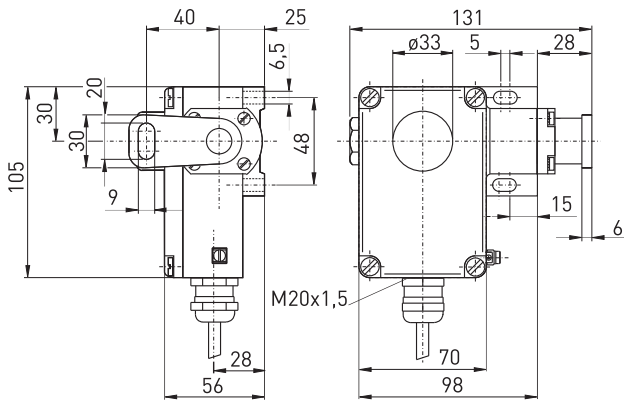
# Ex emergency pull-wire switches, two-side actuation

## // Series EEx ZS 73 S

### Features/Options

- Ex zone 1 and 2, as well as 21 and 22
- Metal enclosure
- 2 contacts
- Wire length up to 2 x 50 m
- Push button or key release possible
- Wire pull and breakage detection
- Special version only for equipment category 3D, available for dust Ex zone 22
- Inmetro approval for Brazil to be ordered separately

## // EEX ZS 73 S



### Technical data

Standards	IEC/EN 60947-5-1, IEC/EN 60947-5-5, EN 50014, EN 50018, EN 50281-1-1
Enclosure	aluminium die casting, enamel finish; EEx ZS 73 NIRO: aluminium die casting, hard-coated and enamelled
Cover	glass-fibre reinforced, shock-proof thermoplastic, ultramid
Switch insert	EEx 14
Protection class	EEx ZS 73 S VD: IP 65; EEx ZS 73 S VS: IP 54 to IEC/EN 60529
Contact material	silver
Switching system	slow action, positive break NC contacts ⊕
Switching elements	change-over contact with double break or 2 NC contacts
Termination	termination cable H05VV-F
Cable section	4 x 0.75mm <sup>2</sup> (incl. conductor ferrules)
Cable length	3 m
U <sub>imp</sub>	4 kV
U <sub>i</sub>	250 V
I <sub>the</sub>	6 A
Utilisation category	AC-15, DC-13
I <sub>e</sub> /U <sub>e</sub>	6 A/250 VAC, 0.25 A/230 VDC
Max. fuse rating	6 A gL/gG D-fuse
Ambient temperature	-20 °C ... +65 °C, +75 °C bei T5
Mechanical life	> 1 million operations
Max. wire length	2 x 50 m
Features	wire pull and breakage detection
Ex certification	⊕ II 2G EEx d IIC T6, II 2D IP65 T80°C
Approvals	PTB 06 ATEX 1066 X



### Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<p>EEx ZS 73 S 10/1S</p>
2 NC contacts	<p>EEx ZS 73 S 20</p>

### Ordering details

EEx ZS 73 S 10/1S VD-NIRO-3D	Dust Ex zone 22 NIRO Pull-wire unit VD Push button release [VS key release, blank without mechanical latching] 1 NC/1 NO contact (20) S Two-side actuation Series Emergency pull-wire switch Ex certified component
------------------------------	--

At 4 m distance intermediate wire supports are required. Details related to pre-stress and actuating forces are indicated at the end of this chapter. Two tension springs type RZ1561 must be installed. See accessories on page 142.

# Ex emergency pull-wire switches, two-side actuation

## // Series EEx ZS 73 S, variants

### Features/Options

- Indicator lamps for zone 22 for 24VDC are indicated at the end of this chapter
- Indicator lamp position in the left side cable entry, other positions possible on request
- EEx ZS 73 NIRO: pull-wire unit and screws made of stainless steel 1.4305, hard-coated enclosure with enamel finish

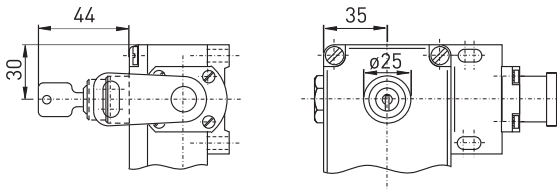
### Features/Options

- With 2 cable entries available on request for zone 22
- Version for equipment category 3D, dust Ex zone 22 is equipped with a wiring compartment

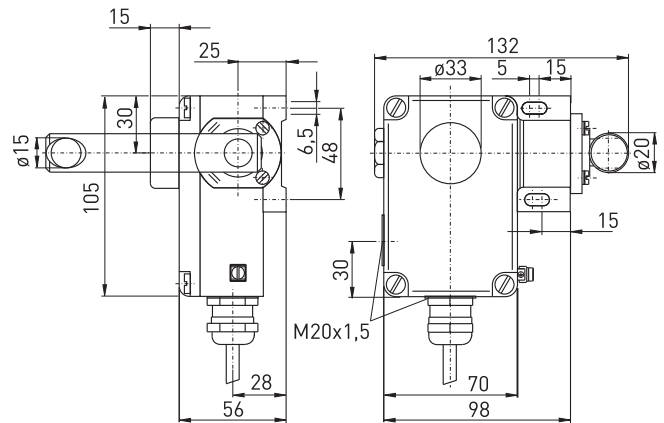
### // EEx ZS 73 S NIRO



### // Key release VS



### // EEx ZS 73 S NIRO



# Ex emergency pull-wire switches, two-side actuation

## // Series EEx ZS 75 S

### Features/Options

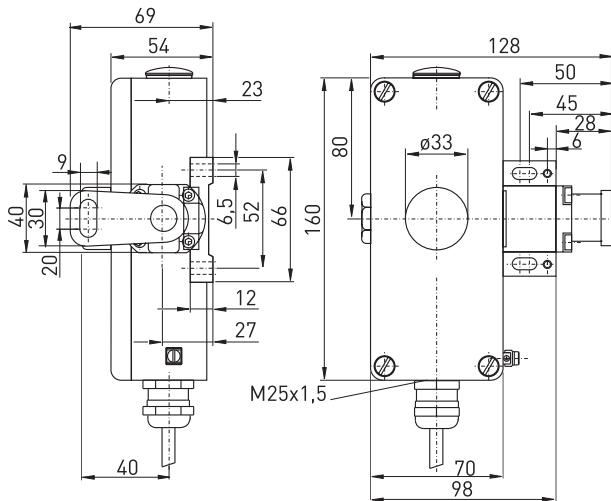
- Ex zone 1 and 2, as well as 21 and 22
- Metal enclosure
- 2 or 4 contacts
- Wire length up to 2 x 50 m
- Push button or key release possible
- Wire pull and breakage detection
- Special version only for equipment category 3D, available for dust Ex zone 22
- Inmetro approval for Brazil to be ordered separately

### // EEX ZS 75 S



### Technical data

<b>Standards</b>	IEC/EN 60947-5-1, IEC/EN 60947-5-5, EN 50014, EN 50018, EN 50281-1-1
<b>Enclosure</b>	aluminium die casting, enamel finish
<b>Cover</b>	aluminium die casting, enamel finish
<b>Switch insert</b>	EEx 14
<b>Protection class</b>	EEx ZS 75 S VD: IP 65; EEx ZS 75 S VS: IP 54 to IEC/EN 60529
<b>Contact material</b>	silver
<b>Switching system</b>	slow action, positive break NC contacts ⊕
<b>Switching elements</b>	change-over contact with double break or 2 NO/2 NC or 4 NC contacts
<b>Termination</b>	4 x 0.75mm <sup>2</sup> (incl. conductor ferrules)
<b>Cable section</b>	3 m
<b>Cable length</b>	4 kV
<b>U<sub>imp</sub></b>	250 V
<b>U<sub>i</sub></b>	6 A
<b>I<sub>the</sub></b>	AC-15, DC-13
<b>Utilisation category</b>	6 A/250 VAC, 0.25 A/230 VDC
<b>I<sub>e</sub>/U<sub>e</sub></b>	6 A gL/gG D-fuse
<b>Max. fuse rating</b>	-20 °C ... +65 °C, +75 °C bei T5
<b>Ambient temperature</b>	> 1 million operations
<b>Mechanical life</b>	2 x 50 m
<b>Max. wire length</b>	wire pull and breakage detection
<b>Features</b>	⊕ II 2G EEx d IIC T6, II 2D IP65 T80°C
<b>Ex certification</b>	PTB 06 ATEX 1067 X
<b>Approvals</b>	



### Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<b>EEx ZS 75 S 10̄/1S</b> 
2 NC/2 NO contact	<b>EEx ZS 75 S 20̄/2S</b> 
4 NC contacts	<b>EEx ZS 75 S 40̄</b> 

### Ordering details

#### EEx ZS 75 S 20̄/2S VD-3D

- Dust Ex zone 22
- VD Push button release (VS key release, blank without mechanical latching)
- 2 NC/2 NO contacts (10̄/1S, 40̄)
- S Two-side actuation
- Series
- Emergency pull-wire switch
- Ex certified component

At 4 m distance intermediate wire supports are required. Details related to pre-stress and actuating forces are indicated at the end of this chapter. Two tension springs type RZ1561 must be installed. See accessories on page 142.

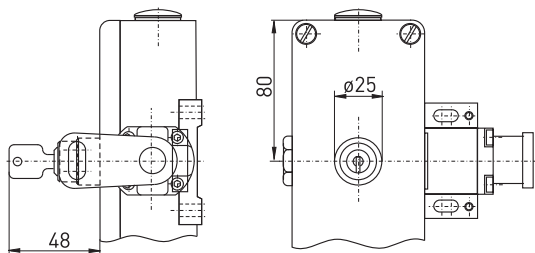
## Ex emergency pull-wire switches, two-side actuation

### // Series EEx ZS 75 S, variants

#### Features/Options

- Indicator lamps for zone 22 for 24VDC are indicated at the end of this chapter
- Indicator lamp position on the left side, other positions possible on request
- Version for equipment category 3D, dust Ex zone 22 is equipped with a wiring compartment

### // Key release VS





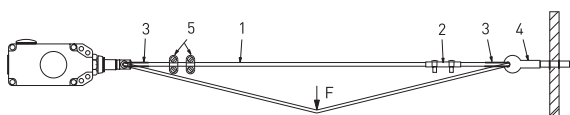
# Ex emergency pull-wire switches

## // Mounting notes

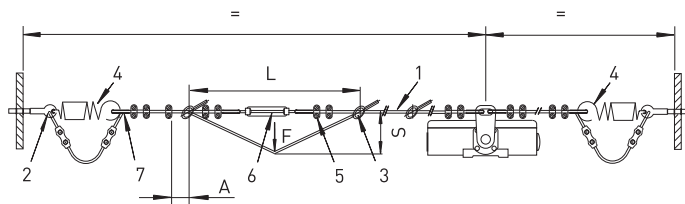
### Notes

- Always mount emergency pull-wire switch in middle position.
- Two tension springs type RZ156I must be installed. See chapter accessories in the appendix

### // One-side actuation



### // Two-side actuation



138

- 1 = Pull-wire
- 2 = DUPLEX wire clamp
- 3 = Wire thimble
- 4 = Eye bolt
- 5 = Wire clamp

- 1 = Pull-wire
- 2 = Eye bolt
- 3 = Wire support
- 4 = Tension spring
- 5 = Wire clamp
- 6 = Tensioner
- 7 = Wire thimble
- A = Travel limit 70 mm
- L = Maximum wire length between wire supports
- S = Switching/actuating travel  
e.g. max. 400 mm at L = 4 m

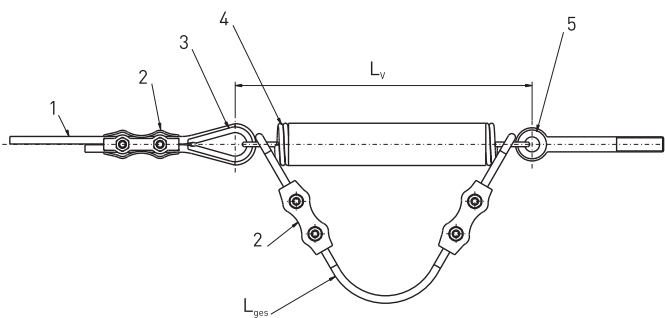
**Notes**

- With two-side actuation a travel limitation must be installed, see drawing below, in order to prevent overstretching of the tension spring.
- Before mounting the pull-wire, the red PVC sheath must be removed from the the pull-wire in the clamping range of the pull-wire!
- In order to guarantee safe operation, observe the enclosed mounting and wiring instructions.

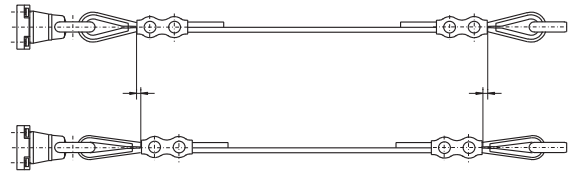
**Notes**

- After fitting the wire, pull on it strongly several times as the pull-wire and the wire thimble will deform.
- Subsequently, retense the wire using the DUPLEX wire clamp, eye-bolt or tensioner.

**// Spring pre-tension / Travel limitation**



**// Wire thimble deformation**



- 1 = Pull-wire
- 2 = DUPLEX wire clamp
- 3 = Wire thimble
- 4 = Tension spring
- 5 = Eye bolt

$L_{ges}$  = Total length for limitation of spring 270 mm

$L_v$  = Pre-stress 200 mm

Both values refer to tension spring RZ1561

# Ex emergency pull-wire switches

## // Pre-stress and actuating forces

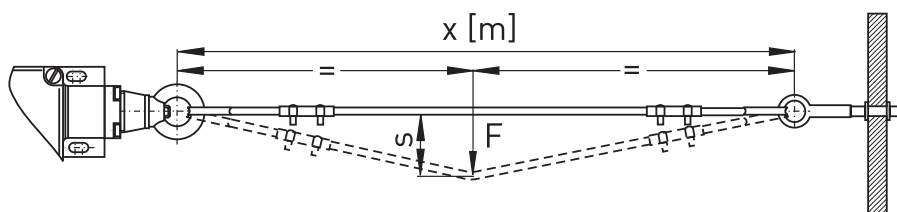
### Notes

- The values are indicated for an ambient temperature of 20 °C.
- The linear expansion of the wire due to strain and deformation of the wire thimble is not considered.
- The actuating forces are only approximate values, due to the spring forces being subject to tolerances.

Emergency pull-wire switch	Wire length betw. supports x [m]	Pre-stress force [N]	Actuating travel s [cm]	Actuating force F [N]	Recommended wire length [m]	Ordering index
EEx ZS 71	3	200 55	7 7	30 6	5-20 <5	/200N /55N
EEx ZS 73	5	295-390 195-275 120-180	13 13 13	38-60 33-41 19-25	30-50 20-30 10-20	/295-390N /195-275N /120-180N
EEx ZS 75	5	295-390 195-275 120-180	13 13 13	38-60 33-41 19-25	30-50 20-30 10-20	/295-390N /195-275N /120-180N
EEx ZS 80	5	100	22	32	75	-

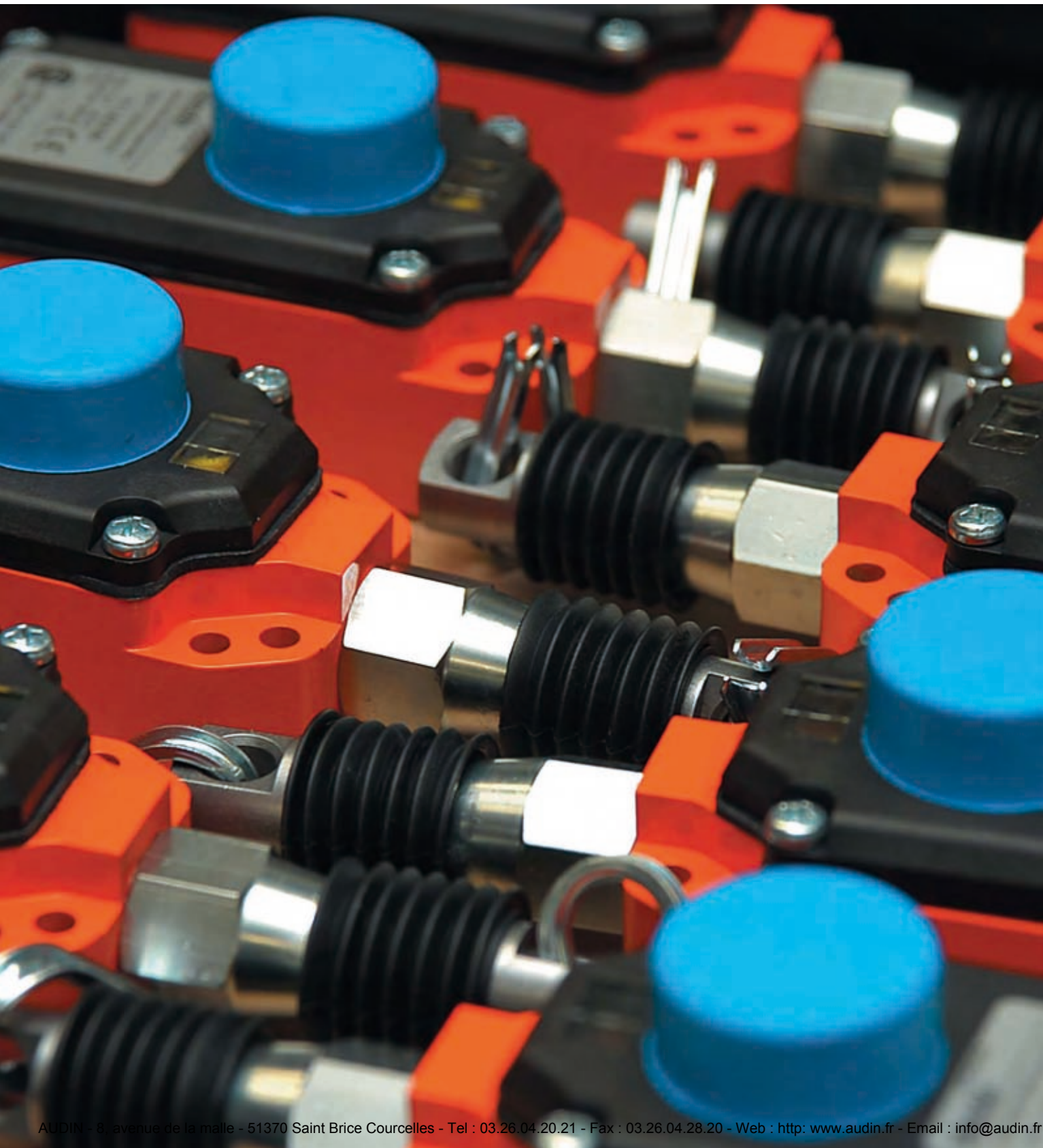
140

### Actuating forces and travel between supports



PRODUCTION PROCESS ASSEMBLY

EMERGENCY PULL-WIRE SWITCH AFTER FINAL QUALITY CHECK



141

## Appendix // Accessories

### Features/Options

- To guide the pull-wire where the path is not a straight line
- For pull-wire with red PVC sheath  $\varnothing$  5 mm (steel core  $\varnothing$  3 mm)
- Ordering unit: 1 piece

### Notes

According to EN 418, pulleys may only be mounted such that the complete length of the pull-wire can be observed.

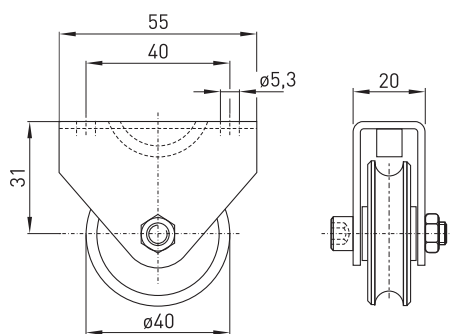
### Features/Options

- Steel core  $\varnothing$  3 mm with red PVC sheath
  - Total diameter 5 mm
  - Ordering unit: per metre
  - Available with stainless steel core
- Complete pull-wire set consisting of:  
5 m pull-wire  $\varnothing$  3 mm with 2 mm PVC sheath,  
2 wire clamps DIN 741, 1 wire thimble DIN 6899,  
1 eye bolt DIN 444 and 1 Duplex wire clamp

### // Pulley



### // Pulley



### Ordering details

Pulley

04.73.9102

### // Pull-wire



### // Pull-wire



### Ordering details

Pull-wire  $\varnothing$  5 mm per metre

01.09.0011

Pull-wire stainless steel  $\varnothing$  5 mm per metre

01.10.0059

Complete pull-wire set, 5 m

(other lengths on request)

04.61.7101

Features/Options

- Pull-wire yellow (polypropylene)
- With rubber ball and mounting clamp
- 1, 2, 3 or 4 m long
- Ordering unit: 1 piece

Features/Options

- For pull-wire with steel core  $\varnothing$  3 mm
- Ordering unit: 1 piece
- Wire clamp made of stainless steel available

// Pull-wire



// Wire clamp



// Duplex wire clamp



Ordering details

Pull-wire with ball 1 m	04.73.7101
Pull-wire with ball 2 m	04.73.7103
Pull-wire with ball 3 m	04.73.7104
Pull-wire with ball 4 m	04.73.7102

Ordering details

Wire clamp 3 mm	01.10.0003
Wire clamp 3 mm stainless steel	01.10.0061
Duplex wire clamp	01.10.0004

## Appendix // Accessories

### Features/Options

- For pull-wire with steel core  $\varnothing$  3 mm
- Ordering unit: 1 piece

### Features/Options

- Per DIN 6899
- For pull-wire with steel core  $\varnothing$  3 mm, part number wire thimble 3B
- Wire clamp made of stainless steel available
- Ordering unit: 1 piece

// Oval-shaped wire clamp



// Wire thimble 3B



### Ordering details

Oval-shaped wire clamp 3 mm

01.10.0091

### Ordering details

Wire thimble 3B  
Wire thimble stainless steel

01.10.0001  
01.10.0084

Features/Options

- Per DIN 444
- Eye bolt M8 x 70 including nut:  
70 mm length referring to eye centre,  
M8 thread, 25 mm thread length
- M8 x 70 made of stainless steel available
- Eye bolt BM10 x 40 including nut (without figure):  
40 mm length referring to eye centre,  
M10 thread, 25 mm thread length
- Ordering unit: 1 piece

Features/Options

- For precise adjustment of pull-wire pre-stress
- Per DIN 1480
- Tensioner M6: adjustable von 145 mm bis 225 mm
- Tensioner M8 (without figure):  
made of stainless steel, adjustable from 160 mm to 255 mm
- Ordering unit: 1 piece

// Eye bolt M8 x 70



// Tensioner M6



145

Ordering details

Eye bolt BM8x70 with nut	04.00.7112
Eye bolt BM8x70 stainless steel	01.03.0210
Eye bolt BM10x40 with nut	01.03.0208

Ordering details

Tensioner M6	01.10.0010
Tensioner M8 stainless steel	01.10.0062



## Appendix // Accessories

### Features/Options

- Only suitable for two-side actuation, emergency pull-wire switches series ZS 73 S and ZS 75 S
- To maintain reaction force
- Length in unstretched state 130 mm
- Ordering unit: 1 piece

### Features/Options

- Only suitable for application in zone 2 and 22
- Lamp cap red, green or yellow
- M20 x 1.5
- 24 VDC
- Ordering unit: 1 piece

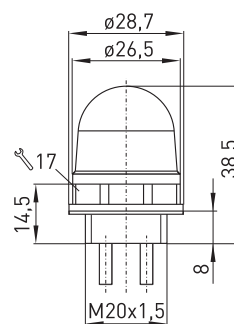
// Tension spring RZ-156I



// Ex indicator Multi-LED coloured



// Ex indicator Multi-LED coloured



### Ordering details

Tension spring RZ-156I

01.07.0070

### Ordering details

Ex indicator lamp Multi-LED RD 24 VDC

04.00.7122

Ex indicator lamp Multi-LED GN 24 VDC

04.00.7123

Ex indicator lamp Multi-LED YE 24 VDC

04.00.7124

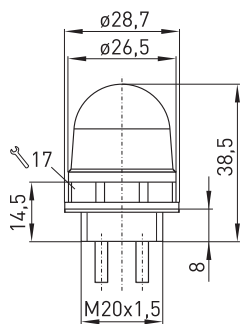
Features/Options

- Only suitable for application in zone 2 and 22
- Lamp cap white
- M20 x 1.5
- 24 VDC
- Ordering unit: 1 piece

// Ex indicator lamp Multi-LED white



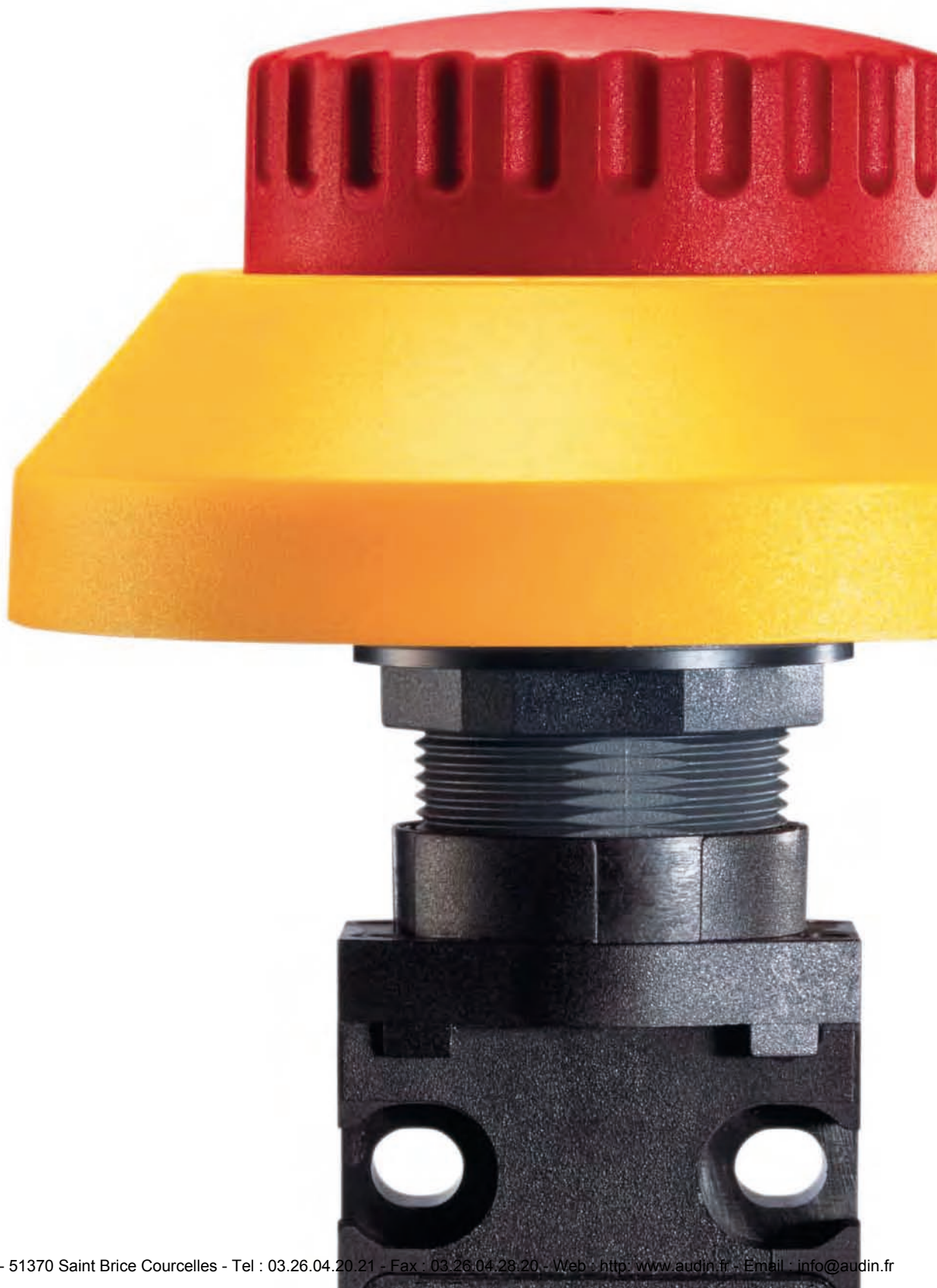
// Ex indicator lamp Multi-LED white



Ordering details

Ex indicator lamp Multi-LED WH 24 VDC

04.00.7125



## Ex command devices

Thermoplastic enclosure

// Series EEx 14

from page 152





# Ex command devices

## Range of application

Ex command devices are mounted in switchboards, control panels, two-hand control panels and in the lift industry. On manual actuation, the devices start or terminate operating sequences and functional processes.

There are versions as push buttons, semi-rotary, key-operated and emergency stop switches. The emergency stop devices are wired in the safety circuit of machinery or plants. They fulfil the requirements of EN 60204-1.

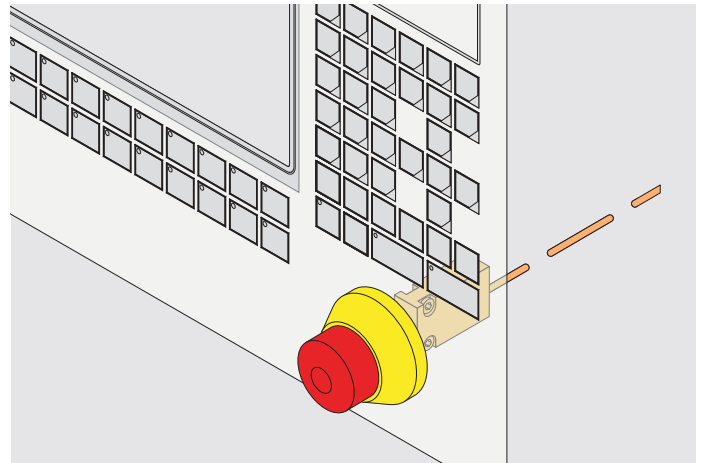
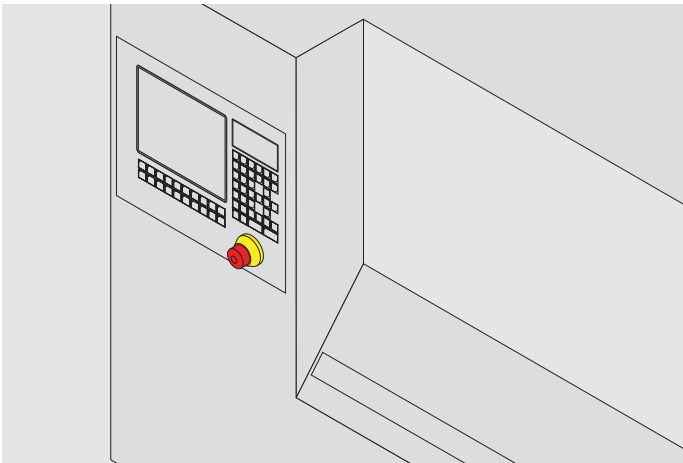
## Design and operating principle

The Ex command devices are fit for  $\varnothing 22.5$  mm mounting holes and suitable for spacings of 30 mm between centres. All Ex command devices provide protection class IP 65 and are double insulated for class II. The actuator is connected to the EEx 14 switch by a bayonet fastener. Available switching elements with slow action are: emergency-stop push-buttons, push-buttons with and without diaphragm, selectors, control switches and key-operated switches.

All Ex command devices shown in this chapter bear the CE mark according to the Low Voltage Directive 73/23/EC and the emergency-stop push-buttons according to the Machinery Directive 98/37/EC, as well as to ATEX 94/9/EC. The Ex command devices per equipment category 3D bear the CE mark without the number of the notified body and have received a CE declaration of manufacturer conformity.

## Application

as emergency-stop push button in a switchboard




# Ex command devices

## // Series EEx 14

### Features/Options

- Ex zone 1 and 2, as well as 21 and 22
- Double insulated  $\square$
- Slow action  $\ominus$ , change-over contact or 2 NC contacts with double break
- Overlapping contacts available
- Mounting hole diameter 22.5 mm
- With pre-wired cable, cable length 1 metre
- Special version only for equipment category 3D, available for dust Ex zone 22
- Inmetro approval for Brazil to be ordered separately

### Technical data

<b>Standards</b>	IEC/EN 60947-5-1; EN 1088; EN 50014; EN 50018; EN 50281-1-1
<b>Enclosure</b>	glass-fibre reinforced, shock-proof thermoplastic, self-extinguishing UL 94-V0
<b>Switch insert</b>	-
<b>Protection class</b>	IP 65 according to IEC/EN 60529
<b>Contact material</b>	silver
<b>Switching system</b>	slow action, positive break NC contact $\ominus$
<b>Switching elements</b>	change-over contact with double break Zb, galvanically separated contact bridges
<b>Termination</b>	cable H05VV-F
<b>Cable section</b>	4 x 0,75mm <sup>2</sup>
<b>Cable length</b>	1 m
<b>U<sub>imp</sub></b>	4 kV
<b>U<sub>i</sub></b>	250 V
<b>I<sub>the</sub></b>	6 A;
<b>I<sub>e</sub>/U<sub>e</sub></b>	6 A/250 VAC; 0,25 A/230 VDC
<b>Utilisation category</b>	AC-15, DC-13
<b>Max. fuse rating</b>	6 A gL/gG D-fuse
<b>Ambient temperature</b>	-20 °C ... +65 °C, +75 °C bei T5
<b>Mechanical life</b>	> 1 million operations
<b>Switching frequency</b>	1800/h
<b>Ex certification</b>	⊕ II 2G EEx d IIC T6, II 2D IP65 T80°C
<b>Approvals</b>	PTB 03 ATEX 1070 X 

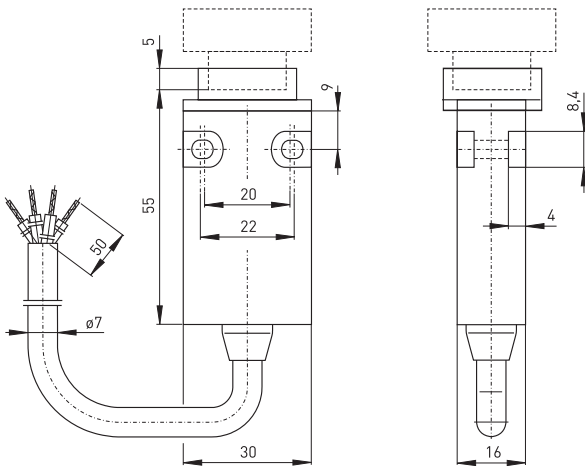
**Note** Switch must be protected from mechanical damage!

### Ordering details

**EEx 14 RUV 10/1S-s-1m-3D**

Equipment Categ.  
3D, dust Ex zone 22  
Cable length 1 m,  
(2 m, 5 m, 10 m)  
Cable entry on side  
Contact type 10/1S (20 only for RUV)  
Actuator RUV (RT, RSSA, RW, etc. ...)  
Series  
Ex certified component

// EEX 14



# Ex command devices

## // Series EEx 14, Actuator

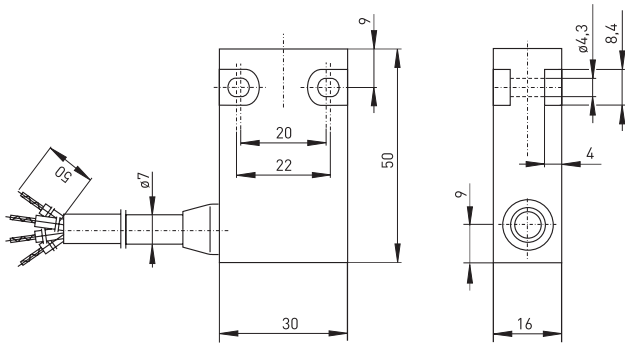
### Features/Options

- Slow action with 2 NC contacts available
- With gold-plated contacts available on request
- With actuator made of stainless steel, ordering suffix -V2A
- Available with stainless steel actuators: push buttons, semi-rotary, key-operated or key-operated switches

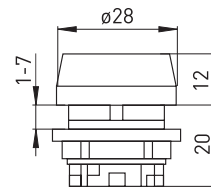
### Features/Options

- With pre-wired cable, cable length 1 meter
- Protection class IP 65

### // Cable on side



### // Push button RT



### // EEx 14 RT-V2A



Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	EEx 14 RT

### // EEx 14 RST-V2A





# Ex command devices

## // Series EEx 14, Actuator

### Features/Options

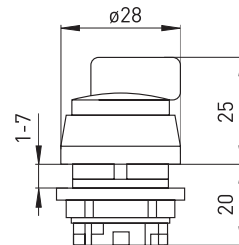
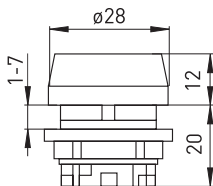
- Diaphragm of transparent silicon material
- IP 67 for actuators with diaphragm
- With pre-wired cable, cable length 1 metre
- Available with actuator made of stainless steel

### Features/Options

- Selector with rest positions
- Available in 3 different versions
- Protection class IP 65
- With pre-wired cable, cable length 1 metre
- Available with actuator made of stainless steel

## // Push button with diaphragm RTM

## // Selector RW



154

### Contact variants: switch travel/contacts

### Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<b>EEx 14 RTM</b> 

	Slow action
1 NC/1 NO contact	<b>EEx 14 RW ...</b> 
2 switching positions Switching angle 90° 0 - I or I - II	<b>EEx 14 RWA 0 - I</b> <b>EEx 14 RWA I - II</b> 
3 switching positions Switching angle -45° + 45° I - 0 - II	<b>EEx 14 RWB I - 0 - II</b> 
Control switch actuated selector Left-hand side switching, right-hand side stroke Switching angle -45° + 45° I - 0 ← II	<b>EEx 14 RWC I - 0 ← II</b> 



**Features/Options**

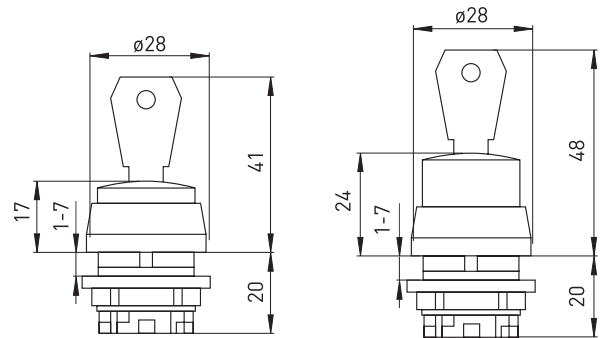
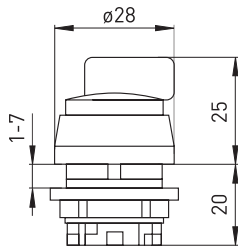
- RST with spring return
- Available in 2 different versions
- Protection class IP 65
- With pre-wired cable, cable length 1 metre
- Available with actuator made of stainless steel

**Features/Options**

- RSSA key switch with safety cylinder lock (locks against turning)
- Normal version always has same key number
- Available in 9 different versions
- Up to 20 lock combinations available on request
- Protection class IP 65
- With pre-wired cable, cable length 1 metre
- Available with actuator made of stainless steel

**// Control switch RST**

**// Key switch RSSA**



**Contact variants: switch travel/contacts**

**Contact variants: switch travel/contacts**

	Slow action
1 NC/1 NO contact	<p><b>EEx 14 RST ...</b></p>
Switching angle 90° with return to left position, 0 ← I	<p><b>EEx 14 RSTA 0 ← I</b></p>
Switching angle -45° + 45° with return to central position I → 0 ← II	<p><b>EEx 14 RSTB I → 0 ← II</b></p>

	Slow action	2 Schaltstellungen	3 Schaltstellungen
1 NC/1 NO contact	<p><b>EEx 14 RSSA ...</b></p>		
Key switch	<p><b>EEx 14 RSSA 14</b></p> <p><b>EEx 14 RSSA 15</b></p> <p><b>EEx 14 RSSA 17</b></p> <p><b>EEx 14 RSSA 18</b></p> <p><b>EEx 14 RSSA 27</b></p>	<p><b>EEx 14 RSSA 12</b></p> <p><b>EEx 14 RSSA 13</b></p> <p><b>EEx 14 RSSA 23</b></p> <p><b>EEx 14 RSSA 24</b></p>	

**Legend**

- I Switching position
- ↶ Spring return
- Position for key removal



# Ex command devices

## // Series EEx 14, Actuator

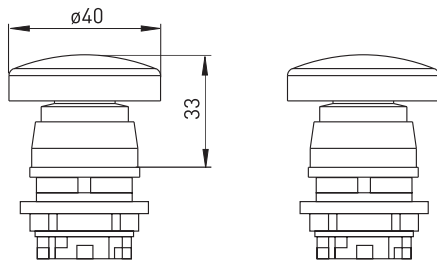
### Features/Options

- Thermoplastic actuator
- Protection class IP 65
- With pre-wired cable, cable length 1 metre
- 1 NC and 1 NO contact, double break, type Zb or 2 NC contacts

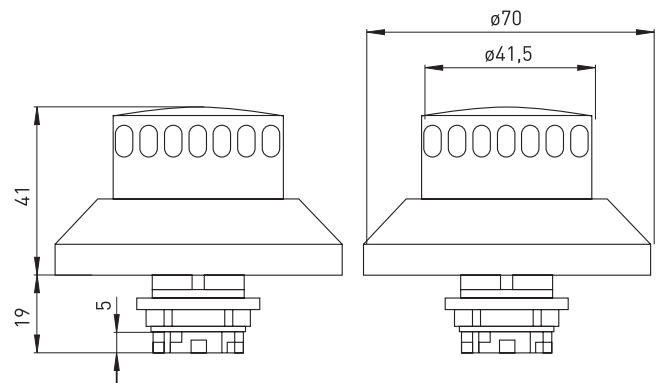
### Features/Options

- Thermoplastic actuator
- according to EN 418
- 1 NC and 1 NO contact, double break, type Zb or 2 NC contacts
- Projection from front of panel 41 mm
- With collar to prevent blocking
- Reset by turning clockwise
- With pressure-point to protect against unintentional actuation
- Protection class IP 65
- With pre-wired cable, cable length 1 metre

## // Push button RS SW



## // Emergency-stop push button RUV



Contact variants: switch travel/contacts

Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<b>EEx 14 RS SW</b> 
2 NC contacts	<b>EEx 14 RS SW 2Ö</b> 

	Slow action
1 NC/1 NO contact	<b>EEx 14 RUV</b> 
2 NC contacts	<b>EEx 14 RS RUV 2Ö</b> 



PRODUCTION PROCESS ASSEMBLY  
ASSEMBLY OF CONTACT BRIDGES



157



## Ex position switches

### Thermoplastic enclosure

// Series EEx 13

from page 164

// Series EEx/EExM 14

from page 176

// Series EEx 95

from page 186

// Series EEx T 356

from page 196

### Metal enclosure

// Series EEx 12

from page 200

// Series EEx 335

from page 212

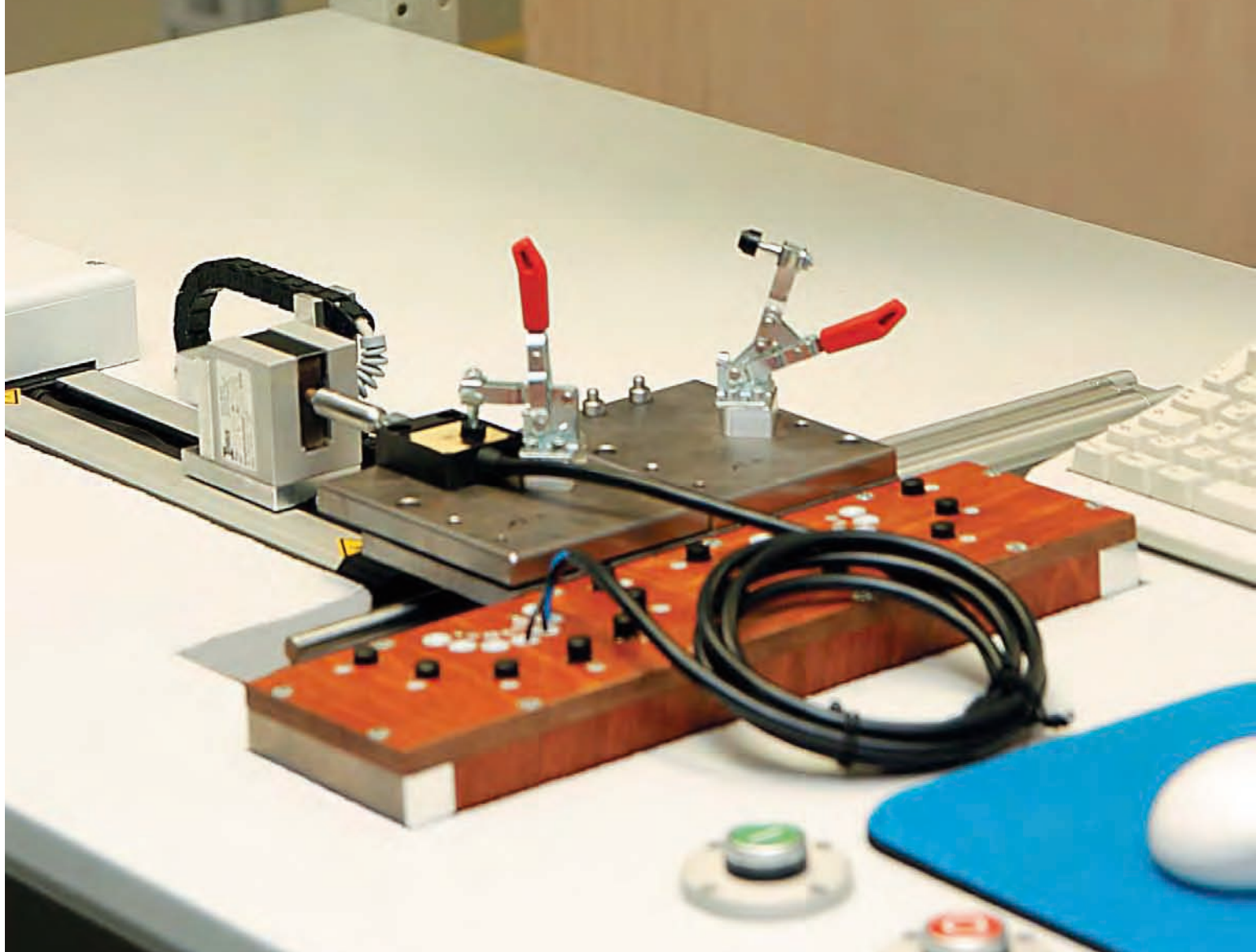
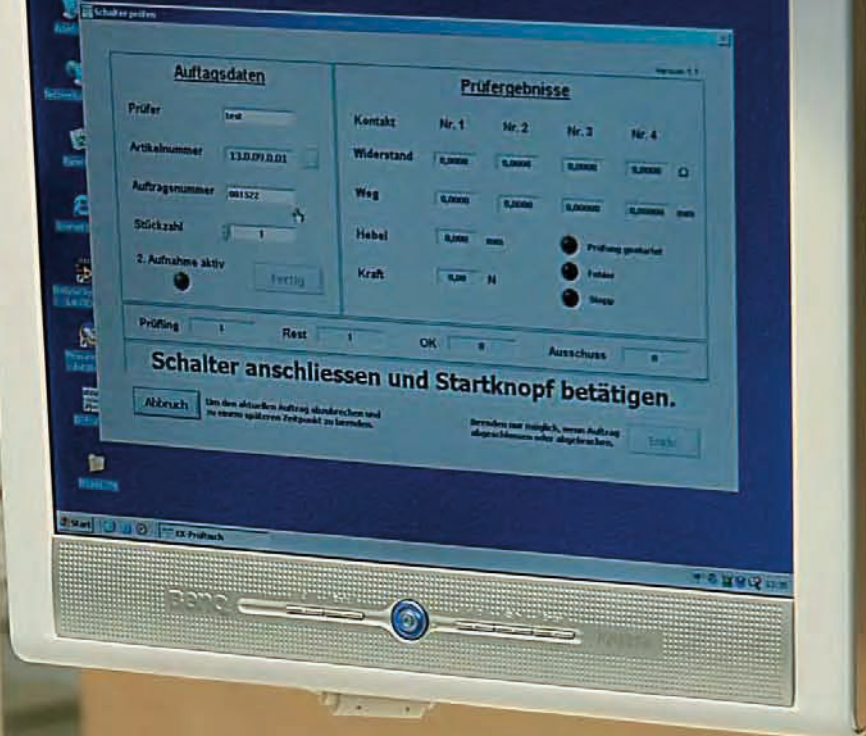
// Series EEx 355

from page 218

// Series EEx/EExM 61

from page 224





160

# Ex position switches

## Range of application

Ex position switches are used where moving parts of machines and industrial plants have to be positioned, controlled and monitored.

The various application fields, ranging from fine mechanics to heavy-duty machinery, require different materials, electrical capacity and quality criteria regarding construction and design.

## Design and operating principle

Many of the Ex position switches fulfil the requirements of the IEC 60947-5-1 standard and can therefore also be used as Ex position switches with safety function. These products are identified by the symbol  $\ominus$  for positive break. Some position switches fulfil the requirements for standardised switches to DIN EN 50 047 or DIN EN 50 041.

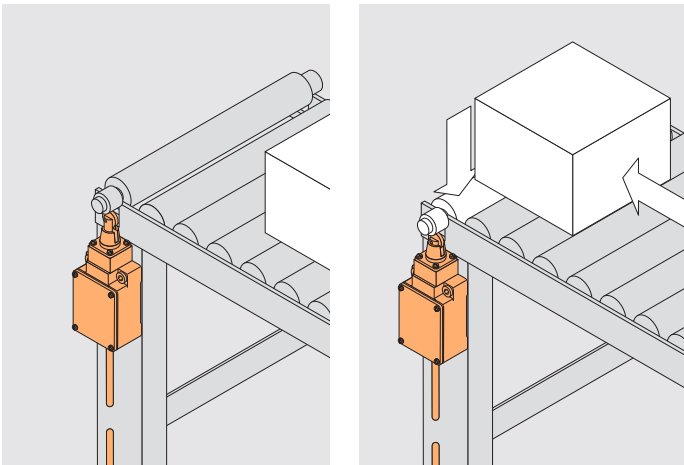
The position switches are available with snap and slow action and are available with different contact configurations. A wide range of actuators completes the program. Most of the switches can be supplied with a metal roller on request.

The devices are listed in the order of enclosure dimensions and materials, starting with the smallest and the plastic enclosures.

All Ex position switches shown in this chapter bear the CE mark according to the Low Voltage Directive 06/95/EC and to ATEX 94/9/EC. The Ex position switches per equipment category 3D bear the CE mark without the number of the notified body and have received a CE declaration of manufacturer conformity.

## Application

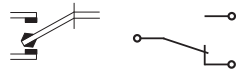
### Position monitoring on a conveyor belt



### Contacts per IEC 60617

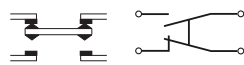
#### Type C

Change-over contact with single break with 3 terminals



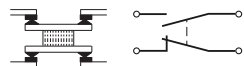
#### Type Za

Change-over contact with double break with 4 terminals. The contacts have the same polarity.

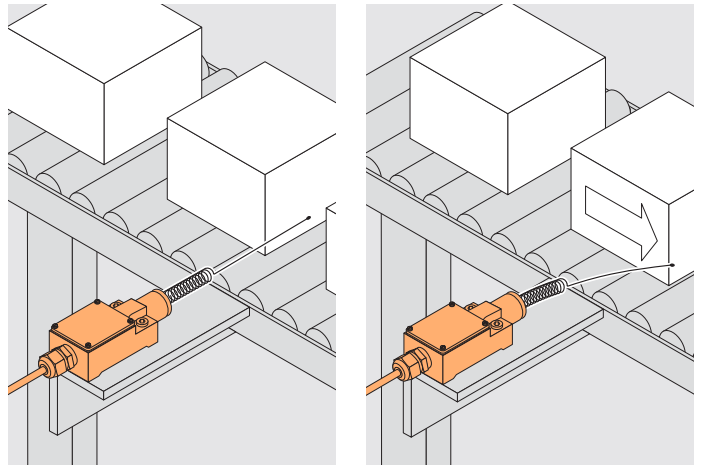


#### Type Zb

Change-over contact with double break with 4 terminals. The two movable contacts are electrically insulated from each other.

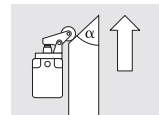


### As a piece counter

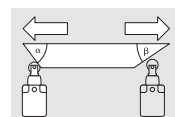


### Legend

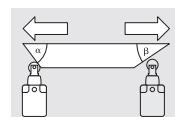
$\alpha$ : Actuating angle from bottom of switch axis as shown in picture



$\alpha$ : Actuating angle from right of switch axis



$\beta$ : Actuating angle from left of switch axis as shown in picture









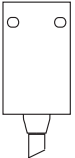
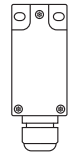


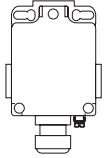


# Selection table

## Ex position switches

// Series

// Actuator

		↓	↓	↺	↺	↺	↔	↔	↔
									
<p>EEx 13, from page 164</p> <ul style="list-style-type: none"> <li>- Thermoplastic enclosure</li> <li>- Cable</li> </ul>  		+ W	F	KU WKU	FKU		R WR		FR
<p>EEx/EEExM 14, from page 176</p> <ul style="list-style-type: none"> <li>- Thermoplastic enclosure</li> <li>- Cable</li> </ul>  		+ W	F	KU WKU	FKU	VKU	R WR		FR
<p>EEx/EEExM 95, from page 186</p> <ul style="list-style-type: none"> <li>- Thermoplastic enclosure</li> <li>- Wiring compartment</li> <li>- 1 cable entry</li> <li>- Design to DIN EN 50 047</li> </ul> 		W					R	RL	
<p>EEx T 356, from page 196</p> <ul style="list-style-type: none"> <li>- Thermoplastic enclosure with metal cover</li> <li>- Cable</li> </ul>  		S					R		
<p>EEx 12, from page 200</p> <ul style="list-style-type: none"> <li>- Metal enclosure</li> <li>- Cable</li> </ul> 		+ W	F	KU WKU	FKU		R WR		FR
<p>EEx 335, from page 212</p> <ul style="list-style-type: none"> <li>- Metal enclosure</li> <li>- Wiring compartment</li> <li>- 1 cable entry</li> </ul>  		S					R		
<p>EEx 355, from page 218</p> <ul style="list-style-type: none"> <li>- Metal enclosure</li> <li>- Wiring compartment</li> <li>- 3 cable entries</li> </ul>  		S					R		
<p>EEx /EEExM 61, from page 224</p> <ul style="list-style-type: none"> <li>- Metal enclosure</li> <li>- Cable</li> </ul> 		W							

+ Standard: plunger without water-tight collar

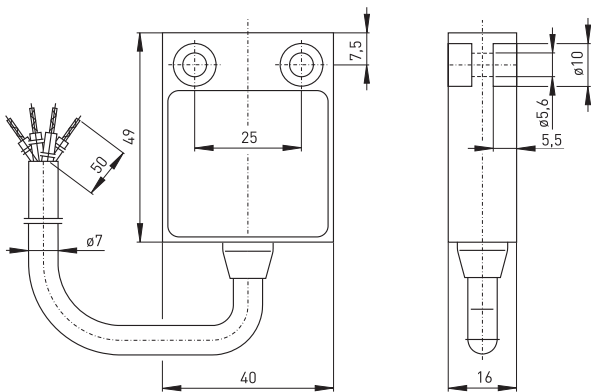
Actuating direction ↓ / Free movement of actuator →

	↔	↔	↔	↑	↔	↔	↔	↔	↔	↔	↔	↻	↻	↻		
		WH	WHL	WPH	WHK	D	DL	DS			DD	TL	TF	TK		
	VR					D	DL	DS				TL	TF	TK		
		WH WHM	WHL WML	WPH WPHM 4K	WHKM	D		DS		DF	DD	TL		TK		
						4VH		4V7H			4V10H					
		WH	WHL	WPH	WHK	D	DL	DS			DD	TL	TF	TK		
		1K		3K		4VH	4V3H	4V7H	3V4D		4V10H			TK		
		1K		3K		4VH	4V3H	4V7H	3V4D		4V10H			TK		
		WH	WHL	WPH	WHK	D	DL	DS				TL	TF TFL	TK		

# Ex position switches

## // Series EEx 13

### // EEX 13



### Features/Options

- Ex zone 1 and 2, as well as 21 and 22
- Thermoplastic enclosure
- Double insulated □
- Slow action ⊖, change-over contact with double break
- Slow action with overlapping contacts available
- Suitable for in-line mounting
- With pre-wired cable, cable length 1 metre
- Special version only for equipment category 3D, available for dust Ex zone 22
- Inmetro approval for Brazil to be ordered separately

### Technical data

Standards	IEC/EN 60947-5-1; EN 1088; EN 50014; EN 50018; EN 50281-1-1
Enclosure	glass-fibre reinforced, shock-proof thermoplastic, self-extinguishing UL 94-V0
Switch insert	-
Protection class	IP 65 according to EN 60529
Contact material	silver
Switching system	slow action, positive break NC contact ⊖
Switching elements	change-over contact with double break Zb, galvanically separated contact bridges
Termination	cable H05VV-F
Cable section	4 x 0.75 mm <sup>2</sup>
Cable length	1, 2, 5 and 10 m
U <sub>imp</sub>	4 kV
U <sub>i</sub>	250 V
I <sub>the</sub>	6 A
I <sub>e</sub> /U <sub>e</sub>	6 A/250 VAC; 0.25 A/230 VDC
Utilisation category	AC-15, DC-13
Max. fuse rating	6 A gL/gG D-fuse
Ambient temperature	-20 °C ... +65 °C
Mechanical life	> 1 million operations
Switching frequency	1800/h
Repeat accuracy	± 0.1 mm
Contact gap	max. 2 x 4.5 mm
Ex certification	⊖ II 2G EEx d IIC T6, II 2D IP65 T80°C
Approvals	PTB 03 ATEX 1068 X



### Ordering details

EEx 13 WR 10/1S-V-S-1m-3D

- Equipment Categ. 3D, Staub-Ex Zone 22
- Cable length 1 m, (2 m, 5 m, 10 m)
- Cable entry on side
- Mechanical latching
- Contact type 10/1S, (UE)
- Actuator R (H, TK, D, etc. ...)
- Collar
- Series
- Ex certified component

# Ex position switches

## // Series EEx 13, variants

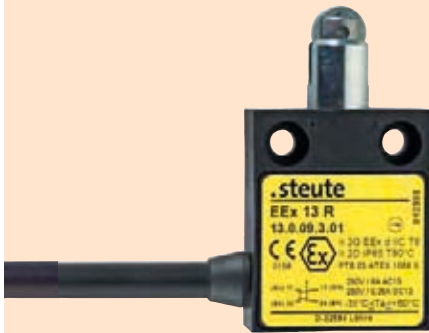
### Features/Options

- Special cables possible on request
- Gold-plated contacts available on request
- Mechanical latching: locking by actuation, unlocking by pulling the unlocking button

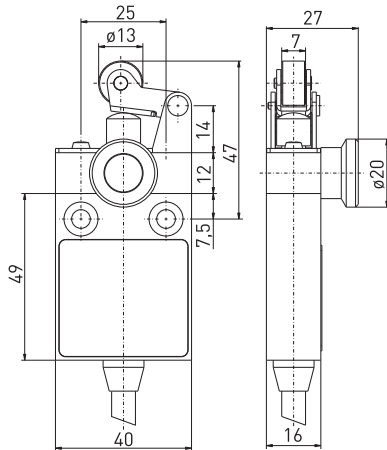
### Features/Options

- Actuating speed 0.5 m/s with an actuating angle of 0°

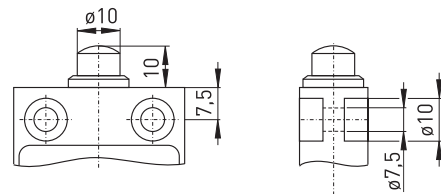
### // Cable entry on side S



### // Mechanical latching V



### // Plunger

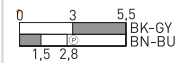


Contact variants: switch travel/contacts

### Slow action

1 NC/1 NO contact

EEx 13



# Ex position switches

## // Series EEx 13, actuators

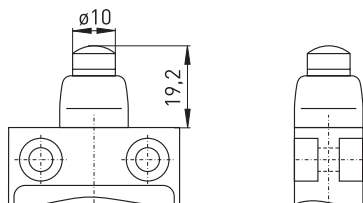
### Features/Options

- Actuating speed 0.5 m/s with an actuating angle of 0°
- Collar to protect against the entry of foreign bodies

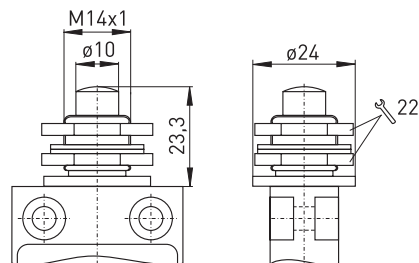
### Features/Options

- Actuating speed 0.5 m/s with an actuating angle of 0°

### // Plunger with collar W



### // Plunger for front mounting F



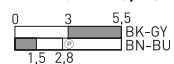
Contact variants: switch travel/contacts

Contact variants: switch travel/contacts

#### Slow action

1 NC/1 NO contact

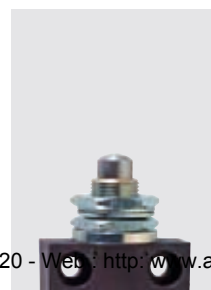
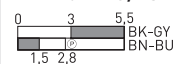
EEx 13 W 10/15



#### Slow action

1 NC/1 NO contact

EEx 13 F 10/15



**Features/Options**

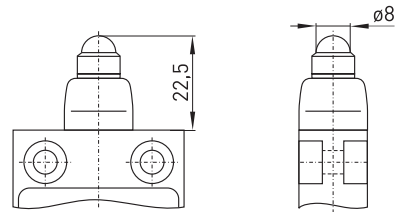
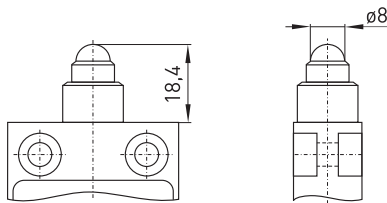
- Actuating speed 0.5 m/s with an actuating angle of 20°
- Can be actuated in line with or from side of switch axis
- Actuator head with captive stainless steel ball actuator
- Exact repeatability of switching point

**Features/Options**

- Actuating speed 0.5 m/s with an actuating angle of 15°
- Can be actuated in line with or from side of switch axis
- Actuator head with captive stainless steel ball actuator
- Exact repeatability of switching point
- Collar to protect against the entry of foreign bodies

**// Ball plunger KU**

**// Ball plunger with collar WKU**

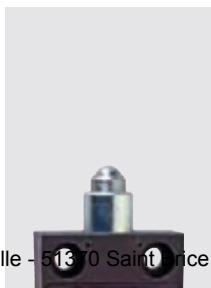


Contact variants: switch travel/contacts

Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<p><b>EEx 13 KU 10/1S</b></p> <p>BK-GY BN-BU</p>

	Slow action
1 NC/1 NO contact	<p><b>EEx 13 WKU 10/1S</b></p> <p>BK-GY BN-BU</p>



# Ex position switches

## // Series EEx 13, actuators

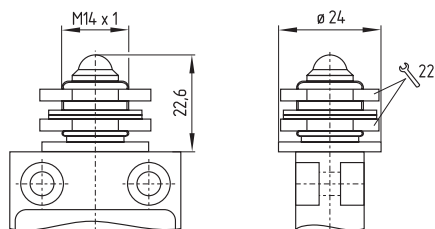
### Features/Options

- Actuating speed 0.5 m/s with an actuating angle of 20°
- Can be actuated in line with or from side of switch axis
- Actuator head with captive stainless steel ball actuator
- Ball diameter: 8 mm
- Exact repeatability of switching point

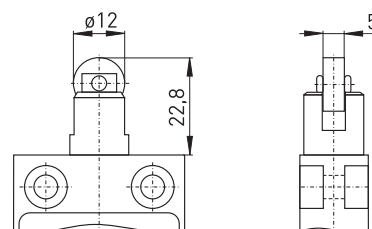
### Features/Options

- Actuating speed 0.5 m/s with an actuating angle of 30°
- Metal roller
- Available with actuator repositioned by 90°

### // Ball plunger for front mounting FKU



### // Roller plunger R

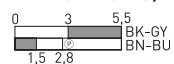


Contact variants: switch travel/contacts

#### Slow action

1 NC/1 NO contact

EEx 13 FKU 10/1S

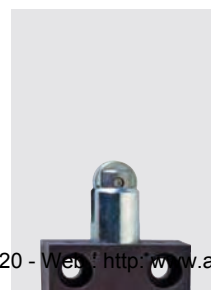
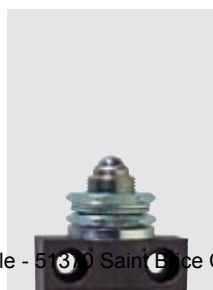
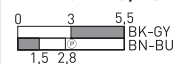


Contact variants: switch travel/contacts

#### Slow action

1 NC/1 NO contact

EEx 13 R 10/1S



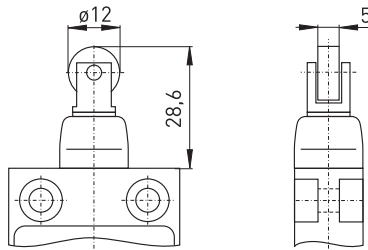
**Features/Options**

- Actuating speed 0.5 m/s with an actuating angle of 25°
- Metal roller
- Available with actuator repositioned by 90°
- Collar to protect against the entry of foreign bodies

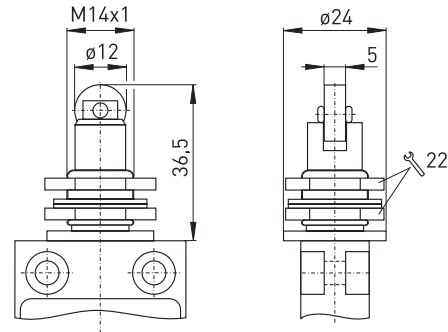
**Features/Options**

- Actuating speed 0.5 m/s with an actuating angle of 25°
- Metal roller
- Available with actuator repositioned by 90°

// Roller plunger with collar WR



// Roller plunger for front mounting FR

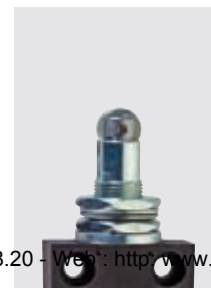
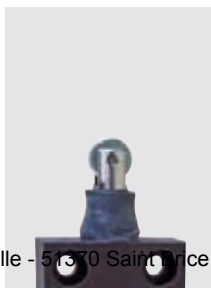


Contact variants: switch travel/contacts

Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<b>EEx 13 WR 10/1S</b>

	Slow action
1 NC/1 NO contact	<b>EEx 13 FR 10/1S</b>





# Ex position switches

## // Series EEx 13, actuators

### Features/Options

- Actuating speed 0.5 m/s with an actuating angle of  $\alpha = 40^\circ$  and  $\beta = 25^\circ$
- Metal roller
- Available with actuator repositioned by  $180^\circ$
- Collar to protect against the entry of foreign bodies
- With plastic roller available on request

### Note

Actuation from the left should be avoided since this reduces the mechanical life of the position switch.

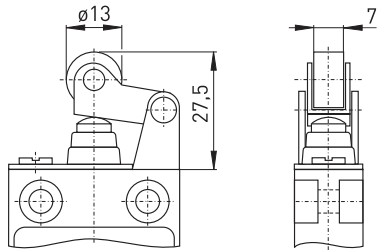
### Features/Options

- Actuating speed 0.5 m/s with an actuating angle of  $\alpha = 40^\circ$  and  $\beta = 25^\circ$
- Metal roller
- Available with actuator repositioned by  $180^\circ$
- Collar to protect against the entry of foreign bodies
- With plastic roller available on request

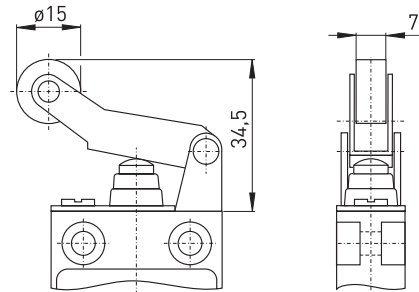
### Note

Actuation from the left should be avoided since this reduces the mechanical life of the position switch.

## // Roller lever with collar WH



## // Long roller lever with collar WHL

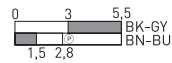


Contact variants: switch travel/contacts

### Slow action

1 NC/1 NO contact

EEx 13 WH 10/15

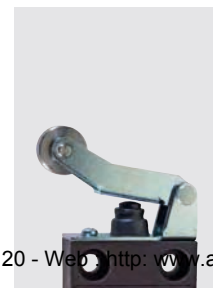
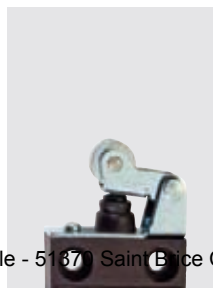
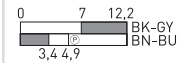


Contact variants: switch travel/contacts

### Slow action

1 NC/1 NO contact

EEx 13 WHL 10/15



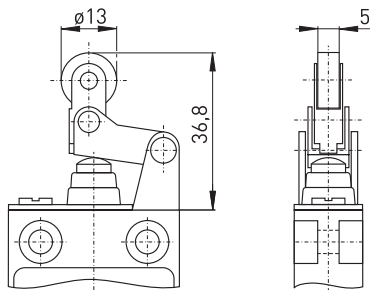
**Features/Options**

- Actuating speed 0.5 m/s with an actuating angle of  $\alpha = 40^\circ$
- Actuation only possible from right-hand side
- Free movement of actuator from the other side
- Metal roller
- Available with actuator repositioned by  $180^\circ$
- Collar to protect against the entry of foreign bodies
- With plastic roller available on request

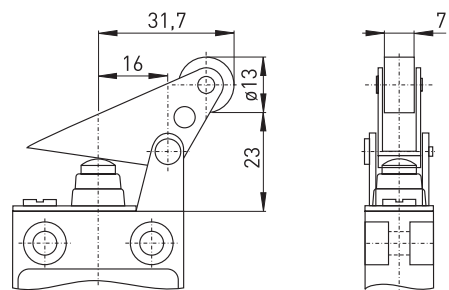
**Features/Options**

- Actuating speed 0.5 m/s with an actuating angle of  $\alpha = 30^\circ$
- Actuation parallel to switch from below
- Metal roller
- Available with actuator repositioned by  $180^\circ$
- Collar to protect against the entry of foreign bodies
- With plastic roller available on request

// Rocking roller lever with collar WHK



// Parallel roller lever with collar WPH

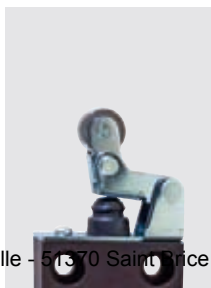


Contact variants: switch travel/contacts

Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<b>EEx 13 WHK 10/1S</b>

	Slow action
1 NC/1 NO contact	<b>EEx 13 WPH 10/1S</b>



# Ex position switches

## // Series EEx 13, actuators

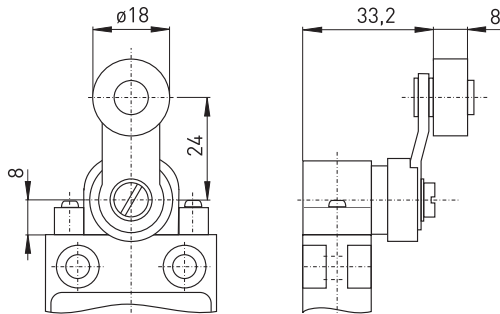
### Features/Options

- Actuating speed 0.5 m/s with an actuating angle of 45°
- Wear-resistant thermoplastic roller
- Lever can be repositioned in 10° steps clockwise or counter-clockwise
- Actuator can be repositioned by 180°
- With metal roller available on request

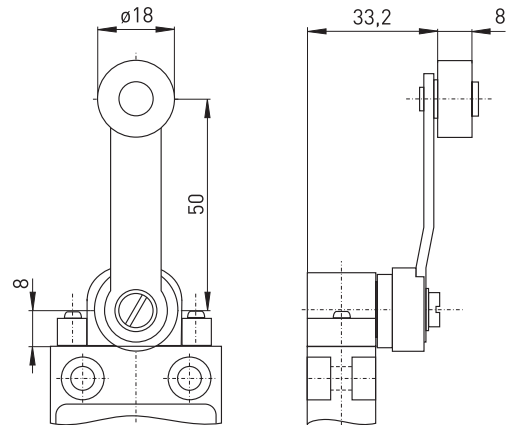
### Features/Options

- Actuating speed 0.5 m/s with an actuating angle of 45°
- Wear-resistant thermoplastic roller
- Lever can be repositioned in 10° steps clockwise or counter-clockwise
- Actuator can be repositioned by 180°
- With metal roller available on request

## // Rocking roller lever D



## // Long rocking roller lever DL



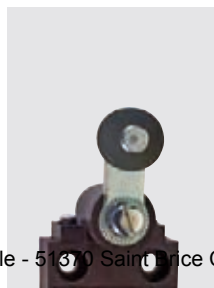
172

Contact variants: switch travel/contacts

Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<b>EEx 13 D 1Ö/1S</b> 

	Slow action
1 NC/1 NO contact	<b>EEx 13 DL 1Ö/1S</b> 



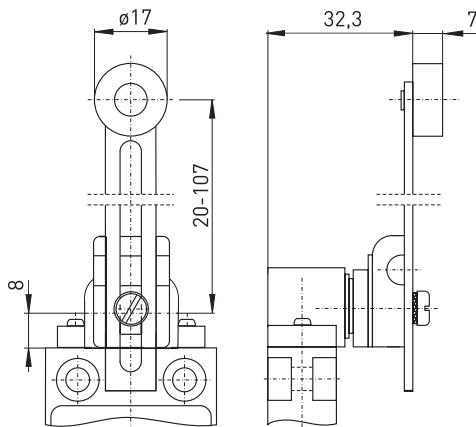
**Features/Options**

- Actuating speed 0.5 m/s with an actuating angle of 45°
- Wear-resistant thermoplastic roller
- Lever can be repositioned in 10° steps clockwise or counter-clockwise
- Actuator can be repositioned by 180°
- With metal roller available on request

**Features/Options**

- Wear-resistant thermoplastic tip
- Lever can be repositioned in 10° steps clockwise or counter-clockwise
- Actuator can be repositioned by 180°

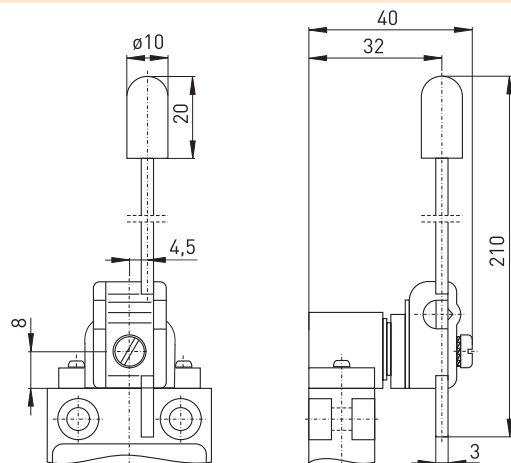
**// Adjustable-length roller lever DS**



Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<p><b>EEx 13 DS 10/1S</b></p> <p>65° 35° 0° 35° 65°</p> <p>15° 15° BK-GY BN-BU</p>

**// Wire roller lever DD**



Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<p><b>EEx 13 DD 10/1S</b></p> <p>65° 35° 0° 35° 65°</p> <p>15° 15° BK-GY BN-BU</p>



# Ex position switches

## // Series EEx 13, actuators

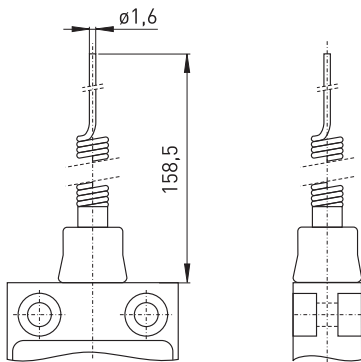
### Features/Options

- Spring rod can be actuated from any direction
- Spring rod can be shortened 30 mm in actuating area
- Exact linear actuation not unnecessary
- Elasticity of spring allows for deflection above the max. switching angle of 18°

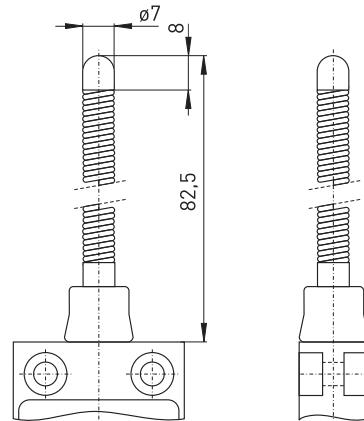
### Features/Options

- With rounded steel tip
- Spring rod can be actuated from any direction
- Elasticity of spring allows for deflection above the max. switching angle of 18°

### // Long spring rod TL



### // Spring rod with rounded steel tip TF



174

### Contact variants: switch travel/contacts

### Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<p><b>EEx 13 TL 10/1S</b></p>

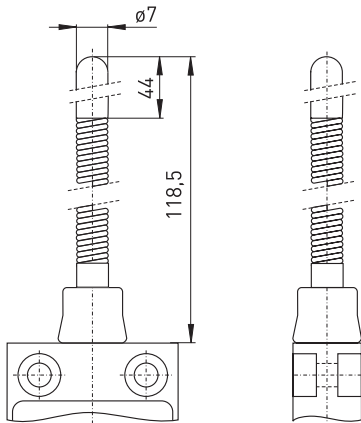
	Slow action
1 NC/1 NO contact	<p><b>EEx 13 TF 10/1S</b></p>



**Features/Options**

- Wear-resistant plastic tip
- Spring rod can be actuated from any direction
- Elasticity of spring allows for deflection above the max. switching angle of 18°

// Spring rod with plastic tip TK



Contact variants: switch travel/contacts

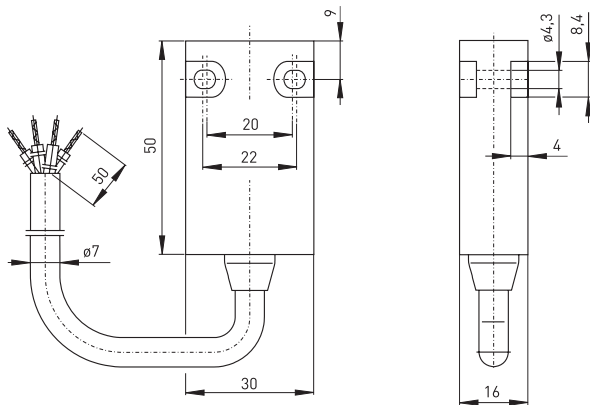
	Slow action
1 NC/1 NO contact	<p><b>EEx 13 TK 10/15</b></p> <p>18° 15° 0° 15° 18°</p> <p>10° 10° BK-GY BN-BU</p>



# Ex position switches

## // Series EEx/EEExM 14

// EEX/EEEXM 14



### Features/Options

- Ex zone 1 and 2, as well as 21 and 22
- Thermoplastic enclosure
- Double insulated □
- Slow action with overlapping contacts available
- Mounting details to DIN EN 50 047
- Suitable for in-line mounting
- With pre-wired cable, cable length 1 metre
- Special version only for equipment category 3D, available for dust Ex zone 22
- Inmetro approval for Brazil to be ordered separately

### Technical data

<b>Standards</b>	IEC/EN 60947-5-1; EN 1088; EN 50014; EN 50018; EN 50281-1-1
<b>Enclosure</b>	glass-fibre reinforced, shock-proof thermoplastic, self-extinguishing UL 94-V0
<b>Switch insert</b>	-
<b>Protection class</b>	IP 65 according to EN 60529
<b>Contact material</b>	silver
<b>Switching system</b>	slow or snap action
<b>Switching elements</b>	EEx 14: change-over contact with double break Zb or 2 NC contacts, galvanically separated contact bridges; EEExM 14: change-over contact with single break C or Za
<b>Termination</b>	cable H05VV-F
<b>Cable section</b>	Za and Zb: 4 x 0.75mm <sup>2</sup> , C: 3 x 0.75mm <sup>2</sup>
<b>U<sub>imp</sub></b>	4 kV
<b>U<sub>i</sub></b>	250 V
<b>I<sub>the</sub></b>	Zb: 6 A; C and Za: 5 A
<b>I<sub>e</sub>/U<sub>e</sub></b>	Zb: 6 A/250 VAC, 0.25 A/230 VDC; Za: 5 A/250 VAC, 0.2 A/230 VDC, C: 5 A/250 VAC, 0.16 A/230 VDC
<b>Utilisation category</b>	AC-15, DC-13
<b>Max. fuse rating</b>	Zb: 6 A gL/gG D-fuse; C and Za: 5 A gL/gG D-fuse
<b>Ambient temperature</b>	-20 °C ... +65 °C, C: +60 °C, T5: +75 °C
<b>Mechanical life</b>	> 1 million operations
<b>Switching frequency</b>	1800/h
<b>Repeat accuracy</b>	± 0.1 mm
<b>Contact gap</b>	max. 2 x 4 mm
<b>Ex certification</b>	⊕ II 2G EEx d IIC T6, II 2D IP65 T80°C
<b>Approvals</b>	EEExM 14: PTB 03 ATEX 1069 X EEExM 14 IÖ/1S: PTB 03 ATEX 1006 X EEx 14: PTB 03 ATEX 1070 X
<b>Note</b>	Switch must be protected from mechanical damage!

### Ordering details

**EEExM 14 WR IÖ/1S-RE-S-1m-3D**

Equipment  
 Categ. 3D, dust  
 Ex zone 22  
 Cable length 1 m,  
 (2 m, 5 m, 10 m)  
 Cable entry on side  
 Latching  
 Contact type IÖ/1S, (UE, 2Ö)  
 Actuator R (H, TK, D, etc. ...)  
 Collar  
 Series  
 M Snap action  
 Ex certified component

# Ex position switches

## // Series EEx/EExM 14, actuators

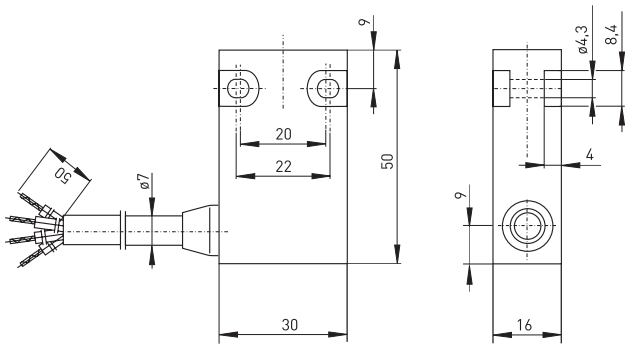
### Features/Options

- Snap action, change-over contact available with double break e.g. EExM 14 R 10/15
- Slow action available with 2 NC contacts
- With gold-plated contacts available on request
- With latching: On-/Off principle

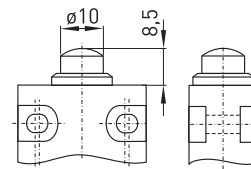
### Features/Options

- Actuating speed 0.5 m/s with an actuating angle of 0°

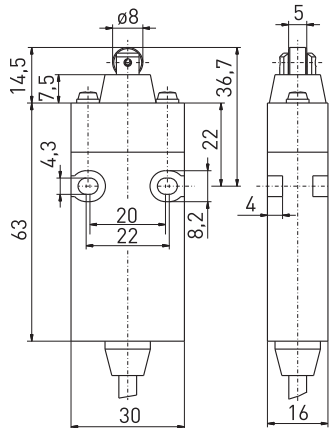
### // Cable entry on side S



### // Plunger



### // With latching RE



### Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact	<b>EExM 14 10/15</b> 	<b>EEx 14 10/15</b> 
1 change-over contact	<b>EExM 14</b> 	
2 NC contacts		<b>EEx 14 20</b> 



# Ex position switches

## // Series EEx/EExM 14, actuators

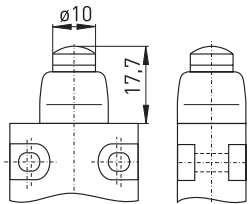
### Features/Options

- Actuating speed 0.5 m/s with an actuating angle of 0°
- Collar to protect against the entry of foreign bodies

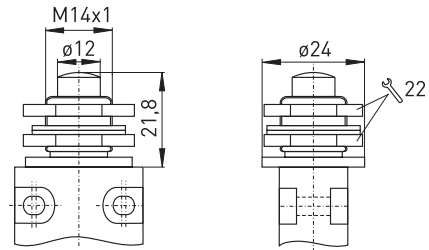
### Features/Options

- Actuating speed 0.5 m/s with an actuating angle of 0°

### // Plunger with collar W



### // Plunger for front mounting F



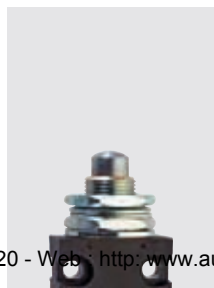
178

### Contact variants: switch travel/contacts

### Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact	<b>EExM 14 W 10/1S</b> 0 1,5 5,5 BK-GY BN-BU	<b>EEx 14 W 10/1S</b> 0 3 5,5 BK-GY BN-BU 1,5 2,8
1 change-over contact	<b>EExM 14 W</b> 0 1,5 5,5 CY BK GY BN	
2 NC contacts		<b>EEx 14 W 20</b> 0 5,5 BK-GY BN-BU 1,5 2,8

	Snap action	Slow action
1 NC/1 NO contact	<b>EExM 14 F 10/1S</b> 0 1,5 5,5 BK-GY BN-BU	<b>EEx 14 F 10/1S</b> 0 3 5,5 BK-GY BN-BU 1,5 2,8
1 change-over contact	<b>EExM 14 F</b> 0 1,5 5,5 CY BK GY BN	
2 NC contacts		<b>EEx 14 F 20</b> 0 5,5 BK-GY BN-BU 1,5 2,8



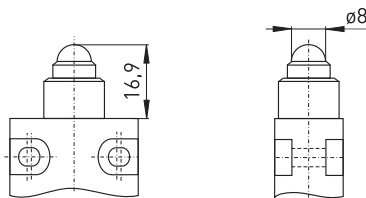
**Features/Options**

- Actuating speed 0.5 m/s with an actuating angle of 20°
- Can be actuated in line with or from side of switch axis
- Actuator head with captive stainless steel ball actuator
- Exact repeatability of switching point

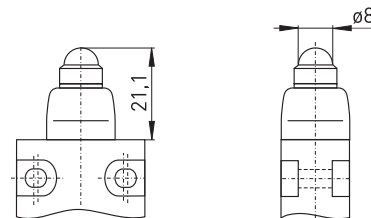
**Features/Options**

- Actuating speed 0.5 m/s with an actuating angle of 20°
- Can be actuated in line with or from side of switch axis
- Actuator head with captive stainless steel ball actuator
- Exact repeatability of switching point
- Collar to protect against the entry of foreign bodies

**// Ball plunger KU**



**// Ball plunger with collar WKU**



Contact variants: switch travel/contacts

Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact	<b>EExM 14 KU 10/1S</b> 	<b>EEx 14 KU 10/1S</b> 
1 change-over contact	<b>EExM 14 KU</b> 	
2 NC contacts		<b>EEx 14 KU 20</b> 

	Snap action	Slow action
1 NC/1 NO contact	<b>EExM 14 WKU 10/1S</b> 	<b>EEx 14 WKU 10/1S</b> 
1 change-over contact	<b>EExM 14 WKU</b> 	
2 NC contacts		<b>EEx 14 WKU 20</b> 



# Ex position switches

## // Series EEx/EEExM 14, actuators

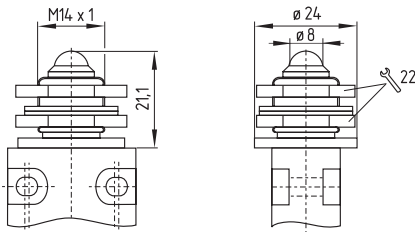
### Features/Options

- Actuating speed 0.5 m/s with a vertical actuating angle of 20°
- Can be actuated in line with or from side of switch axis
- Actuator head with captive stainless steel ball actuator
- Exact repeatability of switching point

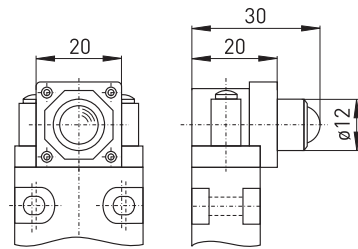
### Features/Options

- Actuation from any direction
- Actuator head with captive stainless steel ball actuator

## // Ball plunger for front mounting FKU



## // Vertical ball plunger VKU



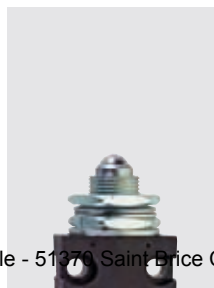
180

### Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact	<b>EExM 14 FKU 10/1S</b> 	<b>EEx 14 FKU 10/1S</b> 
1 change-over contact	<b>EExM 14 FKU</b> 	
2 NC contacts		<b>EEx 14 FKU 20</b> 

### Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact	<b>EExM 14 VKU 10/1S</b> 	<b>EEx 14 VKU 10/1S</b> 
1 change-over contact	<b>EExM 14 VKU</b> 	
2 NC contacts		<b>EEx 14 VKU 20</b> 



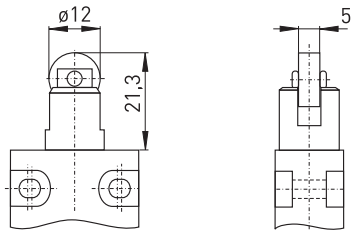
**Features/Options**

- Actuating speed 0.5 m/s with an actuating angle of 30°
- Metal roller
- Available with actuator repositioned by 90°

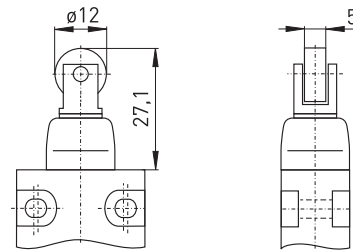
**Features/Options**

- Actuating speed 0.5 m/s with an actuating angle of 25°
- Metal roller
- Available with actuator repositioned by 90°
- Collar to protect against the entry of foreign bodies

// Roller plunger R



// Roller plunger with collar WR

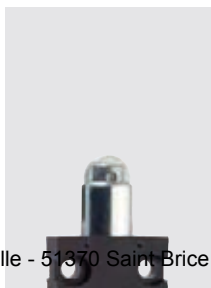


Contact variants: switch travel/contacts

Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact	<b>EExM 14 R 10/1S</b> 	<b>EEx 14 R 10/1S</b> 
1 change-over contact	<b>EExM 14 R</b> 	
2 NC contacts		<b>EEx 14 R 20</b> 

	Snap action	Slow action
1 NC/1 NO contact	<b>EExM 14 WR 10/1S</b> 	<b>EEx 14 WR 10/1S</b> 
1 change-over contact	<b>EExM 14 WR</b> 	
2 NC contacts		<b>EEx 14 WR 20</b> 



# Ex position switches

## // Series EEx/EExM 14, actuators

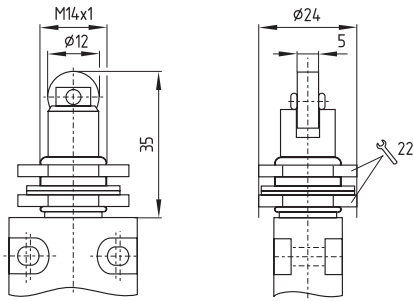
### Features/Options

- Actuating speed 0.5 m/s with an actuating angle of 25°
- Metal roller
- Available with actuator repositioned by 90°

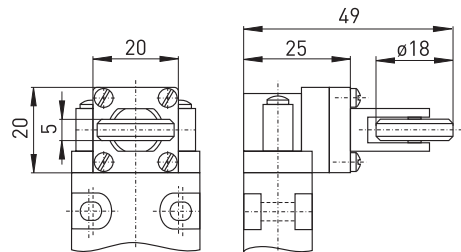
### Features/Options

- Available with actuator repositioned by 90°
- Wear-resistant thermoplastic roller

## // Roller plunger for front mounting FR



## // Vertical roller plunger VR



182

### Contact variants: switch travel/contacts

### Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact	<b>EExM 14 FR 10/1S</b> 	<b>EEx 14 FR 10/1S</b> 
1 change-over contact	<b>EExM 14 FR</b> 	
2 NC contacts		<b>EEx 14 FR 20</b> 

	Snap action	Slow action
1 NC/1 NO contact	<b>EExM 14 VR 10/1S</b> 	<b>EEx 14 VR 10/1S</b> 
1 change-over contact	<b>EExM 14 VR</b> 	
2 NC contacts		<b>EEx 14 VR 20</b> 



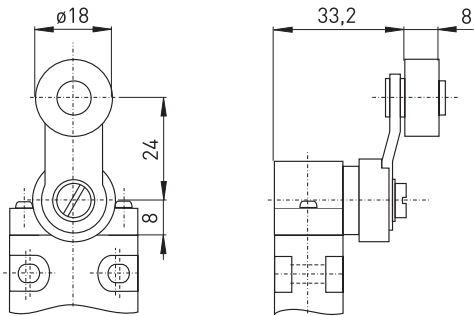
**Features/Options**

- Actuating speed 0.5 m/s with an actuating angle of 45°
- Wear-resistant thermoplastic roller
- Lever can be repositioned in 10° steps clockwise or counter-clockwise
- Actuator can be repositioned by 180°
- With metal roller available on request

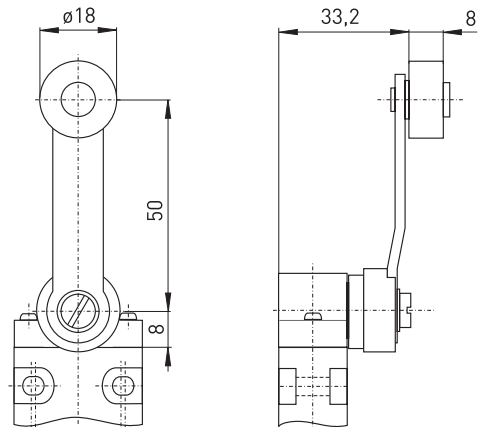
**Features/Options**

- Actuating speed 0.5 m/s with an actuating angle of 45°
- Wear-resistant thermoplastic roller
- Lever can be repositioned in 10° steps clockwise or counter-clockwise
- Actuator can be repositioned by 180°
- With metal roller available on request

**// Rocking roller lever D**



**// Long rocking roller lever DL**



**Contact variants: switch travel/contacts**

	Snap action	Slow action
1 NC/1 NO contact	<b>EExM 14 D 10/1S</b> 	<b>EEx 14 D 10/1S</b> 
1 change-over contact	<b>EExM 14 D</b> 	
2 NC contacts		<b>EEx 14 D 20</b> 

**Contact variants: switch travel/contacts**

	Snap action	Slow action
1 NC/1 NO contact	<b>EExM 14 DL 10/1S</b> 	<b>EEx 14 DL 10/1S</b> 
1 change-over contact	<b>EExM 14 DL</b> 	
2 NC contacts		<b>EEx 14 DL 20</b> 



# Ex position switches

## // Series EEx/EExM 14, actuators

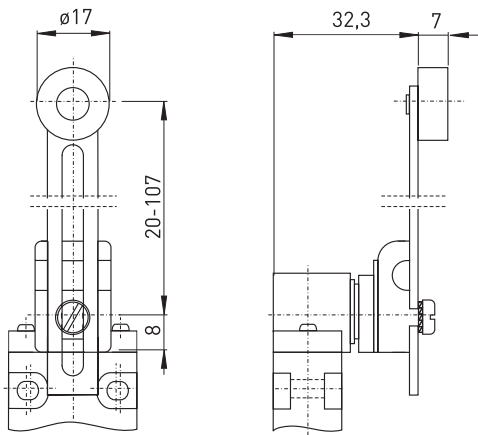
### Features/Options

- Actuating speed 0.5 m/s with an actuating angle of 45°
- Wear-resistant thermoplastic roller
- Lever can be repositioned in 10° steps clockwise or counter-clockwise
- Actuator can be repositioned by 180°
- With metal roller available on request

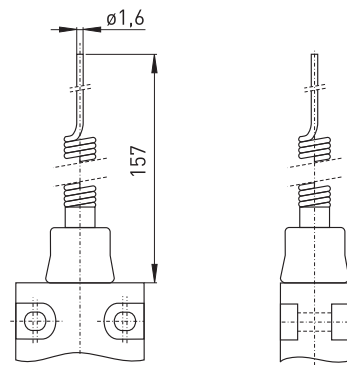
### Features/Options

- Spring rod can be actuated from any direction
- Spring rod can be shortened 30 mm in actuating area
- Exact linear actuation not necessary
- Elasticity of spring allows for deflection above the max. switching angle of 18°

## // Adjustable-length roller lever DS



## // Long spring rod TL



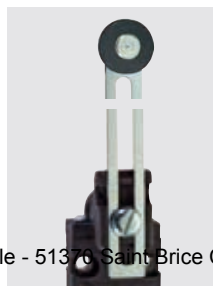
184

### Contact variants: switch travel/contacts

### Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact	<b>EExM 14 DS 10/1S</b> 	<b>EEx 14 DS 10/1S</b> 
1 change-over contact	<b>EExM 14 DS</b> 	
2 NC contacts		<b>EEx 14 DS 20</b> 

	Snap action	Slow action
1 NC/1 NO contact	<b>EExM 14 TL 10/1S</b> 	<b>EEx 14 TL 10/1S</b> 
1 change-over contact	<b>EExM 14 TL</b> 	
2 NC contacts		<b>EEx 14 TL 20</b> 



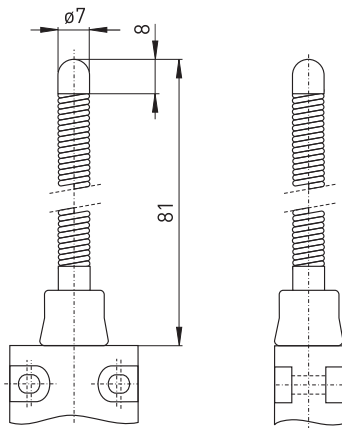
**Features/Options**

- With rounded steel tip
- Spring rod can be actuated from any direction
- Elasticity of spring allows for deflection above the max. switching angle of 18°

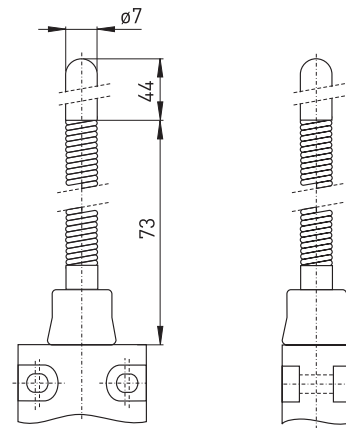
**Features/Options**

- Wear-resistant plastic tip
- Spring rod can be actuated from any direction
- Elasticity of spring allows for deflection above the max. switching angle of 18°

// Spring rod with rounded steel tip TF



// Spring rod with plastic tip TK



Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact	<b>EEExM 14 TF 10/1S</b> 	<b>EEx 14 TF 10/1S</b> 
1 change-over contact	<b>EEExM 14 TF</b> 	
2 NC contacts		<b>EEx 14 TF 20</b> 

Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact	<b>EEExM 14 TK 10/1S</b> 	<b>EEx 14 TK 10/1S</b> 
1 change-over contact	<b>EEExM 14 TK</b> 	
2 NC contacts		<b>EEx 14 TK 20</b> 

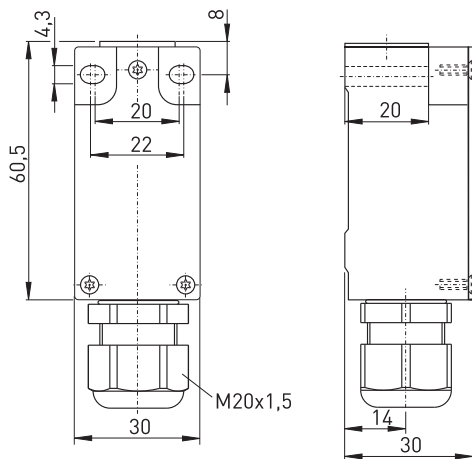




# Ex position switches

## // Series EEx 95

### // EEX 95



#### Features/Options

- Ex zone 1 and 2, as well as 21 and 22
- Thermoplastic enclosure
- Design according to DIN EN 50 047
- Wiring compartment
- Double insulated ☐
- Available with overlapping contacts
- Actuator heads can be repositioned in 4 x 90° steps
- Angle of offset roller lever can be adjusted in 10° steps
- With gold-plated contacts available on request
- Inmetro approval for Brazil to be ordered separately

#### Technical data

<b>Standards</b>	IEC/EN 60947-5-1; EN 1088; EN 50014; EN 50018; EN 50019; EN 50281-1-1
<b>Design</b>	DIN EN 50 047
<b>Enclosure</b>	glass-fibre reinforced, shock-proof thermoplastic, self-extinguishing UL 94-V0
<b>Switch insert</b>	Ex 95
<b>Protection class</b>	IP 67 according to EN 60529
<b>Contact material</b>	silver
<b>Switching system</b>	slow action, positive break NC contact ⊖
<b>Switching elements</b>	change-over contact with double break Zb or 2 NC contacts, galvanically separated contact bridges
<b>Termination</b>	M3 screw clamps
<b>Cable section</b>	max. 1.5 mm <sup>2</sup> (incl. conductor ferrules)
<b>Cable length</b>	-
<b>U<sub>imp</sub></b>	4 kV
<b>U<sub>i</sub></b>	250 V
<b>I<sub>the</sub></b>	6 A
<b>I<sub>e</sub>/U<sub>e</sub></b>	6 A/250 VAC; 0.25 A/230 VDC
<b>Utilisation category</b>	AC-15, DC-13
<b>Max. fuse rating</b>	6 A gL/gG D-fuse
<b>Ambient temperature</b>	-20 °C ... +65 °C
<b>Mechanical life</b>	> 1 million operations
<b>Switching frequency</b>	3600/h
<b>Repeat accuracy</b>	± 0.1 mm
<b>Contact gap</b>	max. 2 x 3.5 mm
<b>Ex certification</b>	⊕ II 2G EEx de IIC T6, II 2D IP67 T80°C
<b>Approvals</b>	DMT 01 ATEX E 118

#### Ordering details

**EEx 95 WH 10/1S-3D**

Equipment Categ. 3D, dust  
Ex zone 22  
Contact type 10/1S, (20, UE)  
Actuator H (R, D, DS, etc. ...)  
Collar  
Series  
Ex certified component

# Ex position switches

## // Series EEx 95, actuators

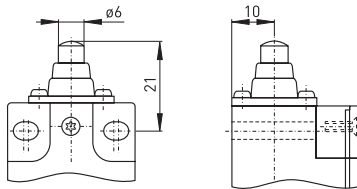
### Features/Options

- Actuator type B to DIN EN 50 047
- Actuator with collar

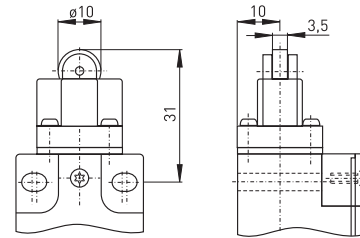
### Features/Options

- Actuator type C to DIN EN 50 047
- Wear-resistant thermoplastic roller
- Metal roller available on request
- Actuator heads can be repositioned in 4 x 90° steps

### // Plunger W



### // Roller plunger R



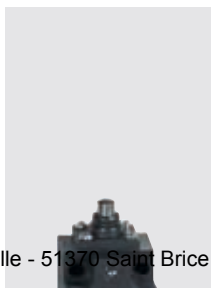
#### Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<b>EEx 95 W 1Ö/1S</b> 
1 NC/1 NO contact with overlapping	<b>EEx 95 W UE</b> 
2 NC contacts	<b>EEx 95 W 2Ö</b> 

#### Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<b>EEx 95 R 1Ö/1S</b> 
1 NC/1 NO contact with overlapping	<b>EEx 95 R UE</b> 
2 NC contacts	<b>EEx 95 R 2Ö</b> 

187



# Ex position switches

## // Series EEx 95, actuators

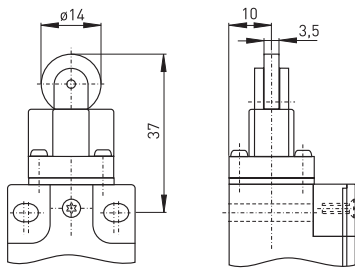
### Features/Options

- Wear-resistant thermoplastic roller
- Metal roller available on request
- Actuator heads can be repositioned in 4 x 90° steps

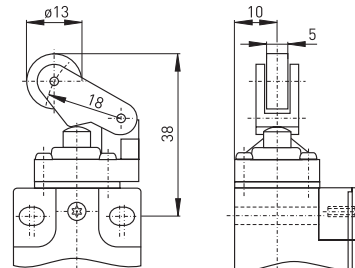
### Features/Options

- Actuating speed 0.5 m/s with an actuating angle of  $\alpha = 40^\circ$  and  $\beta = 25^\circ$
- Actuator type E to DIN EN 50 047
- Actuator with collar
- Wear-resistant thermoplastic roller
- Actuator heads can be repositioned in 4 x 90° steps
- Metal roller available on request

## // Long roller plunger RL



## // Roller lever WH



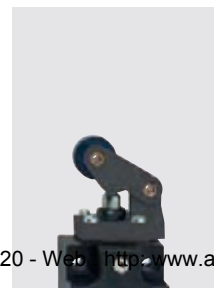
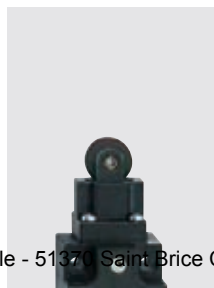
188

### Contact variants: switch travel/contacts

### Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<b>EEx 95 RL 10/1S</b> 
1 NC/1 NO contact with overlapping	<b>EEx 95 RL UE</b> 
2 NC contacts	<b>EEx 95 RL 2Ö</b> 

	Slow action
1 NC/1 NO contact	<b>EEx 95 WH 10/1S</b> 
1 NC/1 NO contact with overlapping	<b>EEx 95 WH UE</b> 
2 NC contacts	<b>EEx 95 WH 2Ö</b> 



**Features/Options**

- Actuating speed 0.5 m/s with an actuating angle of  $\alpha = 40^\circ$  and  $\beta = 25^\circ$
- Actuator with collar
- Wear-resistant thermoplastic roller
- Actuator heads can be repositioned in 4 x 90° steps
- Metal roller available on request

**Note**

Actuation from the left should be avoided since this reduces the mechanical life of the position switch.

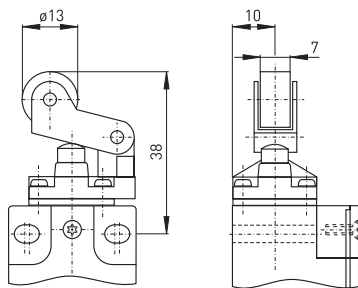
**Features/Options**

- Actuating speed 0.5 m/s with an actuating angle of  $\alpha = 40^\circ$
- Actuator with collar
- Wear-resistant thermoplastic roller
- Actuator heads can be repositioned in 4 x 90° steps
- Metal roller available on request

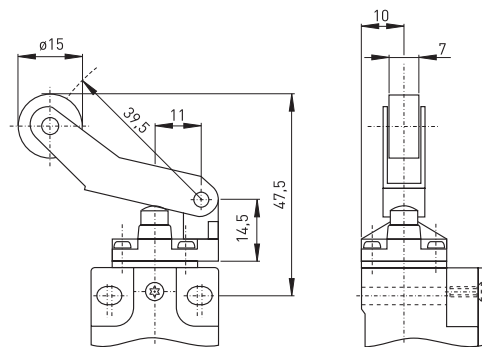
**Note**

Actuation from the left should be avoided since this reduces the mechanical life of the position switch.

// Metal roller lever WHM



// Long metal roller lever WHLM

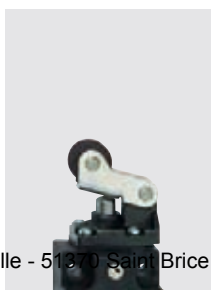


Contact variants: switch travel/contacts

Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<p><b>EEx 95 WHM 1Ö/1S</b></p>
1 NC/1 NO contact with overlapping	<p><b>EEx 95 WHM UE</b></p>
2 NC contacts	<p><b>EEx 95 WHM 2Ö</b></p>

	Slow action
1 NC/1 NO contact	<p><b>EEx 95 WHLM 1Ö/1S</b></p>
1 NC/1 NO contact with overlapping	<p><b>EEx 95 WHLM UE</b></p>
2 NC contacts	<p><b>EEx 95 WHLM 2Ö</b></p>



# Ex position switches

## // Series EEx 95, actuators

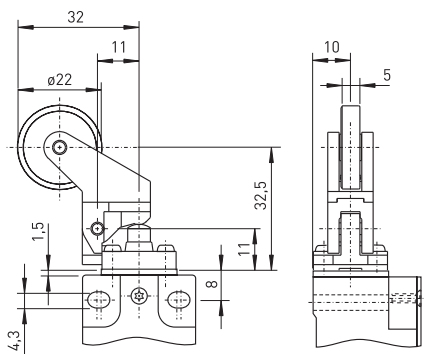
### Features/Options

- Actuating speed 0.5 m/s with an actuating angle of  $\alpha = 40^\circ$
- Actuation parallel to switch from left
- Wear-resistant thermoplastic roller
- Actuator heads can be repositioned in 4 x 90° steps

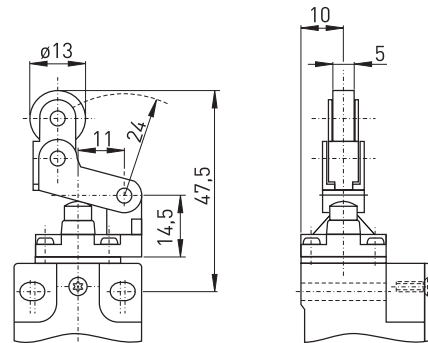
### Features/Options

- Actuating speed 0.5 m/s with an actuating angle of  $\alpha = 40^\circ$
- Actuator with watertight collar
- Wear-resistant thermoplastic roller
- Actuator heads can be repositioned in 4 x 90° steps
- Actuation only possible from right-hand side
- Free movement of actuator from the other side
- Metal roller available on request

### // Thermoplastic roller lever 4K



### // Rocking roller lever WHK



#### Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<b>EEx 95 4K 10/1S</b> 
1 NC/1 NO contact with overlapping	<b>EEx 95 4K UE</b> 
2 NC contacts	<b>EEx 95 4K 20</b> 

#### Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<b>EEx 95 WHK 10/1S</b> 
1 NC/1 NO contact with overlapping	<b>EEx 95 WHK UE</b> 
2 NC contacts	<b>EEx 95 WHK 20</b> 



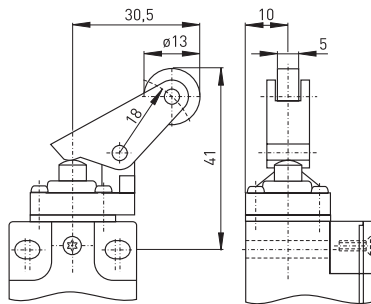
**Features/Options**

- Actuating speed 0.5 m/s with an actuating angle of  $\alpha = 30^\circ$
- Actuation parallel to switch from below
- Actuator with collar
- Wear-resistant thermoplastic roller
- Actuator heads can be repositioned in 4 x 90° steps
- Metal roller available on request

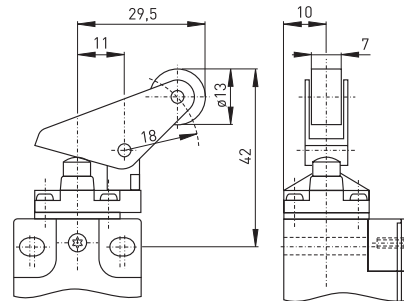
**Features/Options**

- Actuating speed 0.5 m/s with an actuating angle of  $\alpha = 30^\circ$
- Actuation parallel to switch from below
- Actuator with collar
- Wear-resistant thermoplastic roller
- Actuator heads can be repositioned in 4 x 90° steps
- Metal roller available on request

**// Parallel roller lever WPH**



**// Metal parallel roller lever WPHM**

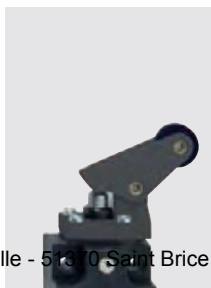


Contact variants: switch travel/contacts

Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<b>EEx 95 WPH 10/1S</b> 
1 NC/1 NO contact with overlapping	<b>EEx 95 WPH UE</b> 
2 NC contacts	<b>EEx 95 WPH 20</b> 

	Slow action
1 NC/1 NO contact	<b>EEx 95 WPHM 10/1S</b> 
1 NC/1 NO contact with overlapping	<b>EEx 95 WPHM UE</b> 
2 NC contacts	<b>EEx 95 WPHM 20</b> 



# Ex position switches

## // Series EEx 95, actuators

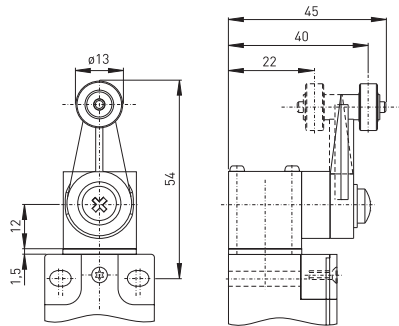
### Features/Options

- Lever angle adjustable in 10° steps
- Wear-resistant thermoplastic roller
- Actuator heads can be repositioned in 4 x 90° steps
- Metal roller available on request

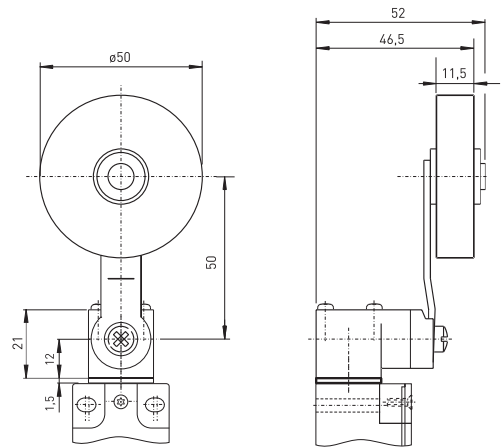
### Features/Options

- Lever angle adjustable in 10° steps
- Actuator heads can be repositioned in 4 x 90° steps

### // Rocking roller lever D



### // Roller lever with rubber roller D50

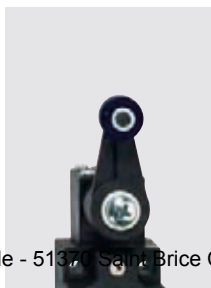


Contact variants: switch travel/contacts

Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<b>EEx 95 D 1Ö/1S</b> 
1 NC/1 NO contact with overlapping	<b>EEx 95 D UE</b> 
2 NC contacts	<b>EEx 95 D 2Ö</b> 

	Slow action
1 NC/1 NO contact	<b>EEx 95 D50 1Ö/1S</b> 
1 NC/1 NO contact with overlapping	<b>EEx 95 D50 UE</b> 
2 NC contacts	<b>EEx 95 D50 2Ö</b> 



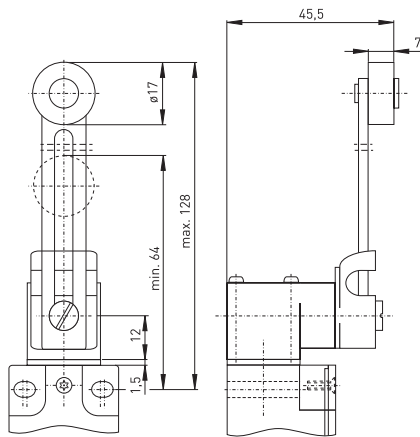
**Features/Options**

- Lever angle adjustable in 10° steps
- Length of roller lever adjustable
- Wear-resistant thermoplastic roller
- Actuator heads can be repositioned in 4 x 90° steps
- Metal roller available on request

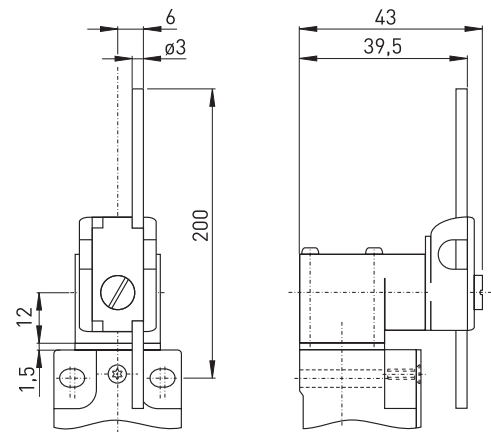
**Features/Options**

- Lever angle adjustable in 10° steps
- Actuator heads can be repositioned in 4 x 90° steps

**// Adjustable-length roller lever DS**



**// Spring lever DD**



Contact variants: switch travel/contacts

Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<b>EEx 95 DS 10/1S</b> 
1 NC/1 NO contact with overlapping	<b>EEx 95 DS UE</b> 
2 NC contacts	<b>EEx 95 DS 2Ö</b> 

	Slow action
1 NC/1 NO contact	<b>EEx 95 DD 10/1S</b> 
1 NC/1 NO contact with overlapping	<b>EEx 95 DD UE</b> 
2 NC contacts	<b>EEx 95 DD 2Ö</b> 





# Ex position switches

## // Series EEx 95, actuators

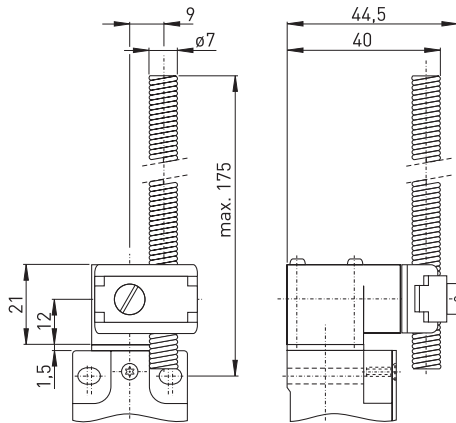
### Features/Options

- Lever angle adjustable in 10° steps
- Actuator heads can be repositioned in 4 x 90° steps

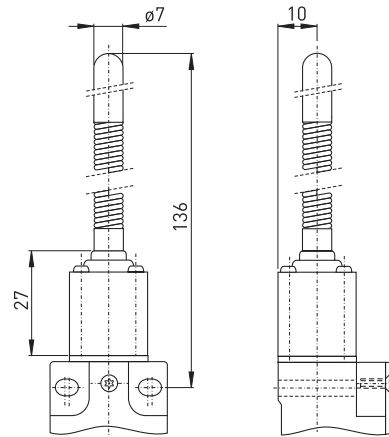
### Features/Options

- Wear-resistant thermoplastic roller
- Spring rod can be actuated from any direction

## // Wire lever DF



## // Spring rod with plastic tip TK



194

### Contact variants: switch travel/contacts

### Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<b>EEx 95 DF 10/1S</b> 
1 NC/1 NO contact with overlapping	<b>EEx 95 DF UE</b> 
2 NC contacts	<b>EEx 95 DF 20</b> 

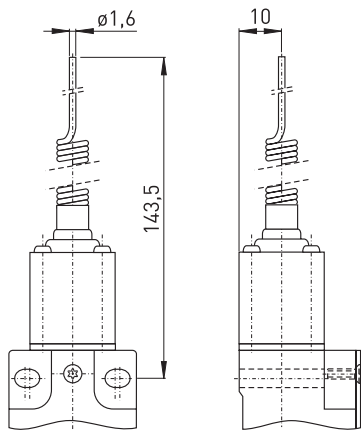
	Slow action
1 NC/1 NO contact	<b>EEx 95 TK 10/1S</b> 
2 NC contacts	<b>EEx 95 TK 20</b> 



Features/Options

- Spring rod can be actuated from any direction

// Long spring rod TL



Contact variants: switch travel/contacts

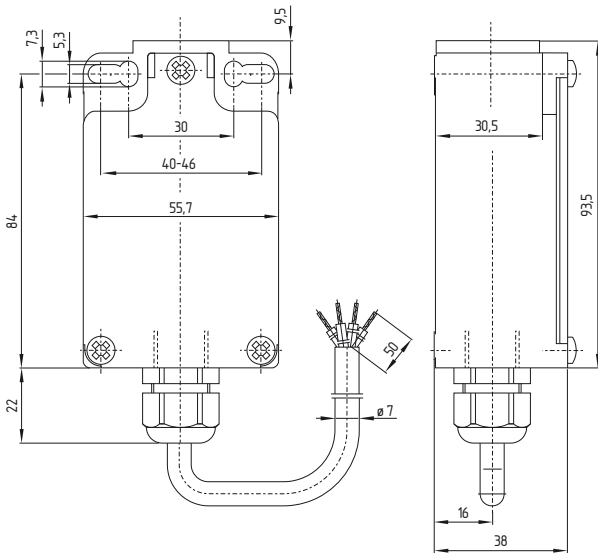
	Slow action
1 NC/1 NO contact	<p><b>EEx 95 TL 10/1S</b></p>
2 NC contacts	<p><b>EEx 95 TL 20</b></p>



# Ex position switches

## // Series EEx T 356

### // EEX T 356



### Features/Options

- Ex zone 1 and 2, as well as 21 and 22
- Thermoplastic enclosure with metal cover
- Mounting dimensions and switching points to EN 50041
- Pre-wired cable available in various lengths
- Actuator heads can be repositioned in 4 x 90° steps
- Angle of offset roller lever can be adjusted in 10° steps
- Special version only for equipment category 3D, available for dust Ex zone 22

### Technical data

<b>Standards</b>	IEC/EN 60947-5-1; EN 1088; EN 50014; EN 50018; EN 50019; EN 50281-1-1
<b>Enclosure</b>	glass-fibre reinforced, shock-proof thermoplastic, self-extinguishing
<b>Cover</b>	steel enamelled
<b>Switch insert</b>	EEx 13
<b>Protection class</b>	IP 65 according to IEC/EN 60529
<b>Contact material</b>	silver
<b>Switching system</b>	slow action, positive break NC contact ⊖
<b>Switching elements</b>	change-over contact with double break Zb, galvanically separated contact bridges
<b>Termination</b>	cable H05VV-F
<b>Cable section</b>	4 x 0.75 mm <sup>2</sup>
<b>Cable length</b>	2 oder 5 m
<b>U<sub>imp</sub></b>	4 kV
<b>U<sub>i</sub></b>	250 V
<b>I<sub>the</sub></b>	6 A
<b>I<sub>e</sub>/U<sub>e</sub></b>	6 A/250 VAC; 0.25 A/230 VDC
<b>Utilisation category</b>	AC-15, DC-13
<b>Max. fuse rating</b>	6 A gL/gG D-fuse
<b>Ambient temperature</b>	-20 °C ... +65 °C
<b>Mechanical life</b>	> 1 million operations
<b>Switching frequency</b>	1800/h
<b>Repeat accuracy</b>	± 0.1 mm
<b>Contact gap</b>	max. 2 x 4.5 mm
<b>Ex certification</b>	⊕ II 2G EEx d IIC T6, II 2D IP65 T80°C PTB 03 ATEX 1068 X* *referring to the switch insert
<b>Approvals</b>	



### Ordering details

**EEx T 356 S 10̄/1S-3D**

Equipment Categ. 3D, dust Ex zone 22  
Contact type 10̄/1S  
Actuator S (R, 4VH, 4V7H, etc. ...)  
Series  
Ex certified component

# Ex position switches

## // Series EEx T 356, actuators

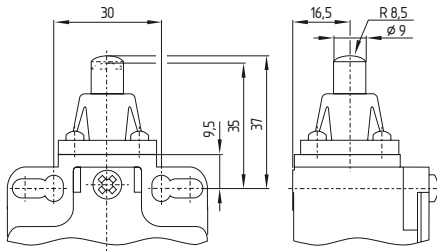
### Features/Options

- Actuator type B to DIN EN 50 041
- Actuating speed 0.5 m/s with an actuating angle of  $\alpha = 0^\circ$

### Features/Options

- Actuator type C to DIN EN 50 041
- Actuating speed 0.5 m/s with an actuating angle of  $\alpha = 30^\circ$

## // Plunger S

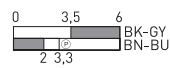


Contact variants: switch travel/contacts

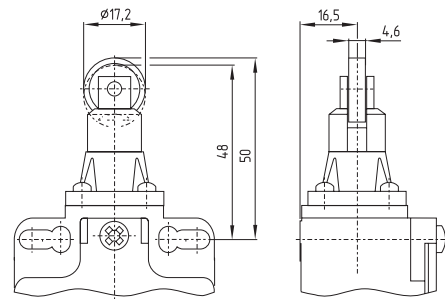
### Slow action

1 NC/1 NO contact

**EEx T 356 S 10/15**



## // Roller plunger R

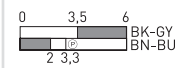


Contact variants: switch travel/contacts

### Slow action

1 NC/1 NO contact

**EEx T 356 R 10/15**



197



# Ex position switches

## // Series EEx T 356, actuators

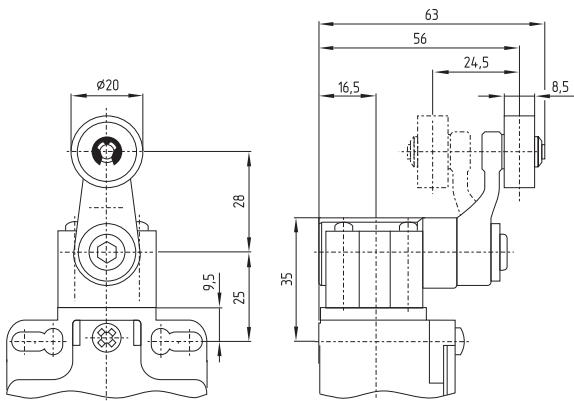
### Features/Options

- Actuator type A to DIN EN 50 041
- Actuating speed 2.5 m/s with an actuating angle of  $\alpha = 30^\circ$
- Wear-resistant thermoplastic roller
- Actuator heads can be repositioned in 4 x 90° steps

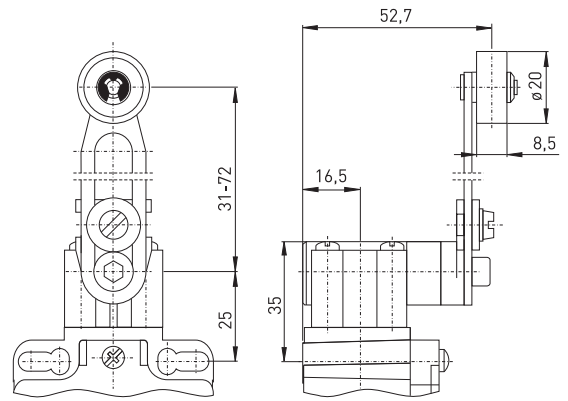
### Features/Options

- Actuating speed 2.5 m/s with an actuating angle of  $\alpha = 30^\circ$
- Wear-resistant thermoplastic roller
- Actuator heads can be repositioned in 4 x 90° steps
- For safety duties  $\ominus$ , positive break, ordering suffix -2138

### // Rocking roller lever 4VH



### // Adjustable rocking lever 4V7H



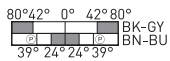
198

Contact variants: switch travel/contacts

#### Slow action

1 NC/1 NO contact

EEx T 356 4VH 10/1S

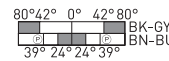


Contact variants: switch travel/contacts

#### Slow action

1 NC/1 NO contact

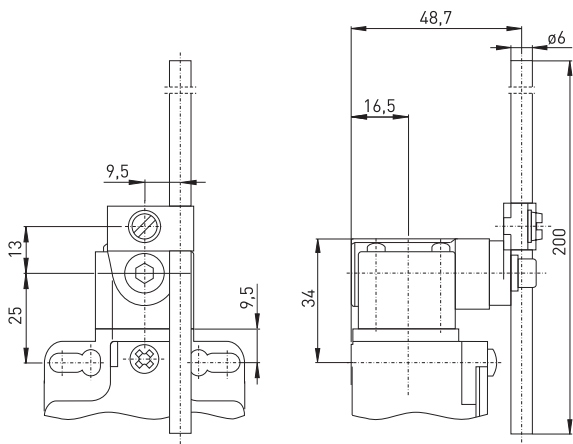
EEx T 356 4V7H 10/1S



Features/Options

- Actuating speed 2.5 m/s with an actuating angle of  $\alpha = 30^\circ$
- Actuator type D to EN 50041

// Rod lever 4V10H



Contact variants: switch travel/contacts

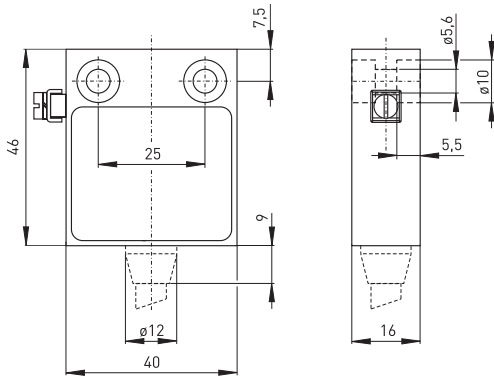
	Slow action								
1 NC/1 NO contact	EEx T 356 4V10H 10/1S								
	<table border="1"> <tr> <td>80°/42°</td> <td>0°</td> <td>42°/80°</td> <td>BK-GY</td> </tr> <tr> <td>39°</td> <td>24°</td> <td>24°/39°</td> <td>BN-BU</td> </tr> </table>	80°/42°	0°	42°/80°	BK-GY	39°	24°	24°/39°	BN-BU
80°/42°	0°	42°/80°	BK-GY						
39°	24°	24°/39°	BN-BU						



# Ex position switches

## // Series EEx 12

### // EEX 12



### Features/Options

- Ex zone 1 and 2, as well as 21 and 22
- Metal enclosure
- Snap action, change-over contact with single break
- Suitable for in-line mounting
- With pre-wired cable, cable length 1 metre
- Special version only for equipment category 3D, available for dust Ex zone 22

### Technical data

<b>Standards</b>	IEC/EN 60947-5-1; EN 50014; EN 50018; EN 50019; EN 50281-1-1
<b>Enclosure</b>	GD-AL alloy
<b>Protection class</b>	IP 65 according to IEC/EN 60529
<b>Contact material</b>	silver
<b>Switching elements</b>	change-over contact with single break
<b>Switching system</b>	snap action
<b>Termination</b>	cable H05VV-F
<b>Cable section</b>	4 x 0.75 mm <sup>2</sup>
<b>Cable length</b>	1 m
<b>U<sub>imp</sub></b>	4 kV
<b>U<sub>i</sub></b>	250 V
<b>I<sub>the</sub></b>	5 A
<b>Utilisation category</b>	AC-15; DC-13
<b>I<sub>e</sub>/U<sub>e</sub></b>	5 A/250 VAC; 0.16 A/230 VDC
<b>Max. fuse rating</b>	5 A gL/gG D-fuse
<b>Mechanical life</b>	> 1 million operations
<b>Switching frequency</b>	1800/h
<b>Umgebungs-temperatur</b>	-20 °C ... + 60 °C, T5: +75 °C
<b>Mechanical life</b>	> 1 million operations
<b>Switching frequency</b>	1800/h
<b>Repeat accuracy</b>	± 0.1 mm
<b>Contact gap</b>	-
<b>Ex certification</b>	Ⓢ II 2G EEx d IIC T6, II 2D IP65 T80°C
<b>Approvals</b>	PTB 03 ATEX 1067 X

### Ordering details

**EEx 12 WKU-S-B-1m-3D**

- Equipment Categ. 3D, dust Ex zone 22
- Cable length 1 m, (2 m, 5 m, 10 m)
- Mounting thread M16 x 1.5
- Cable on side
- Actuator KU (H, TK, D, etc. ...)
- Watertight collar
- Series
- Ex certified component

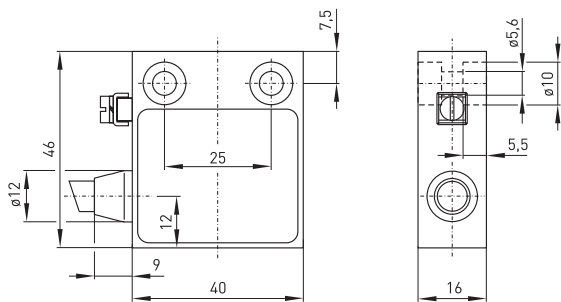
Features/Options

- With gold-plated contacts available on request
- Available with hard-coated enclosure for use in aggressive conditions

// Cable on side



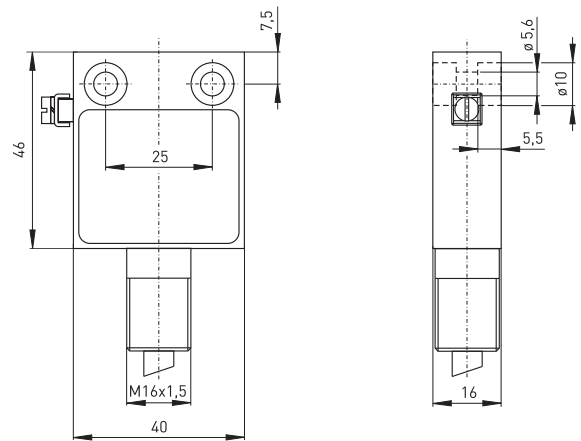
// Cable on side



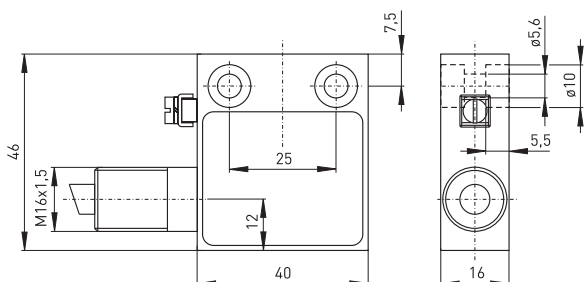
// Mounting thread M16 x 1.5



// Mounting thread M16 x 1.5



// Mounting thread on side M16 x 1.5





# Ex position switches

## // Series EEx 12, actuators

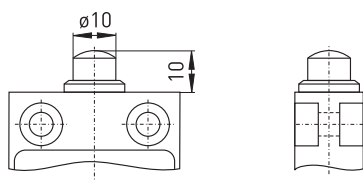
### Features/Options

- Actuating speed 0.5 m/s with an actuating angle of 0°

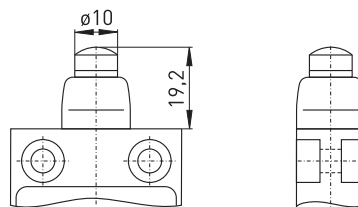
### Features/Options

- Actuating speed 0.5 m/s with an actuating angle of 0°  
 - Collar to protect against the entry of foreign bodies

### // Plunger



### // Plunger with watertight collar W



Contact variants: switch travel/contacts

Contact variants: switch travel/contacts

#### Snap action

1 change-over contact

EEx 12



#### Snap action

1 change-over contact

EEx 12 W



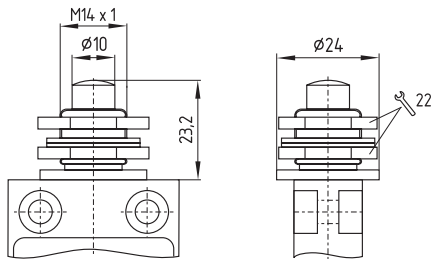
**Features/Options**

- Actuating speed 0.5 m/s with an actuating angle of 0°

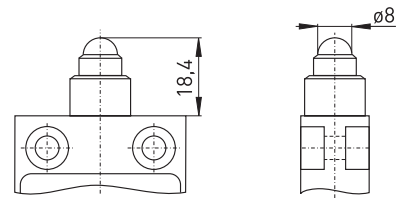
**Features/Options**

- Actuating speed 0.5 m/s with an actuating angle of 20°
- Can be actuated in line with or from side of switch axis
- Actuator head with captive stainless steel ball actuator
- Exact repeatability of switching point

**// Plunger for front mounting F**



**// Ball plunger KU**



Contact variants: switch travel/contacts

Contact variants: switch travel/contacts

**Snap action**

**Snap action**

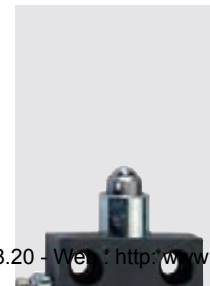
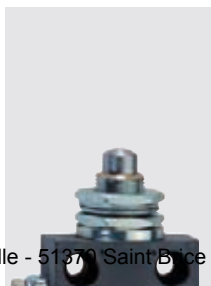
1 change-over contact

**EEx 12 F**



1 change-over contact

**EEx 12 KU**



# Ex position switches

## // Series EEx 12, actuators

### Features/Options

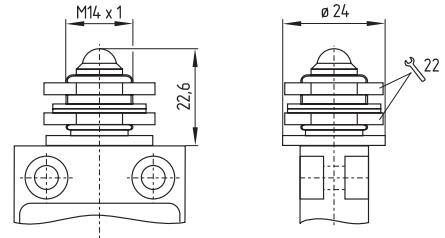
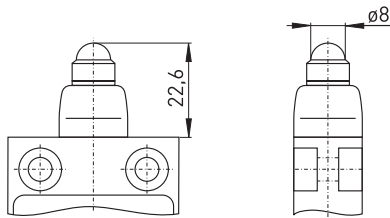
- Actuating speed 0.5 m/s with an actuating angle of 15°
- Can be actuated in line with or from side of switch axis
- Actuator head with captive stainless steel ball actuator
- Exact repeatability of switching point
- Collar to protect against the entry of foreign bodies

### Features/Options

- Actuating speed 0.5 m/s with an actuating angle of 20°
- Can be actuated in line with or from side of switch axis
- Actuator head with captive stainless steel ball actuator
- Ball diameter 8 mm
- Exact repeatability of switching point

## // Ball plunger with collar WKU

## // Ball plunger front mounting FKU



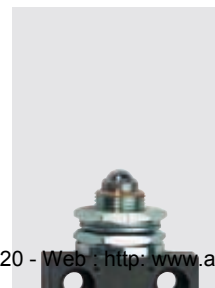
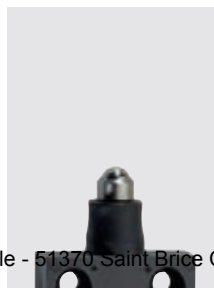
204

Contact variants: switch travel/contacts

Contact variants: switch travel/contacts

Snap action	
1 change-over contact	<b>EEx 12 WKU</b> 

Snap action	
1 change-over contact	<b>EEx 12 FKU</b> 



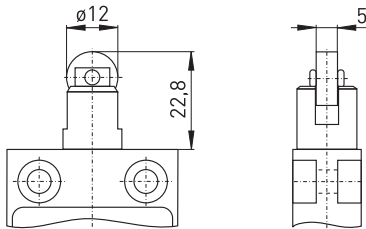
**Features/Options**

- Actuating speed 0.5 m/s with an actuating angle of 30°
- Metal roller
- Available with actuator repositioned by 90°

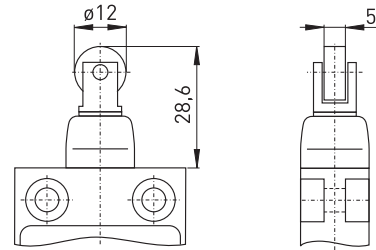
**Features/Options**

- Actuating speed 0.5 m/s with an actuating angle of 25°
- Metal roller
- Available with actuator repositioned by 90°
- Collar to protect against the entry of foreign bodies

// Roller plunger R



// Roller plunger collar WR



Contact variants: switch travel/contacts

Contact variants: switch travel/contacts

**Snap action**

**Snap action**

1 change-over contact

**EEx 12 R**



1 change-over contact

**EEx 12 WR**



# Ex position switches

## // Series EEx 12, actuators

### Features/Options

- Actuating speed 0.5 m/s with an actuating angle of 25°
- Metal roller
- Available with actuator repositioned by 90°

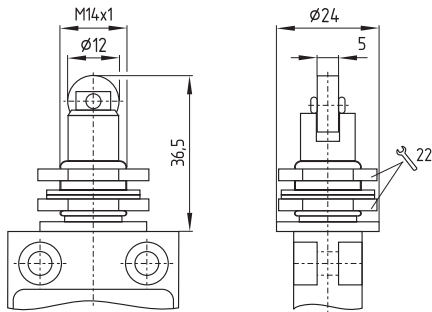
### Features/Options

- Actuating speed 0.5 m/s with an actuating angle of  $\alpha = 40^\circ$  and  $\beta = 25^\circ$
- Metal roller
- Available with actuator repositioned by 180°
- Collar to protect against the entry of foreign bodies
- With plastic roller available on request

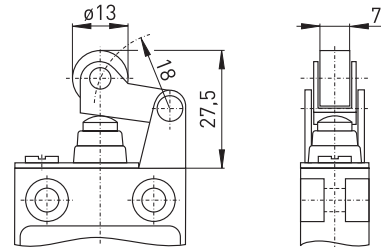
### Note

Actuation from the left should be avoided since this reduces the mechanical life of the position switch.

## // Roller plunger for front mounting FR



## // Lever with collar WH



Contact variants: switch travel/contacts

### Snap action

1 change-over contact

EEx 12 FR

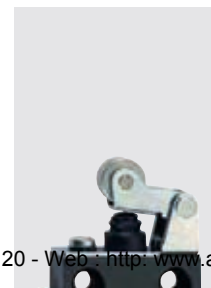


Contact variants: switch travel/contacts

### Snap action

1 change-over contact

EEx 12 WH



**Features/Options**

- Actuating speed 0.5 m/s with an actuating angle of  $\alpha = 40^\circ$  and  $\beta = 30^\circ$
- Metal roller
- Available with actuator repositioned by  $180^\circ$
- Collar to protect against the entry of foreign bodies
- With plastic roller available on request

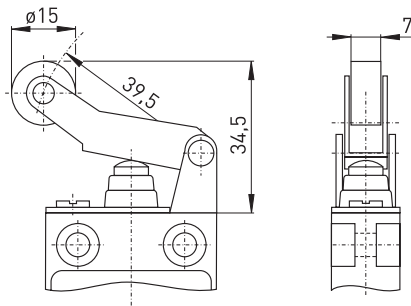
**Features/Options**

Actuation from the left should be avoided since this reduces the mechanical life of the position switch.

**Features/Options**

- Actuating speed 0.5 m/s with an actuating angle of  $\alpha = 40^\circ$
- Actuation only possible from right-hand side
- Free movement of actuator from the other side
- Metal roller
- Available with actuator repositioned by  $180^\circ$
- Collar to protect against the entry of foreign bodies
- With plastic roller available on request

// Long lever with collar WHL

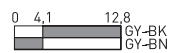


Contact variants: switch travel/contacts

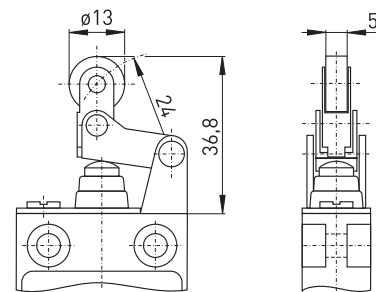
**Snap action**

1 change-over contact

**EEx 12 WHL**



// Rocking roller lever with collar WHK

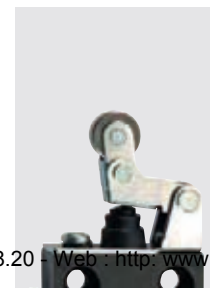


Contact variants: switch travel/contacts

**Snap action**

1 change-over contact

**EEx 12 WHK**



# Ex position switches

## // Series EEx 12, actuators

### Features/Options

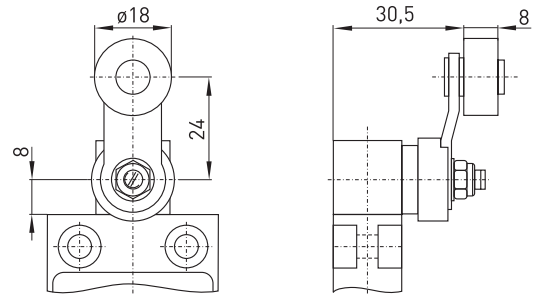
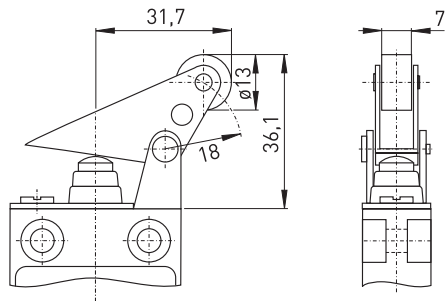
- Actuating speed 0.5 m/s with an actuating angle of  $\alpha = 30^\circ$
- Actuation parallel to axis of switch from below
- Metal roller
- Available with actuator repositioned by  $180^\circ$
- Collar to protect against the entry of foreign bodies
- With plastic roller available on request

### Features/Options

- Actuating speed 0.5 m/s with an actuating angle of  $45^\circ$
- Wear-resistant thermoplastic roller
- Lever can be repositioned in  $10^\circ$  steps clockwise or counter-clockwise
- Actuator can be repositioned by  $180^\circ$
- With metal roller available on request

### // Parallel roller lever with collar WPH

### // Roller lever D



208

Contact variants: switch travel/contacts

Contact variants: switch travel/contacts

Snap action	
1 change-over contact	EEx 12 WPH
	0 1,5 5,5
	GY-BK
	GY-BN

Snap action	
1 change-over contact	EEx 12 D
	70° 17° 0° 17° 70°
	GY-BK
	GY-BN



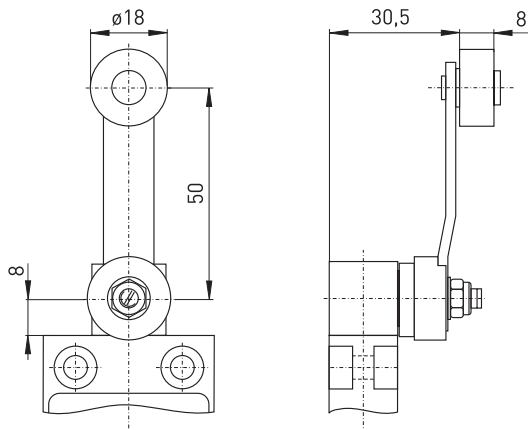
**Features/Options**

- Actuating speed 0.5 m/s with an actuating angle of 45°
- Wear-resistant thermoplastic roller
- Lever can be repositioned in 10° steps clockwise or counter-clockwise
- Actuator can be repositioned by 180°
- With metal roller available on request


**Features/Options**

- Actuating speed 0.5 m/s with an actuating angle of 45°
- Wear-resistant thermoplastic roller
- Lever can be repositioned in 10° steps clockwise or counter-clockwise
- Actuator can be repositioned by 180°
- With metal roller available on request

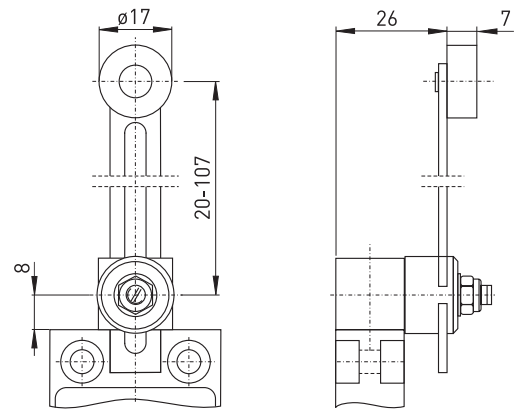
// Long roller lever DL




Contact variants: switch travel/contacts

Snap action	
1 change-over contact	<b>EEx 12 DL</b> 70° 17° 0° 17° 70° 

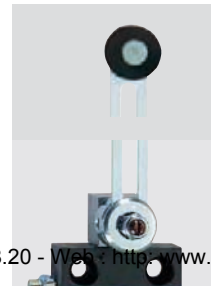
// Adjustable-length roller lever DS



Contact variants: switch travel/contacts

Snap action	
1 change-over contact	<b>EEx 12 DS</b> 70° 17° 0° 17° 70° 

209





# Ex position switches

## // Series EEx 12, actuators

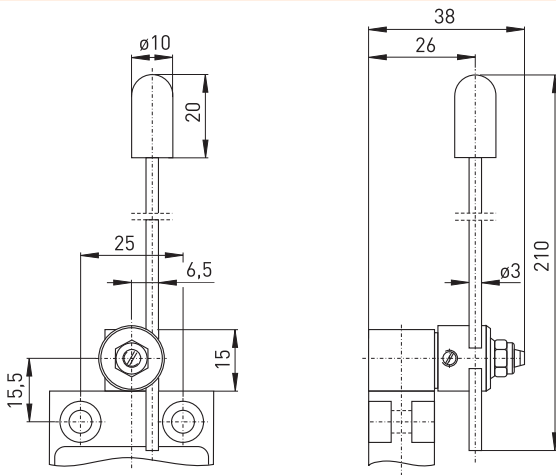
### Features/Options

- Wear-resistant thermoplastic tip
- Lever can be repositioned in 10° steps clockwise or counter-clockwise
- Available with actuator repositioned by 180°

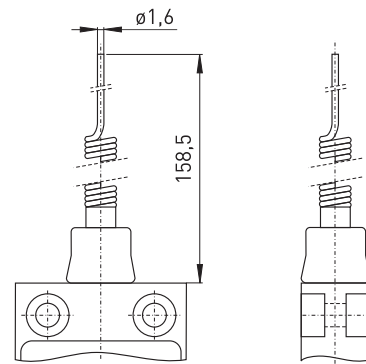
### Features/Options

- Spring rod can be actuated from any direction
- Spring rod can be shortened 30 mm in actuating area
- Exact linear actuation not necessary
- Elasticity of spring allows for deflection above the max. switching angle of 18°

### // Spring lever DD



### // Long spring rod TL



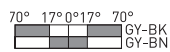
Contact variants: switch travel/contacts

Contact variants: switch travel/contacts

#### Snap action

1 change-over contact

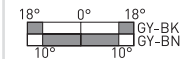
EEx 12 DD



#### Snap action

1 change-over contact

EEx 12 TL



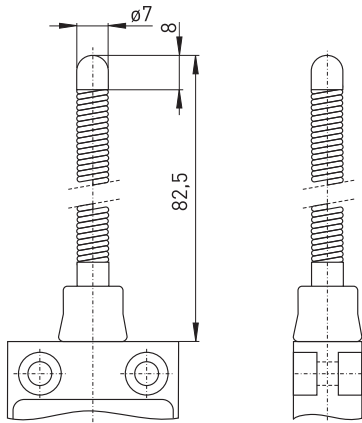
**Features/Options**

- With rounded steel tip
- Spring rod can be actuated from any direction
- Elasticity of spring allows for deflection above the max. switching angle of 18°

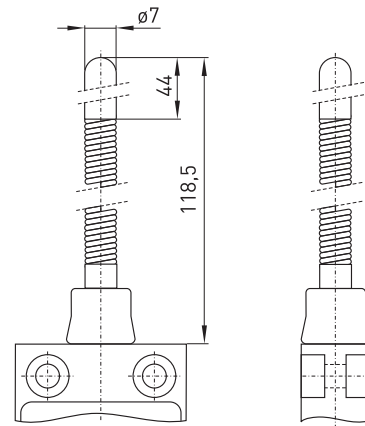
**Features/Options**

- Wear-resistant plastic tip
- Spring rod can be actuated from any direction
- Elasticity of spring allows for deflection above the max. switching angle of 18°

// Spring rod with rounded steel tip TF



// Spring rod with plastic tip TK



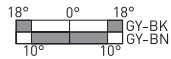
Contact variants: switch travel/contacts

Contact variants: switch travel/contacts

**Snap action**

1 change-over contact

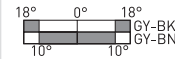
**EEx 12 TF**



**Snap action**

1 change-over contact

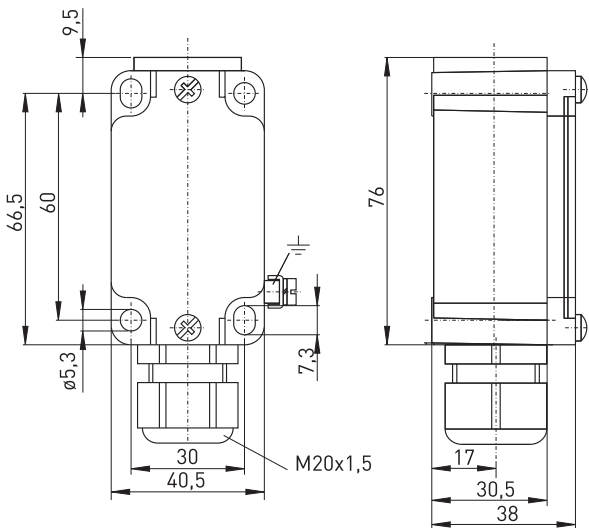
**EEx 12 TK**



# Ex position switches

## // Series EEx 335

### // EEX 335



### Features/Options

- Ex zone 1 and 2, as well as 21 and 22
- Design according to DIN EN 50041
- Available with contact overlapping
- Wiring compartment
- Actuator heads can be repositioned in 4 x 90° steps
- Angle of offset roller lever can be adjusted in 10° steps
- Special version only for equipment category 3D, available for dust Ex zone 22
- With gold-plated contacts available on request
- Gost approval for Russia to be ordered separately

### Technical data

<b>Standards</b>	IEC/EN 60947-5-1; EN 1088; EN 50014; EN 50018; EN 50019; EN 50281-1-1
<b>Design</b>	DIN EN 50 041
<b>Enclosure</b>	zinc die casting, enamelled
<b>Switch insert</b>	Ex 95
<b>Protection class</b>	IP 65 according to EN 60529
<b>Contact material</b>	silver
<b>Switching system</b>	slow action, positive break NC contact ⊖
<b>Switching elements</b>	change-over contact with double break Zb or 2 NC contacts, galvanically separated contact bridges
<b>Termination</b>	M3 screw clamps
<b>Cable section</b>	max. 1.5 mm <sup>2</sup> (incl. conductor ferrules)
<b>Cable length</b>	-
<b>U<sub>imp</sub></b>	4 kV
<b>U<sub>i</sub></b>	250 V
<b>I<sub>the</sub></b>	6 A
<b>I<sub>e</sub>/U<sub>e</sub></b>	6 A/400 VAC; 0.25 A/230 VDC
<b>Utilisation category</b>	AC-15, DC-13
<b>Max. fuse rating</b>	6 A gL/gG D-fuse
<b>Ambient temperature</b>	-20 °C ... +60 °C
<b>Mechanical life</b>	> 1 million operations
<b>Switching frequency</b>	1800/h
<b>Repeat accuracy</b>	± 0.1 mm
<b>Contact gap</b>	max. 2 x 3.5 mm
<b>Ex certification</b>	⊕ II 2G EEx de IIC T6, II 2D IP65 T80°C
<b>Approvals</b>	DMT 01 ATEX E 178



### Ordering details

**EEx 335 S 10/1S-3D**

Equipment Categ. 3D, dust Ex zone 22  
 Contact type 10/1S, (20, UE)  
 Actuator S (R, 4VH, 4V7H-2138, etc.)  
 Series  
 Ex certified component

# Ex position switches

## // Series EEx 335, actuators

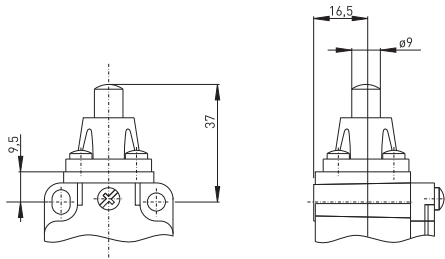
### Features/Options

- Actuator type B to DIN EN 50 041
- Actuating speed 0.5 m/s with an actuating angle of  $\alpha = 0^\circ$

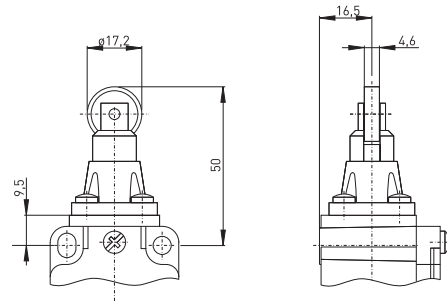
### Features/Options

- Actuator type C to DIN EN 50 041
- Actuating speed 0.5 m/s with an actuating angle of  $\alpha = 30^\circ$

### // Plunger S



### // Roller plunger R



#### Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<b>EEx 335 S 10/1S</b> 
1 NC/1 NO contact with overlapping	<b>EEx 335 S UE</b> 
2 NC contacts	<b>EEx 335 S 20</b> 

#### Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<b>EEx 335 R 10/1S</b> 
1 NC/1 NO contact with overlapping	<b>EEx 335 R UE</b> 
2 NC contacts	<b>EEx 335 R 20</b> 



# Ex position switches

## // Series EEx 335, actuators

### Features/Options

- Actuating speed 0.5 m/s with an actuating angle of  $\alpha = 30^\circ$
- Actuation parallel to switch from right
- Wear-resistant thermoplastic roller
- Actuator heads can be repositioned in 4 x 90° steps

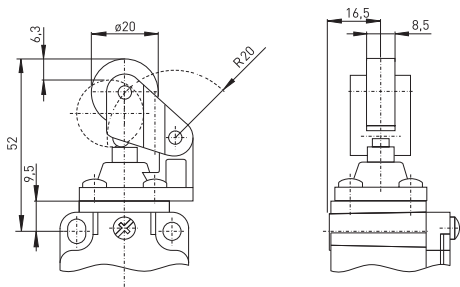
### Note

Actuation from the left should be avoided since this reduces the mechanical life of the position switch.

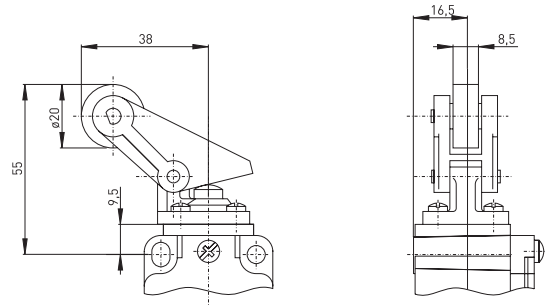
### Features/Options

- Actuating speed 0.5 m/s with an actuating angle of  $\alpha = 30^\circ$
- Actuation parallel to switch from below
- Wear-resistant thermoplastic roller
- Actuator heads can be repositioned in 4 x 90° steps

### // Roller lever 1K



### // Angled roller lever 3K



#### Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<b>EEx 335 1K 10/1S</b> 
1 NC/1 NO contact with overlapping	<b>EEx 335 1K UE</b> 
2 NC contacts	<b>EEx 335 1K 20</b> 

#### Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<b>EEx 335 3K 10/1S</b> 
1 NC/1 NO contact with overlapping	<b>EEx 335 3K UE</b> 
2 NC contacts	<b>EEx 335 3K 20</b> 



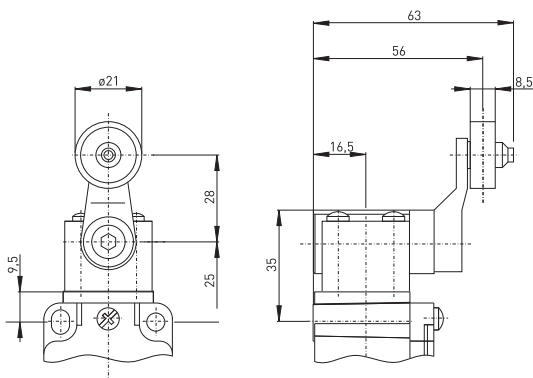
**Features/Options**

- Actuator type A to DIN EN 50 041
- Actuating speed 2.5 m/s with an actuating angle of  $\alpha = 30^\circ$
- Wear-resistant thermoplastic roller
- Actuator heads can be repositioned in 4 x 90° steps

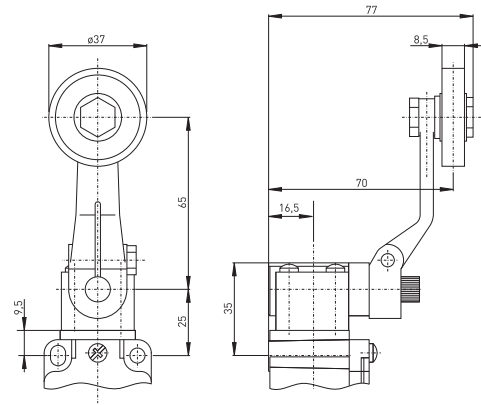
**Features/Options**

- Actuating speed 2.5 m/s with an actuating angle of  $\alpha = 30^\circ$
- Wear-resistant thermoplastic roller
- Actuator heads can be repositioned in 4 x 90° steps

// Rocking roller lever 4VH



// Long rocking roller lever 4V3H



Contact variants: switch travel/contacts

Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<b>EEx 335 4VH 10/1S</b> 85° 25°0°25° 85° 23-24 30°15°15°30° 11-12
1 NC/1 NO contact with overlapping	<b>EEx 335 4VH UE</b> 85° 20°0°20° 85° 23-24 40°25°25°40° 15-16
2 NC contacts	<b>EEx 335 4VH 20</b> 85° 30° 0° 30° 85° 11-12 15°15° 21-22

	Slow action
1 NC/1 NO contact	<b>EEx 335 4V3H 10/1S</b> 85° 25°0°25° 85° 23-24 30°15°15°30° 11-12
1 NC/1 NO contact with overlapping	<b>EEx 335 4V3H UE</b> 85° 20°0°20° 85° 23-24 40°25°25°40° 15-16
2 NC contacts	<b>EEx 335 4V3H 20</b> 85° 30° 0° 30° 85° 11-12 15°15° 21-22



# Ex position switches

## // Series EEx 335, actuators

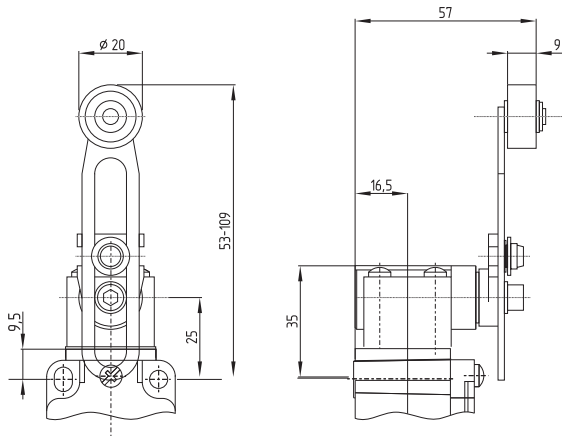
### Features/Options

- Actuating speed 2.5 m/s with an actuating angle of  $\alpha = 30^\circ$
- Wear-resistant thermoplastic roller
- Actuator heads can be repositioned in 4 x 90° steps
- For safety duties  $\ominus$ , positive break, ordering suffix -2138

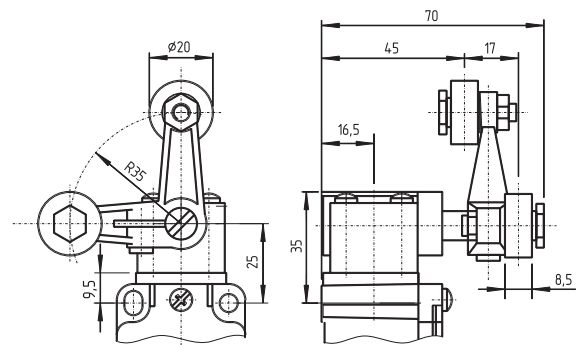
### Features/Options

- Actuating speed 2.5 m/s with an actuating angle of  $\alpha = 30^\circ$
- Wear-resistant thermoplastic roller
- Actuator heads can be repositioned in 4 x 90° steps

### // Adjustable rocking lever 4V7H



### // Forked lever latching 3V4D



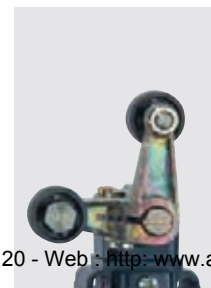
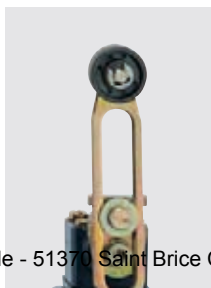
216

Contact variants: switch travel/contacts

Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<b>EEx 335 4V7H 1Ö/1S</b> 
1 NC/1 NO contact with overlapping	<b>EEx 335 4V7H UE</b> 
2 NC contacts	<b>EEx 335 4V7H 2Ö</b> 

	Slow action
1 NC/1 NO contact	<b>EEx 335 3V4D 1Ö/1S</b> 
1 NC/1 NO contact with overlapping	<b>EEx 335 3V4D UE</b> 
2 NC contacts	<b>EEx 335 3V4D 2Ö</b> 



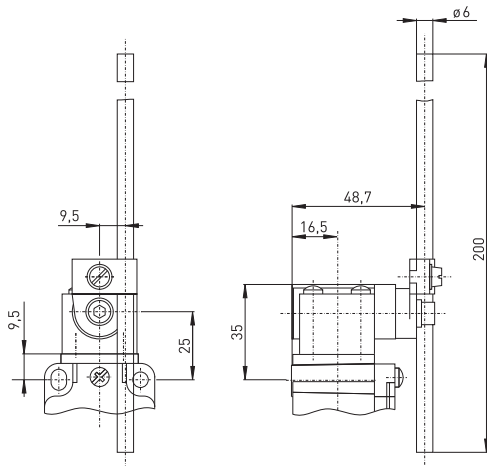
**Features/Options**

- Actuating speed 2.5 m/s with an actuating angle of  $\alpha = 30^\circ$
- Actuator type D to EN 50041

**Features/Options**

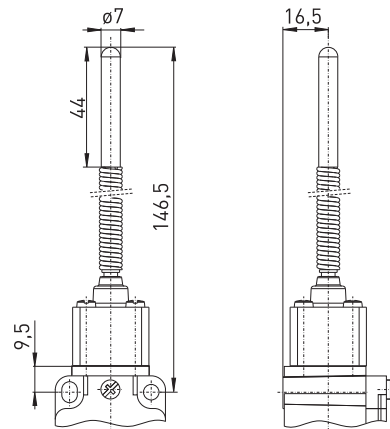
- Wear-resistant plastic tip
- Spring rod can be actuated from any direction
- Elasticity of spring allows for deflection above the max. switching angle of  $12^\circ$

**// Rod lever 4V10H**



Contact variants: switch travel/contacts

**// Spring rod with plastic tip TK**



Contact variants: switch travel/contacts

217

	Slow action
1 NC/1 NO contact	<p><b>EEx 335 4V10H 10/1S</b></p>
1 NC/1 NO contact with overlapping	<p><b>EEx 335 4V10H UE</b></p>
2 NC contacts	<p><b>EEx 335 4V10H 2Ö</b></p>

	Slow action
1 NC/1 NO contact	<p><b>EEx 335 TK 10/1S</b></p>
2 NC contacts	<p><b>EEx 335 TK 2Ö</b></p>





# Ex position switches

## // Series EEx 355

### Features/Options

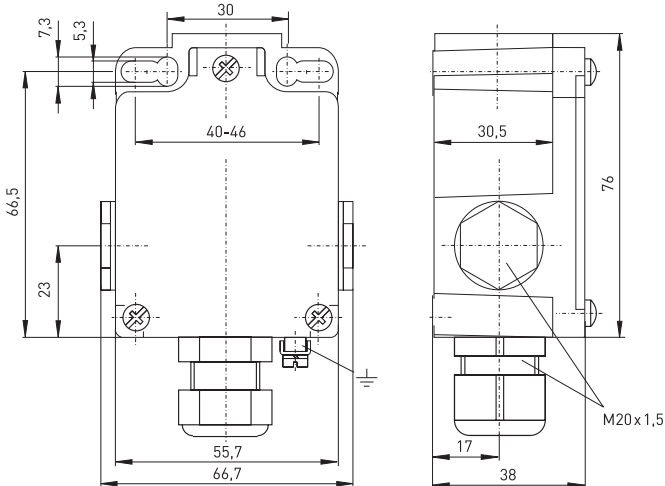
- Ex zone 1 and 2, as well as 21 and 22
- Mounting and switching details to EN 50041
- 3 cable entries
- Actuating elements can be repositioned by 4 x 90°
- Rocking lever can be positioned in 10° steps
- Special version only for equipment category 3D, available for dust Ex zone 22
- With gold-plated contacts available on request
- Inmetro approval for Brazil and Gost approval for Russia to be ordered separately

## // EEX 355



### Technical data

<b>Standards</b>	IEC/EN 60947-5-1; EN 1088; EN 50014; EN 50018; EN 50019; EN 50281-1-1
<b>Design</b>	mounting dimensions and switching points to DIN EN 50 041
<b>Enclosure</b>	zinc die casting, enamelled
<b>Switch insert</b>	Ex 95
<b>Protection class</b>	IP 67 according to EN 60529
<b>Contact material</b>	silver
<b>Switching system</b>	slow action, positive break NC contact ⊖
<b>Switching elements</b>	change-over contact with double break Zb or 2 NC contacts, galvanically separated contact bridges
<b>Termination</b>	M3 screw clamps
<b>Cable section</b>	max. 1.5 mm <sup>2</sup> (incl. conductor ferrules)
<b>Cable length</b>	-
<b>U<sub>imp</sub></b>	4 kV
<b>U<sub>i</sub></b>	250 V
<b>I<sub>the</sub></b>	6 A
<b>I<sub>e</sub>/U<sub>e</sub></b>	6 A/400 VAC; 0.25 A/230 VDC
<b>Utilisation category</b>	AC-15, DC-13
<b>Max. fuse rating</b>	6 A gL/gG D-fuse
<b>Ambient temperature</b>	-20 °C ... +60 °C
<b>Mechanical life</b>	> 1 million operations
<b>Switching frequency</b>	1800/h
<b>Repeat accuracy</b>	± 0.1 mm
<b>Contact gap</b>	max. 2 x 3.5 mm
<b>Ex certification</b>	⊕ II 2G EEx de IIC T6, II 2D IP67 T80°C
<b>Approvals</b>	BVS 04 ATEX E 126



### Ordering details

**EEx 355 S 10/1S-3D**

Equipment Categ. 3D, dust  
Ex zone 22  
Contact type 10/1S, (20, UE)  
Actuator S (R, 4VH, 4V7H-2138, etc.)  
Series  
Ex certified component

# Ex position switches

## // Series EEx 355, actuators

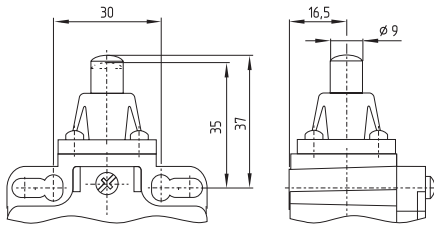
### Features/Options

- Actuator type B to DIN EN 50 041
- Actuating speed 0.5 m/s with an actuating angle of  $\alpha = 0^\circ$

### Features/Options

- Actuator type C to DIN EN 50 041
- Actuating speed 0.5 m/s with an actuating angle of  $\alpha = 30^\circ$

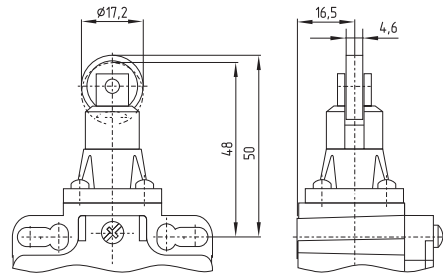
### // Plunger S



Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<b>EEx 355 S 10/1S</b> 
1 NC/1 NO contact with overlapping	<b>EEx 355 S UE</b> 
2 NC contacts	<b>EEx 355 S 20</b> 

### // Roller plunger R



Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<b>EEx 355 R 10/1S</b> 
1 NC/1 NO contact with overlapping	<b>EEx 355 R UE</b> 
2 NC contacts	<b>EEx 355 R 20</b> 



# Ex position switches

## // Series EEx 355, actuators

### Features/Options

- Actuating speed 0.5 m/s with an actuating angle of  $\alpha = 30^\circ$
- Actuation parallel to switch from right
- Wear-resistant thermoplastic roller
- Actuator heads can be repositioned in 4 x 90° steps

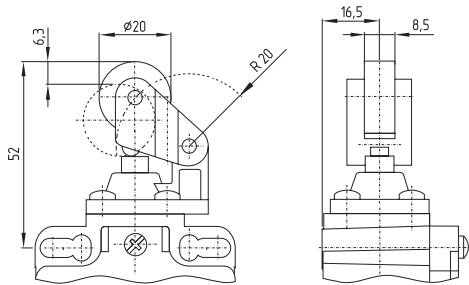
### Note

Actuation from the left should be avoided since this reduces the mechanical life of the position switch.

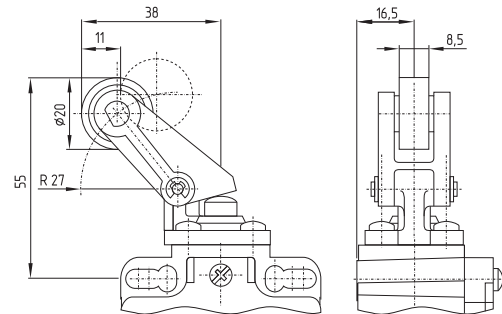
### Features/Options

- Actuating speed 0.5 m/s with an actuating angle of  $\alpha = 30^\circ$
- Actuation parallel to switch from below
- Wear-resistant thermoplastic roller
- Actuator heads can be repositioned in 4 x 90° steps

## // Roller lever 1K



## // Angled roller lever 3K



Contact variants: switch travel/contacts

Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<b>EEx 355 1K 10/1S</b> 
1 NC/1 NO contact with overlapping	<b>EEx 355 1K UE</b> 
2 NC contacts	<b>EEx 355 1K 20</b> 

	Slow action
1 NC/1 NO contact	<b>EEx 355 3K 10/1S</b> 
1 NC/1 NO contact with overlapping	<b>EEx 355 3K UE</b> 
2 NC contacts	<b>EEx 355 3K 20</b> 



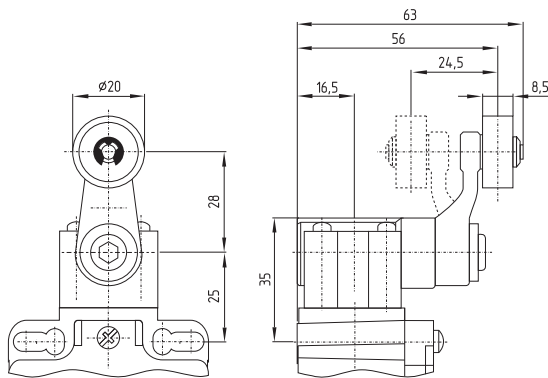
**Features/Options**

- Actuator type A to DIN EN 50 041
- Actuating speed 2.5 m/s with an actuating angle of  $\alpha = 30^\circ$
- Wear-resistant thermoplastic roller
- Actuator heads can be repositioned in 4 x 90° steps


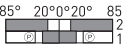
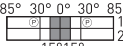
**Features/Options**

- Actuating speed 2.5 m/s with an actuating angle of  $\alpha = 30^\circ$
- Wear-resistant thermoplastic roller
- Actuator heads can be repositioned in 4 x 90° steps

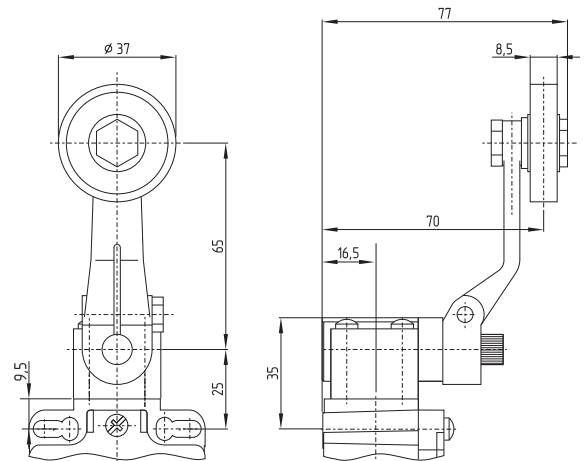
// Rocking roller lever 4VH




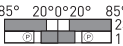

Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<p><b>EEx 355 4VH 10/1S</b></p> <p>85° 25°0°25° 85°   23-24            30°15°15°30° 11-12</p>
1 NC/1 NO contact with overlapping	<p><b>EEx 355 4VH UE</b></p> <p>85° 20°0°20° 85°   23-24            40°25°25°40° 15-16</p>
2 NC contacts	<p><b>EEx 355 4VH 2Ö</b></p> <p>85° 30° 0° 30° 85°   11-12            15°15° 21-22</p>

// Long rocking roller lever 4V3H



Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<p><b>EEx 355 4V3H 10/1S</b></p> <p>85° 25°0°25° 85°   23-24            30°15°15°30° 11-12</p>
1 NC/1 NO contact with overlapping	<p><b>EEx 355 4V3H UE</b></p> <p>85° 20°0°20° 85°   23-24            40°25°25°40° 15-16</p>
2 NC contacts	<p><b>EEx 355 4V3H 2Ö</b></p> <p>85° 30° 0° 30° 85°   11-12            15°15° 21-22</p>



# Ex position switches

## // Series EEx 355, actuators

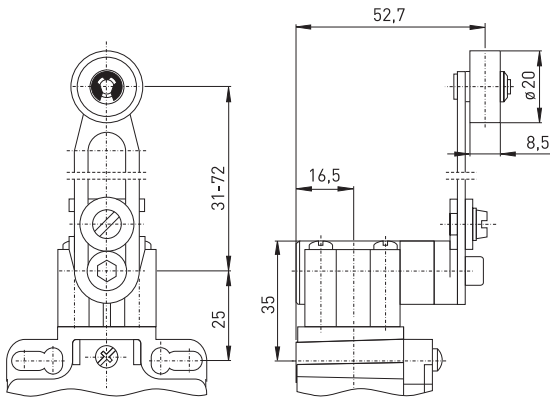
### Features/Options

- Actuating speed 2.5 m/s with an actuating angle of  $\alpha = 30^\circ$
- Wear-resistant thermoplastic roller
- Actuator heads can be repositioned in 4 x 90° steps
- For safety duties  $\ominus$ , positive break, ordering suffix -2138

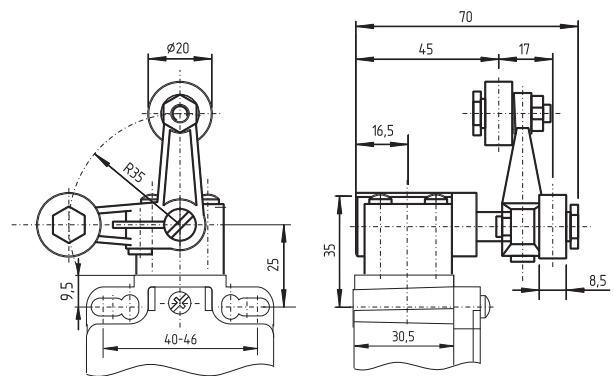
### Features/Options

- Actuating speed 2.5 m/s with an actuating angle of  $\alpha = 30^\circ$
- Wear-resistant thermoplastic roller
- Actuator heads can be repositioned in 4 x 90° steps

### // Adjustable rocking lever 4V7H



### // Forked lever latching 3V4D



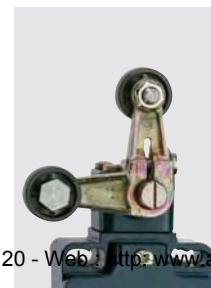
222

#### Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<b>EEx 355 4V7H 1Ö/1S</b> 
1 NC/1 NO contact with overlapping	<b>EEx 355 4V7H UE</b> 
2 NC contacts	<b>EEx 355 4V7H 2Ö</b> 

#### Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<b>EEx 355 3V4D 1Ö/1S</b> 
1 NC/1 NO contact with overlapping	<b>EEx 355 3V4D UE</b> 
2 NC contacts	<b>EEx 355 3V4D 2Ö</b> 



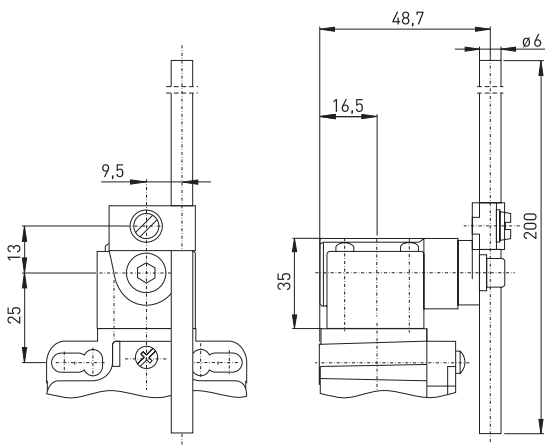
**Features/Options**

- Actuating speed 2.5 m/s with an actuating angle of  $\alpha = 30^\circ$
- Actuator type D to EN 50041

**Features/Options**

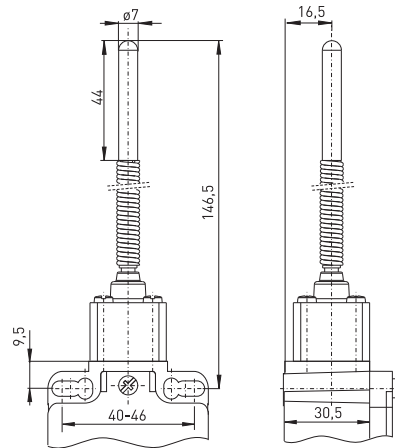
- Wear-resistant plastic tip
- Spring rod can be actuated from any direction
- Elasticity of spring allows for deflection above the max. switching angle of  $12^\circ$

// Rod lever 4V10H



Contact variants: switch travel/contacts

// Spring rod with plastic tip TK



Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<p><b>EEx 355 4V10H 10/1S</b></p>
1 NC/1 NO contact with overlapping	<p><b>EEx 355 4V10H UE</b></p>
2 NC contacts	<p><b>EEx 355 4V10H 2Ö</b></p>

	Slow action
1 NC/1 NO contact	<p><b>EEx 355 TK 10/1S</b></p>
2 NC contacts	<p><b>EEx 355 TK 2Ö</b></p>



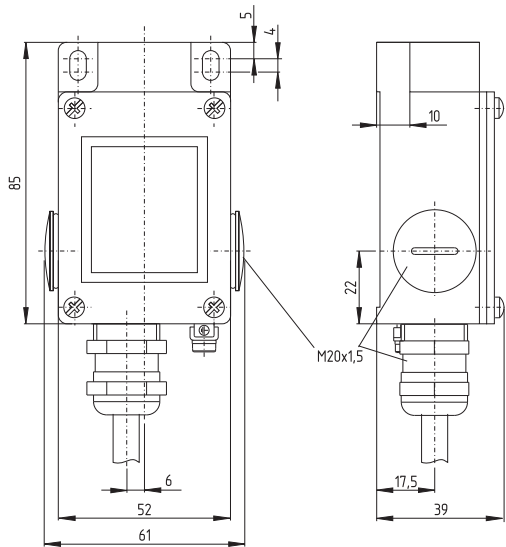
# Ex position switches

## // Series EEx/EEExM 61

### Features/Options

- Ex zone 1 and 2, as well as 21 and 22
- Metal enclosure
- Pre-wired cable available in various lengths
- Available with actuator heads repositioned by 4 x 90°

## // EEX/EEEXM 61



## Technical data

<b>Standards</b>	IEC/EN 60947-5-1; EN 1088; EN 50014; EN 50018; EN 50019; EN 50281-1-1
<b>Design</b>	-
<b>Enclosure</b>	aluminium die casting, enamelled
<b>Cover</b>	steel, enamelled
<b>Switch insert</b>	EExM 14, EEx 14
<b>Protection class</b>	IP 65 according to IEC/EN 60529
<b>Contact material</b>	silver
<b>Switching system</b>	snap or slow action, positive break NC contact ⊖
<b>Switching elements</b>	EExM 61: change-over contact with single break, Form C, EEx 61: change-over contact with double break Zb, galvanically separated contact bridges
<b>Termination</b>	Termination cable H05VV-F
<b>Cable section</b>	4 x 0.75 mm <sup>2</sup>
<b>Cable length</b>	3 m
<b>U<sub>imp</sub></b>	4 kV
<b>U<sub>i</sub></b>	250 V
<b>I<sub>the</sub></b>	6 A
<b>I<sub>e</sub>/U<sub>e</sub></b>	6 A/250 VAC; 0.25 A/230 VDC
<b>Utilisation category</b>	AC-15, DC-13
<b>Max. fuse rating</b>	6 A gL/gG D-fuse
<b>Ambient temperature</b>	-20 °C ... +65 °C
<b>Mechanical life</b>	> 1 million operations
<b>Schaltfrequenz</b>	1800/h
<b>Repeat accuracy</b>	± 0.1 mm
<b>Contact gap</b>	max. 2 x 4.5 mm
<b>Ex certification</b>	⊕ II 2G EEx d IIC T6, II 2D IP65 T80°C
<b>Approvals</b>	EExM 61: PTB 03 ATEX 1069 X* EEx 61: PTB 03 ATEX 1070 X* *referring to the switch insert

### Ordering details

**EEx 61 W 10/1S**

Contact type 10/1S  
Actuator W (WH, WHL, WPH, etc. ...)  
Series  
Ex certified component

# Ex position switches

## // Series EEx/EExM 61, actuators

### Features/Options

- Actuating speed 0.5 m/s with an actuating angle of 15°
- Exact repeatability of switching point
- Collar to protect against the entry of foreign bodies

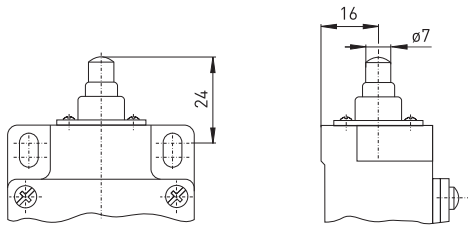
### Features/Options

- Actuating speed 0.5 m/s with an actuating angle of  $\alpha = 40^\circ$  and  $\beta = 25^\circ$
- Wear-resistant thermoplastic roller
- Available with actuator repositioned by  $4 \times 90^\circ$
- Collar to protect against the entry of foreign bodies
- With metal roller available on request

### Note

Actuation from the left should be avoided since this reduces the mechanical life of the position switch.

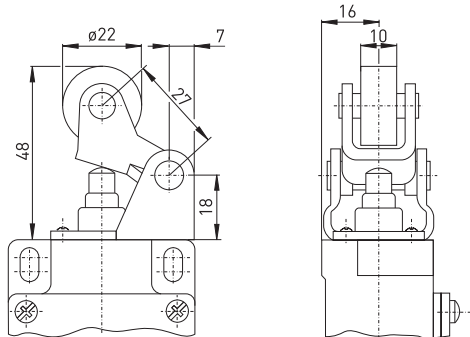
## // Plunger W



Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact	<b>EExM 61 W</b> 	<b>EEx 61 W 10/1S</b> 

## // Roller lever with collar WH



Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact	<b>EExM 61 WH</b> 	<b>EEx 61 WH 10/1S</b> 





# Ex position switches

## // Series EEx/EExM 61, actuators

### Features/Options

- Actuating speed 0.5 m/s with an actuating angle of  $\alpha = 30^\circ$
- Wear-resistant thermoplastic roller
- Available with actuator repositioned by  $4 \times 90^\circ$
- Collar to protect against the entry of foreign bodies
- With metal roller available on request

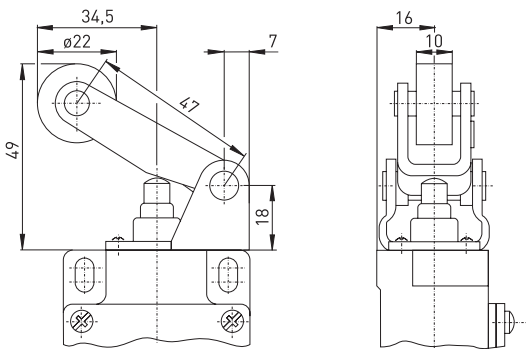
### Note

Actuation from the left should be avoided since this reduces the mechanical life of the position switch.

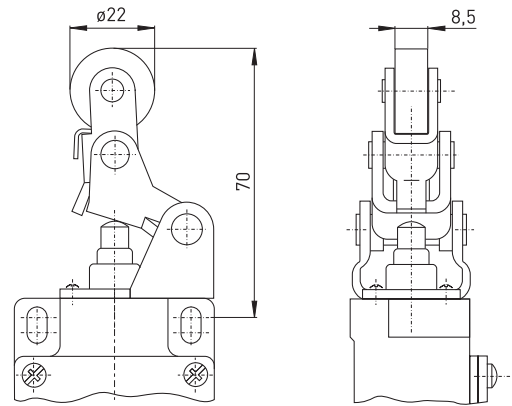
### Features/Options

- Actuating speed 0.5 m/s with an actuating angle of  $\alpha$  and  $\beta = 40^\circ$
- Actuation only possible from right-hand side
- Free movement of actuator from the other side
- Wear-resistant thermoplastic roller
- Actuator heads can be repositioned in  $4 \times 90^\circ$  steps
- Collar to protect against the entry of foreign bodies
- With metal roller available on request

## // Long roller lever with collar WHL



## // Rocking roller lever WHK



226

### Contact variants: switch travel/contacts

### Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact	<b>EExM 61 WHL</b> 	<b>EEx 61 WHL 1Ö/1S</b> 

	Snap action	Slow action
1 NC/1 NO contact	<b>EExM 61 WHK</b> 	<b>EEx 61 WHK 1Ö/1S</b> 



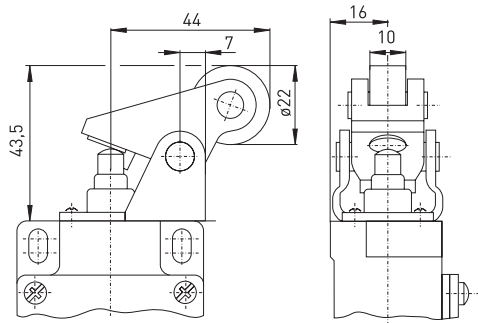
**Features/Options**

- Actuating speed 0.5 m/s with an actuating angle of  $\alpha = 30^\circ$
- Actuation parallel to switch from below
- Wear-resistant thermoplastic roller
- Available with actuator repositioned by  $4 \times 90^\circ$
- Collar to protect against the entry of foreign bodies
- With metal roller available on request

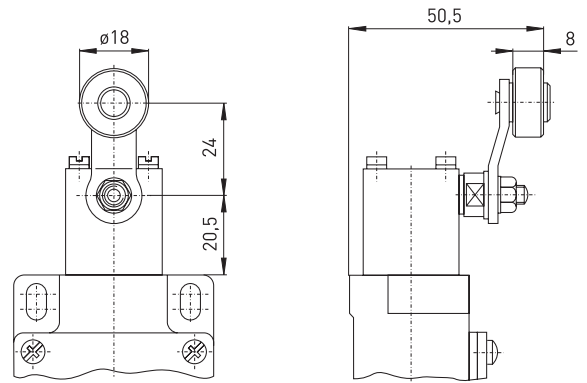
**Features/Options**

- Actuating speed 0.5 m/s with an actuating angle of  $45^\circ$
- Wear-resistant thermoplastic roller
- Lever can be repositioned in  $10^\circ$  steps clockwise or counter-clockwise
- Actuator can be repositioned by  $180^\circ$
- With metal roller available on request

// Parallel roller lever with collar WPH



// Roller lever D



Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact	<b>EExM 61 WPH</b>  GY-BK GY-BN	<b>EEx 61 WPH 10/1S</b>  BK-GY BN-BU

Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact	<b>EExM 61 D</b>  GY-BK GY-BN	<b>EEx 61 D 10/1S</b>  BK-GY BN-BU



# Ex position switches

## // Series EEx/EExM 61, actuators

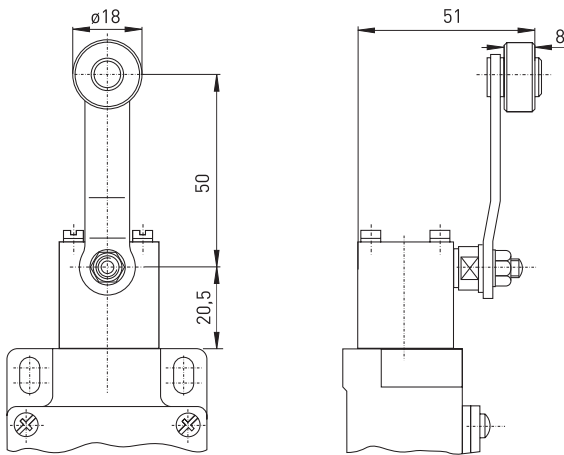
### Features/Options

- Actuating speed 0.5 m/s with an actuating angle of 45°
- Wear-resistant thermoplastic roller
- Lever can be repositioned in 10° steps clockwise or counter-clockwise
- Actuator can be repositioned by 180°
- With metal roller available on request

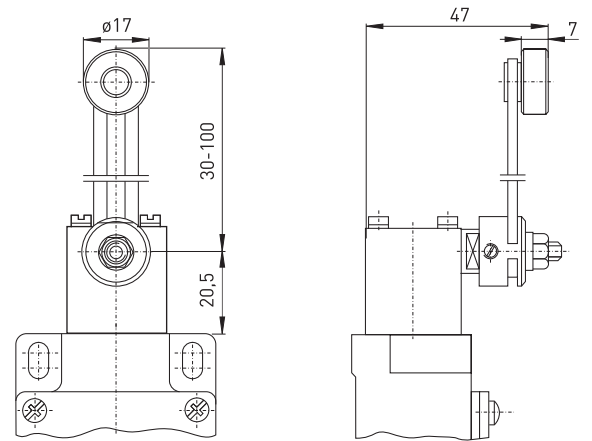
### Features/Options

- Actuating speed 0.5 m/s with an actuating angle of 45°
- Wear-resistant thermoplastic roller
- Lever can be repositioned in 10° steps clockwise or counter-clockwise
- Actuator can be repositioned by 180°
- With metal roller available on request

### // Long roller lever DL



### // Adjustable-length roller lever DS



Contact variants: switch travel/contacts

Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact	<b>EExM 61 DL</b> 70° 15° 0° 15° 70° GY-BK GY-BN	<b>EEx 61 DL 10°/15</b> 70° 35° 0° 35° 70° BK-GY BN-BU 15° 15°

	Snap action	Slow action
1 NC/1 NO contact	<b>EExM 61 DS</b> 70° 15° 0° 15° 70° GY-BK GY-BN	<b>EEx 61 DS 10°/15</b> 70° 35° 0° 35° 70° BK-GY BN-BU 15° 15°



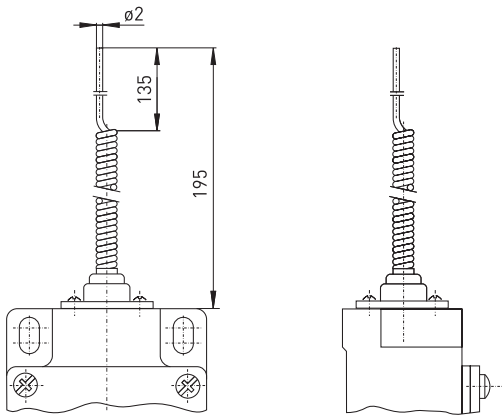
**Features/Options**

- Spring rod can be actuated from any direction
- Spring rod can be shortened 30 mm in actuating area
- Exact linear actuation not necessary
- Elasticity of spring allows for deflection above the max. switching angle

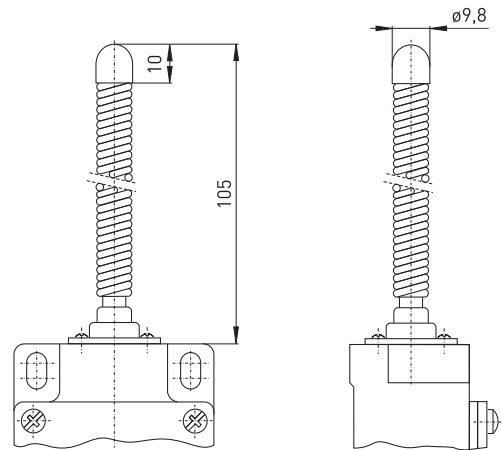
**Features/Options**

- With rounded steel tip
- Spring rod can be actuated from any direction
- Elasticity of spring allows for deflection above the max. switching angle

// Long spring rod TL



// Spring rod with rounded steel tip TF



Contact variants: switch travel/contacts

Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact	<b>EExM 61 TL</b>  GY-BK GY-BN	<b>EEx 61 TL 10/1S</b>  BK-GY BN-BU

	Snap action	Slow action
1 NC/1 NO contact	<b>EExM 61 TF</b>  GY-BK GY-BN	<b>EEx 61 TF 10/1S</b>  BK-GY BN-BU



# Ex position switches

## // Series EEx/EEExM 61, actuators

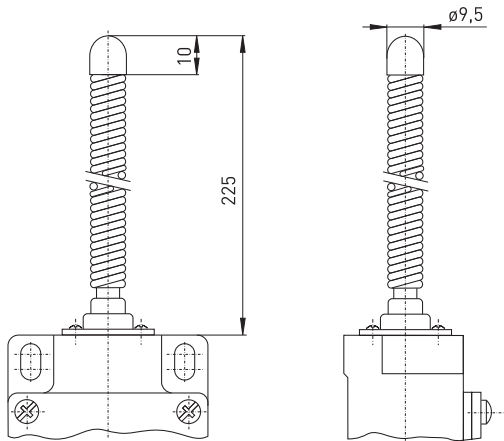
### Features/Options

- With rounded steel tip
- Spring rod can be actuated from any direction
- Elasticity of spring allows for deflection above the max. switching angle

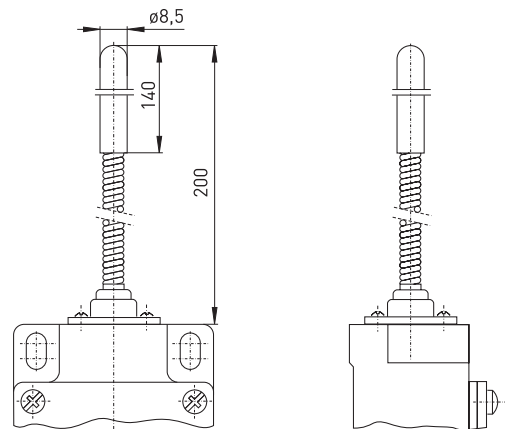
### Features/Options

- Wear-resistant plastic tip
- Spring rod can be actuated from any direction
- Elasticity of spring allows for deflection above the max. switching angle

### // Long spring rod rounded steel tip TFL



### // Spring rod with plastic tip TK



230

Contact variants: switch travel/contacts

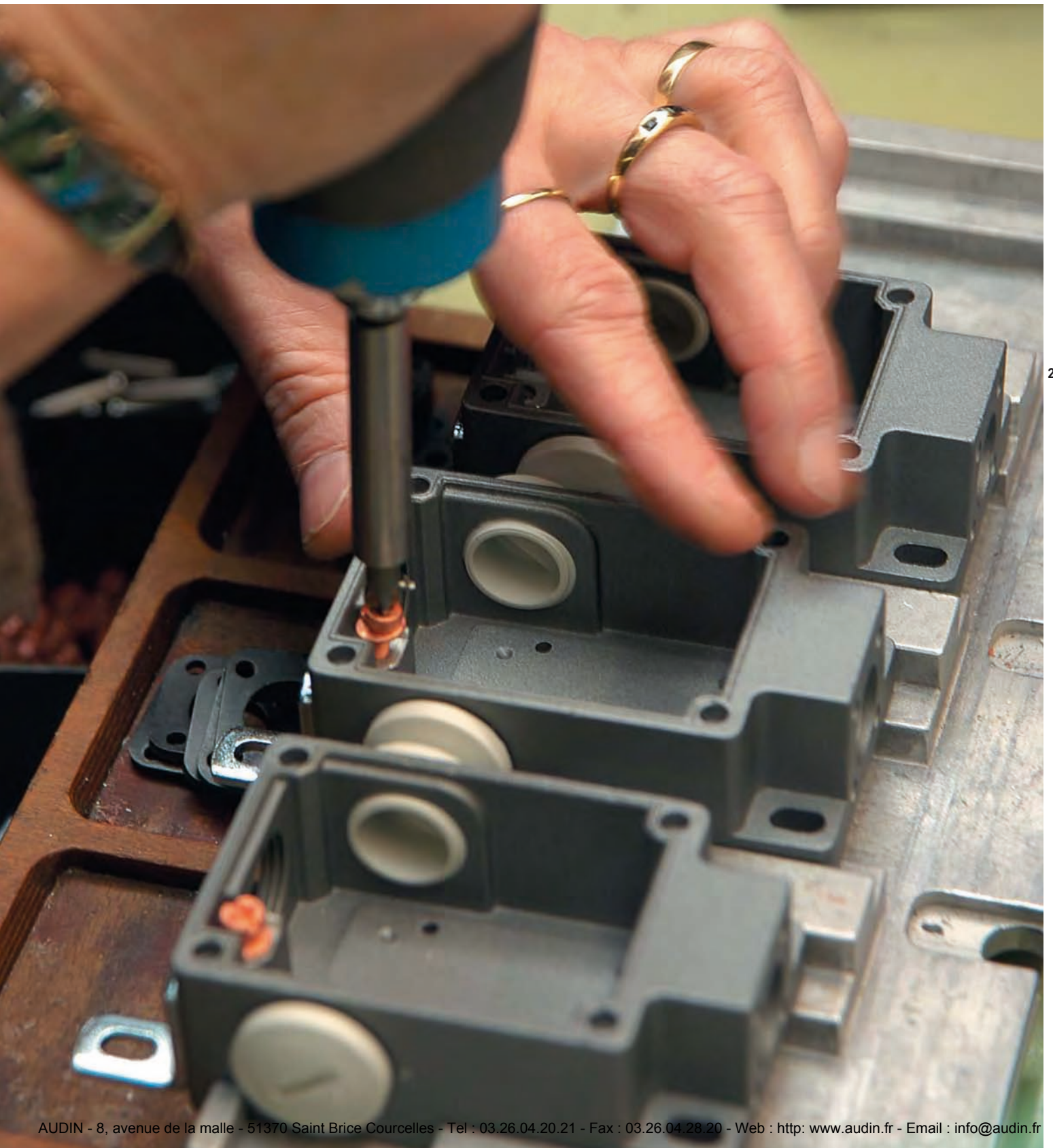
Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact	<b>EEExM 61 TFL</b>  GY-BK GY-BN	<b>EEx 61 TFL 10/1S</b>  BK-GY BN-BU

	Snap action	Slow action
1 NC/1 NO contact	<b>EEExM 61 TK</b>  GY-BK GY-BN	<b>EEx 61 TK 10/1S</b>  BK-GY BN-BU



PRODUCTION PROCESS ASSEMBLY  
FIXING THE GROUND SCREW



231



**-steute**  
25 25 SR 10 15 VD  
73 1 31 6 01  
100 V / 8 A  
100 80 94 73 5 AC 15  
50V 478 1P 20  
326  
1 300 VAC / 8 A 3P  
4300 / 1300  
D. 25 25 SR 10 15 VD  
CE



## Ex belt-alignment switches

// Series EEx 335 4VSR  
from page 236

// Series EEx 355 4VSR  
from page 237

// Series EEx ZS 73 SR  
from page 238

// Series EEx ZS 75 SR  
from page 240





# Ex belt-alignment switches

## Range of application

Ex belt-alignment switches are suitable for applications with handling equipment. Here they are installed e.g. at both sides of a conveyor belt in order to monitor the misalignment of the belt.

Ex belt misalignment, evoked by, for example, goods not in the middle of conveyor belt positioned or pollution of track idlers and deflection pulleys, can without any monitoring measurements lead to damage, destruction, material covering and dropping.

## Design and operating principle

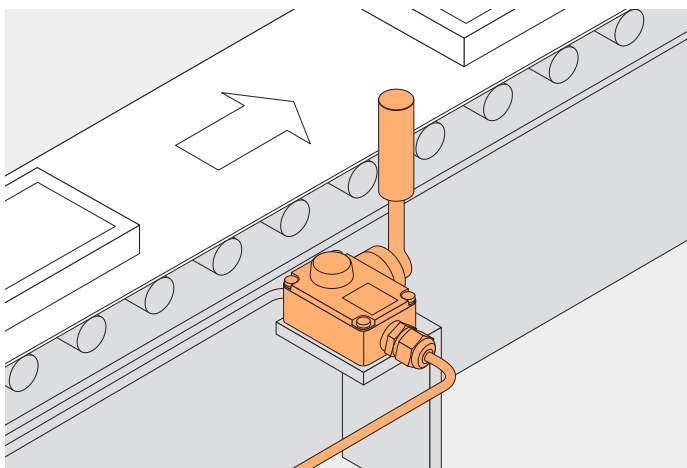
Ex belt-alignment switches are actuated when the conveyor belt becomes misaligned. Depending on the plant arrangements, this signal can either be used to switch the equipment off or to provide automatic correction of the belt alignment. Thus they should be installed at both sides of the conveyor belt close to the deflection and drive pulleys. In the case of very long conveyor systems, further belt-alignment switches must be installed.

These are actuated with the misalignment of the conveyor belt. This signal can either switch the system off or start an automatic belt position correction, as well as at the same time generate an optical or acoustic indicating or warning signal. All Ex belt-alignment switches have positive break NC contacts and mechanical latching. At actuation the NC contacts are opened and latched mechanically. The release can be carried either by push button or by key. Thus an unintentional, automatic restart of the conveyor belt is prevented.

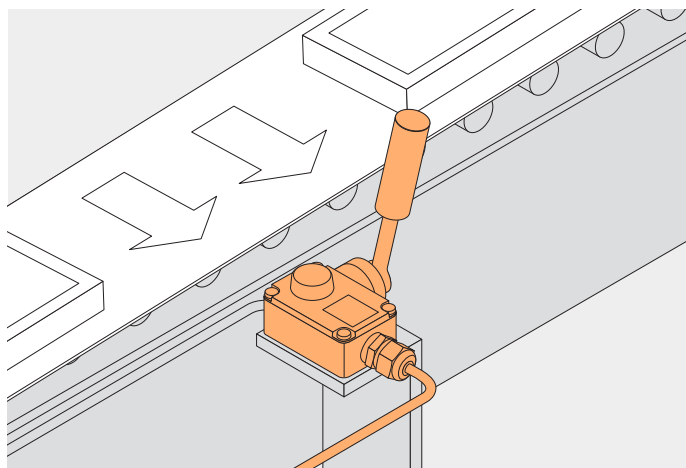
All belt-alignment switches bear the CE mark according to the Machinery Directive 98/37/EC and to ATEX 94/9/EC. The Ex belt-alignment switches per equipment category 3D bear the CE mark without the number of the notified body and have received a CE declaration of manufacturer conformity.

## Application

### Monitoring a conveyor belt



### Belt-alignment switch in actuated state



# Ex belt-alignment switches

## // Series EEx 335 4VSR

### Features/Options

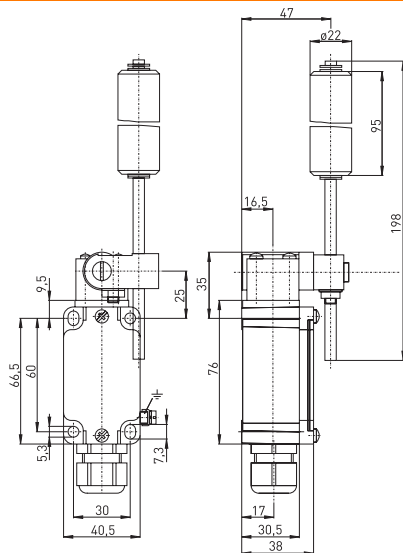
- Ex zone 1 and 2, as well as 21 and 22
- Metal enclosure
- 2 contacts
- Mounting details to DIN EN 50 041
- Wiring compartment
- Adjustable-length rod lever with nylon roller
- For light- and medium-heavy applications
- Special version only for equipment category 3D, available for dust Ex zone 22
- Gost approval for Russia to be ordered separately

## // EEX 335 4VSR



### Technical data

<b>Standards</b>	IEC/EN 60947-5-1; EN 50014; EN 50018; EN 50019; EN 50281-1-1
<b>Enclosure</b>	zinc die casting, enamelled
<b>Switch insert</b>	Ex 95
<b>Protection class</b>	IP 65 according to IEC/EN 60529
<b>Contact material</b>	silver
<b>Switching system</b>	slow action, positive break NC contact ⊖
<b>Switching elements</b>	change-over contact with double break Zb or 2 NC contacts, galvanically separated contact bridges
<b>Termination</b>	M3 screw clamps
<b>Cable section</b>	max. 1.5 mm <sup>2</sup> (incl. conductor ferrules)
<b>Cable length</b>	-
<b>U<sub>imp</sub></b>	4 kV
<b>U<sub>i</sub></b>	250 V
<b>I<sub>the</sub></b>	6 A
<b>I<sub>e</sub>/U<sub>e</sub></b>	6 A/400 VAC; 0.25 A/230 VDC
<b>Utilisation category</b>	AC-15, DC-13
<b>Max. fuse rating</b>	6 A gL/gG D-fuse
<b>Ambient temperature</b>	-20 °C ... +60 °C
<b>Mechanical life</b>	> 1 million operations
<b>Switching frequency</b>	1800/h
<b>Repeat accuracy</b>	± 0.1 mm
<b>Contact gap</b>	max. 2 x 3.5 mm
<b>Ex certification</b>	⊕ II 2G EEx de IIC T6, II 2D IP65 T80°C
<b>Approvals</b>	DMT 01 ATEX E 178



### Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<b>EEx 335 4VSR 1Ö/1S</b> 
1 NC/1 NO contact with overlapping	<b>EEx 335 4VSR UE</b> 
2 NC contacts	<b>EEx 335 4VSR 2Ö</b> 

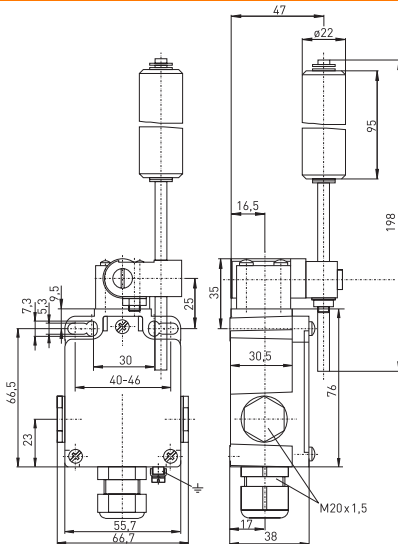
### Ordering details

<b>EEx 335 4VSR 1Ö/1S-3D</b>	Equipment Categ. 3D, dust Ex zone 22
	1 NC/1 NO contact (2Ö, UE)
	4VSR Belt-alignment lever
	Series
	Ex certified component

# Ex belt-alignment switches

// Series EEx 355 4VSR

// EEX 355 4VSR



## Features/Options

- Ex zone 1 and 2, as well as 21 and 22
- Metal enclosure
- 2 contacts
- Mounting details to DIN EN 50 041
- Wiring compartment
- Adjustable-length rod lever with nylon roller
- For light- and medium-strength applications
- Special version only for equipment category 3D, available for dust Ex zone 22
- Inmetro approval for Brazil and Gost approval for Russia to be ordered separately

## Technical data

<b>Standards</b>	IEC/EN 60947-5-1; EN 50014; EN 50018; EN 50019; EN 50281-1-1
<b>Enclosure</b>	zinc die casting, enamelled
<b>Switch insert</b>	Ex 95
<b>Protection class</b>	IP 67 according to IEC/EN 60529
<b>Contact material</b>	silver
<b>Switching system</b>	slow action, positive break NC contact ⊖
<b>Switching elements</b>	change-over contact with double break Zb or 2 NC contacts, galvanically separated contact bridges
<b>Termination</b>	M3 screw clamps
<b>Cable section</b>	max. 1.5 mm <sup>2</sup> (incl. conductor ferrules)
<b>Cable length</b>	-
<b>U<sub>imp</sub></b>	4 kV
<b>U<sub>i</sub></b>	250 V
<b>I<sub>the</sub></b>	6 A
<b>I<sub>e</sub>/U<sub>e</sub></b>	6 A/400 VAC; 0.25 A/230 VDC
<b>Utilisation category</b>	AC-15, DC-13
<b>Max. fuse rating</b>	6 A gL/gG D-fuse
<b>Ambient temperature</b>	-20 °C ... +60 °C
<b>Mechanical life</b>	> 1 million operations
<b>Switching frequency</b>	1800/h
<b>Repeat accuracy</b>	± 0.1 mm
<b>Contact gap</b>	max. 2 x 3.5 mm
<b>Ex certification</b>	⊕ II 2G EEx de IIC T6, II 2D IP67 T80°C
<b>Approvals</b>	BVS 04 ATEX E 126

237



## Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<p><b>EEx 355 4VSR 10/1S</b></p> <p>85° 25°0°25° 85°  </p>
1 NC/1 NO contact with overlapping	<p><b>EEx 355 4VSR UE</b></p> <p>85° 20°0°20° 85°  </p>
2 NC contacts	<p><b>EEx 355 4VSR 20</b></p> <p>85° 30° 0° 30° 85°  </p>

## Ordering details

<b>EEx 355 4VSR 10/1S-G-3D</b>	
	Equipment Categ. 3D, dust Ex zone 22
	Indicator lamp for 3D, see accessories
	1 NC/1 NO contact (20, UE)
	4VSR Belt-alignment lever
	Series
	Ex certified component

# Ex belt-alignment switches

## // Series EEx ZS 73 SR

### Features/Options

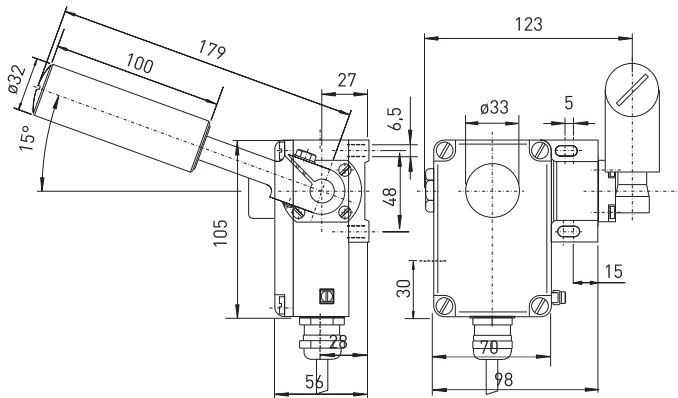
- Ex zone 1 and 2, as well as 21 and 22
- Metal enclosure
- 2 contacts
- Cable
- Release by push button or key possible
- Belt-alignment roller made of stainless steel 1.4104
- Special version only for equipment category 3D, available for dust Ex zone 22
- Inmetro approval for Brazil to be ordered separately

## // EEX ZS 73 SR



### Technical data

Standards	IEC/EN 60947-5-1, EN 50014, EN 50018, EN 50281-1-1
Enclosure	aluminium die casting, enamel finish; ZS 73 NIRO: aluminium die casting, hard-coated and enamelled
Cover	glass-fibre reinforced, shock-proof thermoplastic, ultramid
Switch insert	EEx 14
Protection class	EEx ZS 73 SR VD: IP 65; EEx ZS 73 SR VS: IP 54 to IEC/EN 60529
Contact material	silver
Switching system	slow action, positive break NC contacts ⊕
Switching elements	change-over contact with double break or 2 NC contacts
Termination	cable H05VV-F
Cable section	4 x 0.75mm <sup>2</sup> (incl. conductor ferrules)
Cable length	3 m
U <sub>imp</sub>	4 kV
U <sub>i</sub>	250 V
I <sub>the</sub>	6 A
Utilisation category	AC-15, DC-13
I <sub>e</sub> /U <sub>e</sub>	6 A/250 VAC, 0.25 A/230 VDC
Max. fuse rating	6 A gL/gG D-fuse
Ambient temperature	-20 °C ... +65 °C, T5: +75 °C
Mechanical life	> 1 million operations
Ex certification	⊕ II 2G EEx d IIC T6, II 2D IP65 T80°C
Approvals	PTB 06 ATEX 1066 X

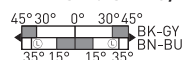


### Contact variants: switch travel/contacts

#### Slow action

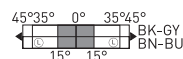
1 NC/1 NO contact

EEx ZS 73 SR 10/1S



2 NC contacts

EEx ZS 73 SR 20



### Ordering details

EEx ZS 73 SR 10/1S VD-G-3D

E	Equipment Categ. 3D, Ex Zone 22
S	Indicator lamp for 3D, see accessories
V	VD Push button release (VS key release, blank without mechanical latching)
D	1 NC/1 NO contact (20)
G	SR Belt-alignment lever
3	Series
D	Ex certified component

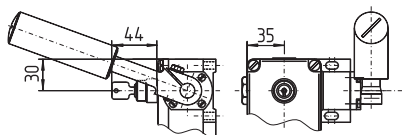
## Ex belt-alignment switches

### // Series EEx ZS 73 SR, variants

#### Features/Options

- Indicator lamps for zone 22 for 24VDC are indicated at the end of this chapter
- Indicator lamp position on the left side, other positions possible on request
- Version for equipment category 3D, dust Ex zone 22 is equipped with a wiring compartment

### // Key release VS



# Ex belt-alignment switches

## // Series EEx ZS 75 SR

### Features/Options

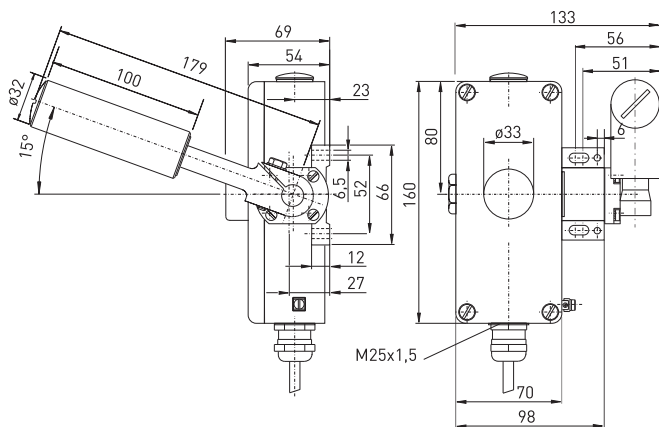
- Ex zone 1 and 2, as well as 21 and 22
- Metal enclosure
- 2 or 4 contacts
- Cable
- Release by push button or key possible
- Belt-alignment roller made of stainless steel 1.4104
- Special version only for equipment category 3D, available for dust Ex zone 22
- Inmetro approval for Brazil to be ordered separately

## // EEX ZS 75 SR



### Technical data

<b>Standards</b>	IEC/EN 60947-5-1, EN 50014, EN 50018, EN 50281-1-1
<b>Enclosure</b>	aluminium die casting, enamel finish
<b>Cover</b>	aluminium die casting, enamel finish
<b>Switch insert</b>	EEx 14
<b>Protection class</b>	EEx ZS 75 SR VD: IP 65; EEx ZS 75 SR VS: IP 54 to IEC/EN 60529
<b>Contact material</b>	silver
<b>Switching system</b>	slow action, positive break NC contacts ⊕
<b>Switching elements</b>	change-over contact with double break or 2 NO/2 NC or 4 NC contacts
<b>Termination</b>	cable H05VV-F
<b>Cable section</b>	4 x 0.75mm <sup>2</sup> (incl. conductor ferrules) per switch insert
<b>Cable length</b>	3 m
<b>U<sub>imp</sub></b>	4 kV
<b>U<sub>i</sub></b>	250 V
<b>I<sub>the</sub></b>	6 A
<b>Utilisation category</b>	AC-15, DC-13
<b>I<sub>e</sub>/U<sub>e</sub></b>	6 A/250 VAC, 0.25 A/230 VDC
<b>Max. fuse rating</b>	6 A gL/gG D-fuse
<b>Ambient temperature</b>	-20 °C ... +65 °C, T5: +75 °C
<b>Mechanical life</b>	> 1 million operations
<b>Ex certification</b>	⊕ II 2G EEx d IIC T6, II 2D IP65 T80°C
<b>Approvals</b>	PTB 06 ATEX 1067 X



### Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<b>EEx ZS 75 SR 10/1S</b> 
2 NC/2 NO contact	<b>EEx ZS 75 SR 20/2S</b> 
4 NC contacts	<b>EEx ZS 75 SR 40</b> 

### Ordering details

<b>EEx ZS 75 SR 20/2S VD-G-3D</b>	Equipment Categ. 3D, Ex Zone 22
	Indicator lamp for 3D, see accessories
	VD Push button release (VS key release, blank without mechanical latching)
	2 NC/2 NO contact (10/1S, 40)
	SR Belt-alignment lever
	Series
	Ex certified component

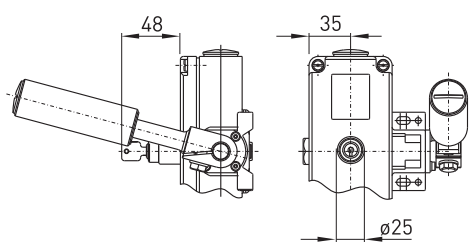
## Ex belt-alignment switches

### // Series EEx ZS 75 SR, variants

#### Features/Options

- Indicator lamps for zone 22 for 24VDC are indicated at the end of this chapter
- Indicator lamp position on the left side, other positions possible on request
- Version for equipment category 3D, dust Ex zone 22 is equipped with a wiring compartment

### // Key release VS









## Ex pull-wire switches

// Series EEx 95 Z

from page 247

// Series EEx/EExM 61 Z

from page 248

// Series EEx ZS 71 Z

from page 250



# Ex pull-wire switches

## Range of application

Ex pull-wire switches are suitable as transducers for starting machines or to open and close electrically-powered doors, gates and barriers.

## Design and operating principle

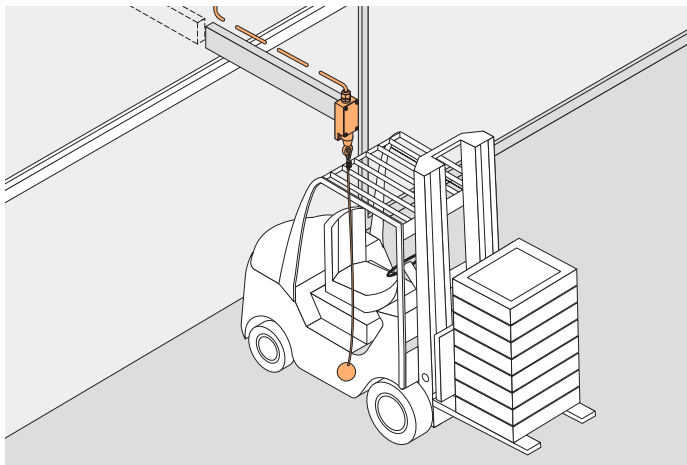
Ex pull-wire switches are actuated manually by pulling. The pull-wire switches generate a switching impulse on actuation.

In the appendix the mounting accessories for pull-wire switches can be selected.

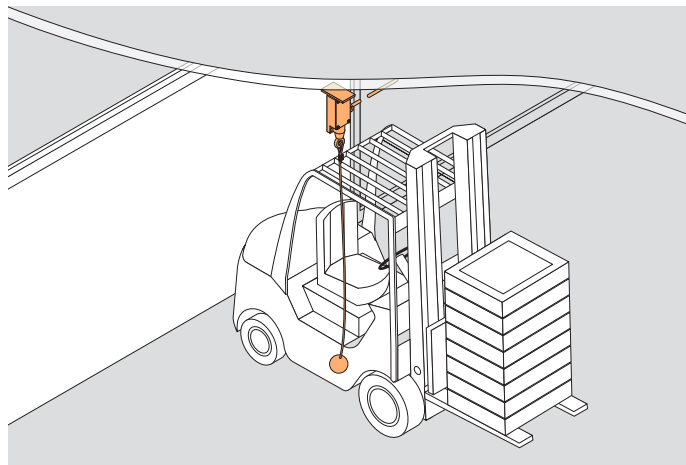
All Ex pull-wire switches presented in this chapter bear the CE mark according to the Low Voltage Directive 90/269/EC and to ATEX 94/9/EC. The Ex pull-wire switches per equipment category 3D bear the CE mark without the number of the notified body and have received a CE declaration of manufacturer conformity.

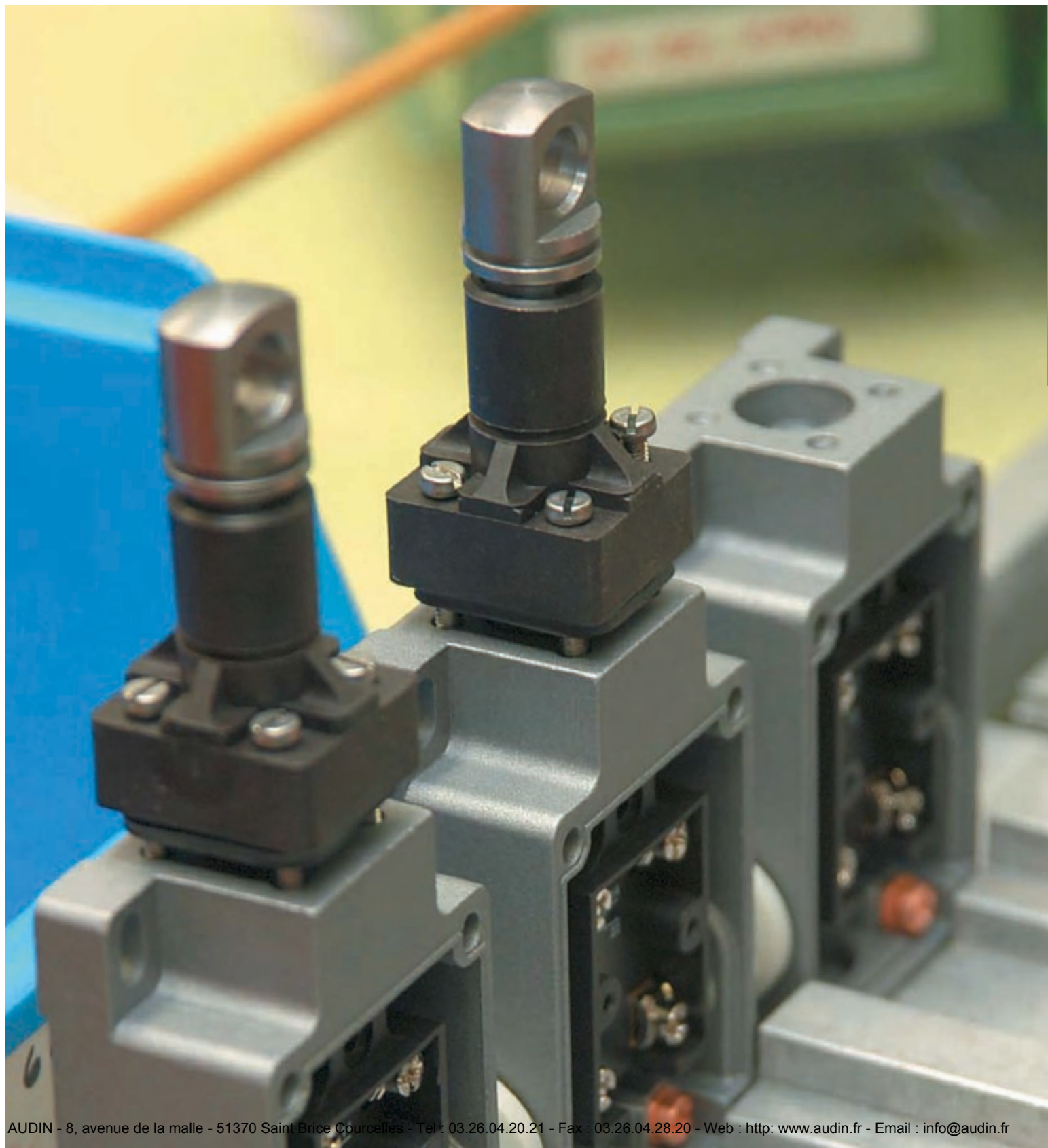
## Application

### Wall mounting as door opener



### Ceiling mounting






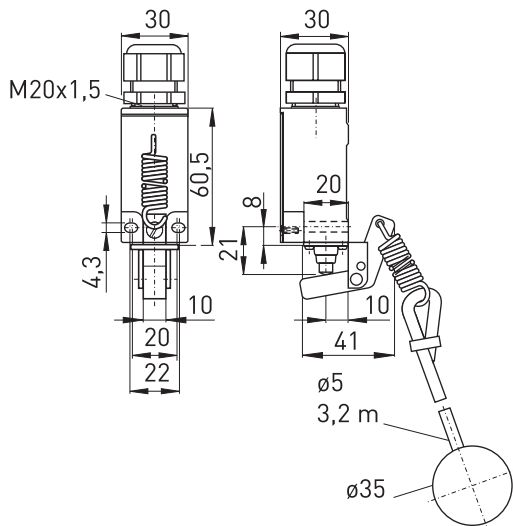
# Ex pull-wire switches

## // Series EEx 95 WH/90°

### Features/Options

- Ex zone 1 and 2, as well as 21 and 22
- Thermoplastic enclosure
- Wall or ceiling mounting
- Slow action: 2 contacts
- With gold-plated contacts available on request
- Mounting details to EN 50 047
- Horizontal mounting slots
- Double insulated 
- Special version only for equipment category 3D, available for dust Ex zone 22

// EEX 95 WH/90°



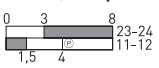
### Technical data

Standards	IEC/EN 60947-5-1
Design	DIN EN 50 047
Enclosure	glass-fibre reinforced, shock-proof thermoplastic, self-extinguishing UL 94-V0
Switch insert	Ex 95
Protection class	IP 67
Contact material	silver
Switching system	slow action, positive break NC contact $\ominus$
Switching elements	change-over contact with double break Zb, galvanically separated contact bridges
Termination	M3 screw clamps
Cable section	max. 1.5 mm <sup>2</sup> (incl. conductor ferrules)
Cable entry	M 20 x 1.5
U <sub>imp</sub>	4 kV
U <sub>i</sub>	250 V
I <sub>the</sub>	6 A
Utilisation category	AC-15; DC-13
Ie/Ue	6 A/250 VAC; 0.25 A/230 VDC
Max. fuse rating	6 A gL/gG D-fuse
Mechanical life	> 1 million operations
Switching frequency	1800/h
Ambient temperature	- 20 °C ... + 80 °C
Actuating force	20 N
Features	pull-wire function
Ex certification	$\oplus$ II 2G EEx de IIC T6, II 2D IP67 T80°C
Approvals	DMT 01 ATEX E 118

247

### Contact variants: switch travel/contacts

1 NC/1 NO contact	Slow action
	EEx 95 WH/90° 10/1S



### Ordering details

**EEx 95 WH/90° 10/1S**  
 1 NC/1 NO contact  
 WH/90° Actuator with pull-wire  
 Series  
 Ex certified component

# Ex pull-wire switches

## // Series EEx/EExM 61 Z

### Features/Options

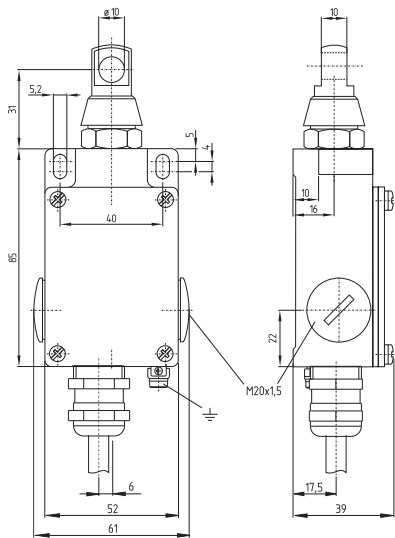
- Ex zone 1 and 2, as well as 21 and 22
- Metal enclosure
- Wall mounting
- Slow or snap action: 2 contacts
- Various spring force variants (actuating forces)
- Pull-wire function

### // EEX/EEXM 61 Z



### Technical data

<b>Standards</b>	IEC/EN 60947-5-1; EN 1088; EN 50014; EN 50018; EN 50019; EN 50281-1-1
<b>Design</b>	-
<b>Enclosure</b>	aluminium die casting, enamel finish
<b>Cover</b>	steel, enamel finish
<b>Switch insert</b>	EExM 14, EEx 14
<b>Protection class</b>	IP 65 according to IEC/EN 60529
<b>Contact material</b>	silver
<b>Switching system</b>	slow or snap action, positive break NC contact ⊖
<b>Switching elements</b>	EExM 61: change-over contact Form C, EEx 61: change-over with double break Zb, galvanically separated contact bridges
<b>Termination</b>	cable H05VV-F
<b>Cable section</b>	4 x 0.75 mm <sup>2</sup>
<b>Cable length</b>	3 m
<b>U<sub>imp</sub></b>	4 kV
<b>U<sub>i</sub></b>	250 V
<b>I<sub>the</sub></b>	6 A
<b>I<sub>e</sub>/U<sub>e</sub></b>	6 A/250 VAC; 0.25 A/230 VDC
<b>Utilisation category</b>	AC-15, DC-13
<b>Max. fuse rating</b>	6 A gL/gG D-fuse
<b>Ambient temperature</b>	-20 °C ... +65 °C
<b>Mechanical life</b>	> 1 million operations
<b>Switching frequency</b>	1800/h
<b>Repeat accuracy</b>	± 0.1 mm
<b>Contact gap</b>	max. 2 x 4.5 mm
<b>Ex certification</b>	⊕ II 2G EEx d IIC T6, II 2D IP65 T80°C
<b>Approvals</b>	EExM 61: PTB 03 ATEX 1069 X* EEx 61: PTB 03 ATEX 1070 X* *referring to the switch insert



### Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact	EExM 61 Z 10/1S 0 4 7 GY-BK GY-BN	EEx 61 Z 10/1S 0 4 7 BK-GY BN-BU

### Ordering details

#### EEx 61 WZ 10/1S

1 NC/1 NO contact  
Z Actuator towing eye  
W Watertight collar  
Series

Ex certified component: EEx Slow action (EExM Snap action)

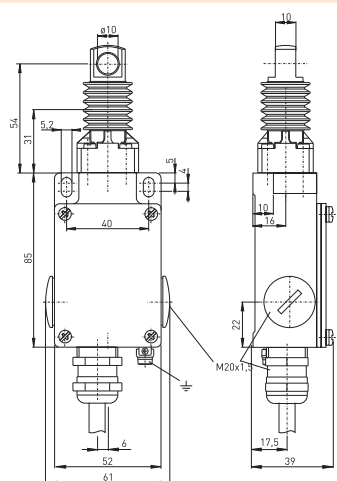
# Ex pull-wire switches

## // Series EEx/EExM 61 Z, variants

### Features/Options

- Watertight collar W to protect against the entry of foreign bodies

### // Watertight collar W





# Ex pull-wire switches

## // Series EEx ZS 71 Z

### Features/Options

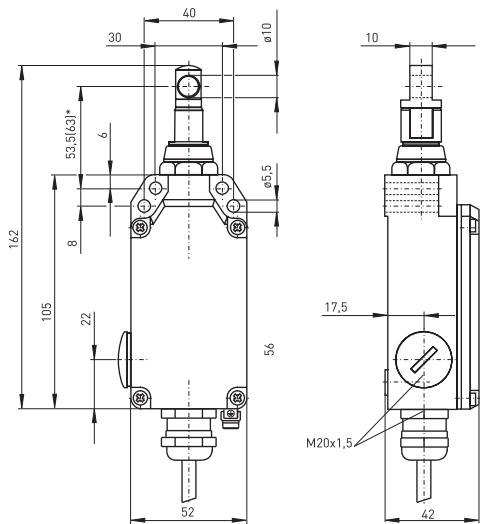
- Ex zone 1 and 2, as well as 21 and 22
- Metal enclosure
- Wall mounting
- Slow action: 2 contacts
- Pull-wire function
- Ex indicator lamp for zone 22 on page 252
- Special version only for equipment category 3D, available for dust Ex zone 22
- Inmetro approval for Brazil to be ordered separately

### Technical data

Standards	IEC/EN 60947-5-1
Design	-
Enclosure	aluminium die casting, enamel finish
Cover	thermoplastic, ultramid
Switch insert	EEx 14
Protection class	IP 65
Contact material	silver
Switching system	slow or snap action, positive break NC contacts $\ominus$ to IEC 60947-5-1
Switching elements	change-over contact with double break, galvanically separated contact bridges
Termination	cable H05VV-F
Cable section	4 x 0.75mm <sup>2</sup>
Cable length	3 m
U <sub>imp</sub>	4 kV
U <sub>i</sub>	250 V
I <sub>the</sub>	6 A
Utilisation category	AC-15, DC-13
I <sub>e</sub> /U <sub>e</sub>	6 A/250 VAC, 0.25 A/230 VDC
Max. fuse rating	6 A gL/gG D-fuse
Ambient temperature	-25 °C ... +70 °C
Mechanical life	> 1 million operations
Indicator lamp	as option
Switching frequency	1800/h
Actuating force	max. 80 N
Features	pull-wire function
Ex certification	⊕ II 2G EEx d IIC T6, II 2D IP65 T80°C
Approvals	PTB 06 ATEX 1065 X



// EEX ZS 71 Z



### Contact variants: switch travel/contacts

	<b>Slow action</b>
1 NC/1 NO contact	EEx ZS 71 Z 10/1S

### Ordering details

EEx ZS 71 W Z 10/1S-3D	Equipment Categ. 3D, dust Ex zone 22
	1 NC/1 NO contact
	Z Actuator towing eye
	W Watertight collar
	Series
	ZS Pull-wire switch
	Ex certified component

PRODUCTION PROCESS ASSEMBLY  
ASSEMBLY OF A PULL-WIRE SWITCH



## Appendix // Accessories

### Features/Options

- Pull-wire yellow (polypropylene)
- With rubber ball and Duplex wire clamp
- 1, 2, 3 or 4 m long
- Ordering unit: 1 piece

### Features/Options

- Only suitable for application in zone 2 and 22
- Lamp cap red, green or yellow
- M20 x 1.5
- 24 VDC
- Ordering unit: 1 piece

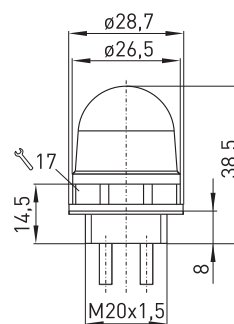
// Pull-wire



// Ex indicator Multi-LED coloured



// Ex indicator Multi-LED coloured



### Ordering details

Pull-wire with ball for pull-wire switches 1 m	04.73.7106
Pull-wire with ball for pull-wire switches 2 m	04.73.7107
Pull-wire with ball for pull-wire switches 3 m	04.73.7108
Pull-wire with ball for pull-wire switches 4 m	04.73.7109

### Ordering details

Ex indicator lamp Multi-LED RD 24 VDC	04.00.7122
Ex indicator lamp Multi-LED GN 24 VDC	04.00.7123
Ex indicator lamp Multi-LED YE 24 VDC	04.00.7124

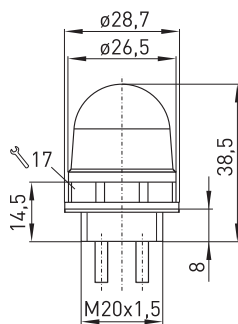
Features/Options

- Only suitable for application in zone 2 and 22
- Lamp cap white
- M20 x 1.5
- 24 VDC
- Ordering unit: 1 piece

// Ex indicator Multi-LED white



// Ex indicator Multi-LED white



Ordering details

Ex indicator lamp Multi-LED WH 24 VDC

04.00.7125



## Ex foot switches

### Single-pedal types

// Series EEx GF

from page 258

// Series EEx GFS

from page 260

// Series EEx GFI

from page 262

// Series EEx GFSI

from page 263

### Double-pedal types

// Series EEx GF 2

from page 264

// Series EEx GFS 2

from page 266

### Triple-pedal types

// Series EEx GF 3

from page 268

// Series EEx GFS 3

from page 269



# Ex foot switches

## Range of application

Ex foot switches are mounted on machines and plants in cases where operation by hand is not possible. They are used to start and stop operations and production processes. Depending on the environmental conditions and mechanical duty, different versions of foot switches are used.

## Design and operating principle

The EEx GFS and EEx GFSI range foot switches are mounted with a shield to protect against unintentional actuation.

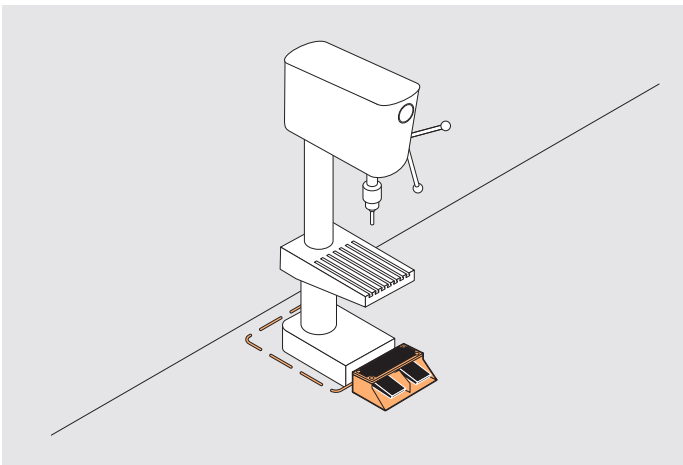
All Ex foot switches are equipped with slow or snap action contacts. They have protection class IP 65.

All foot switches series EEx GF, EEx GFS, EEx GFI and EEx GFSI are Ex approved according to ATEX.

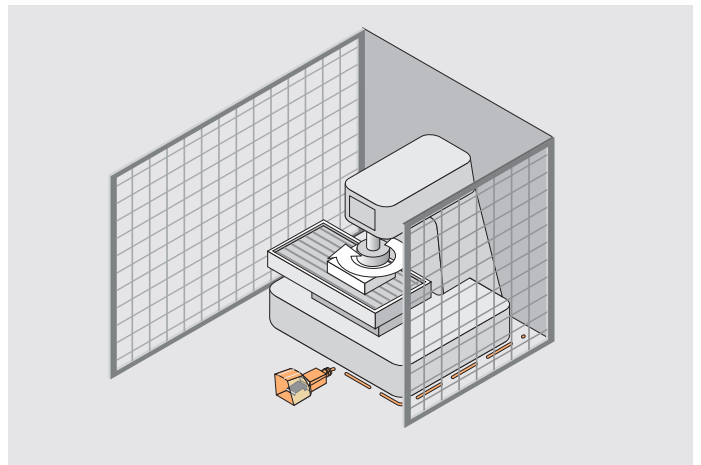
The foot switches bear the CE mark according to the Low Voltage Directive 06/95/EC and to ATEX 94/9/EC. The Ex foot switches per equipment category 3D bear the CE mark without the number of the notified body and have received a CE declaration of manufacturer conformity.

## Application

Foot switch on a drill machine



Foot switch on a CNC machining centre





# Ex foot switches

## // Series EEx GF

### Features/Options

- Ex zone 1 and 2, as well as 21 and 22
- Metal enclosure
- Without protective shield
- Max. 2 contacts
- Low pedal height
- With pre-wired cable, cable length 3 metres
- Available with special finish in RAL colour tones
- Special version only for equipment category 3D, available for dust Ex zone 22
- Inmetro approval for Brazil to be ordered separately

### Technical data

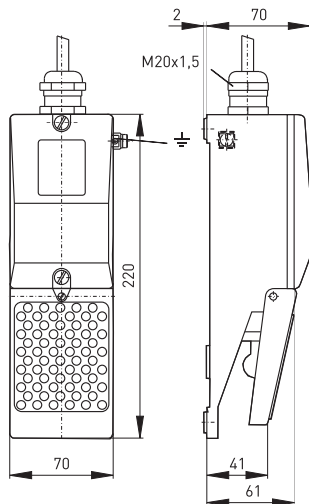
<b>Standards</b>	IEC/EN 60947-5-1; EN 50014; EN 50018; EN 50281-1-1
<b>Enclosure</b>	aluminium die casting, enamel finish, RAL 5011
<b>Cover</b>	glass-fibre reinforced thermoplastic
<b>Pedal</b>	glass-fibre reinforced thermoplastic
<b>Protective shield</b>	-
<b>Termination</b>	cable H05VV-F
<b>Cable section</b>	4 x 0.75 mm <sup>2</sup>
<b>Cable length</b>	3 m
<b>Contact material</b>	silver
<b>Protection class</b>	IP 65 to IEC/EN 60529
<b>Switching system</b>	slow action with double break, positive break NC contact ⊖ or snap action with single break
<b>Switch insert</b>	slow action: EEx 14 snap action: EExM 14
<b>Utilisation category</b>	AC-15; DC-13
<b>I<sub>e</sub>/U<sub>e</sub></b>	slow action: 6 A/250 VAC; 0.25 A/230 VDC snap action: 5 A/250 VAC; 0.25 A/230 VDC
<b>Max. fuse rating</b>	slow action: 6 A gL/gG D-fuse snap action: 5 A gL/gG D-fuse
<b>Ambient temperature</b>	-20 °C ... +65 °C, T5: +75 °C
<b>Mechanical life</b>	> 1 million operations
<b>Ex certification</b>	⊕ II 2G EEx d IIC T6, II 2D IP65 T80°C
<b>Approvals</b>	EEx GF: PTB 03 ATEX 1070 X; EEx GFM: PTB 03 ATEX 1069 X, referring to the switch insert



// EEX GF



258



### Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact	EEx GFM BN GY BK	EEx GF 10/15 BN 11 12 BU BK 23 24 GY

### Ordering details

EEx GFM K 10/15-3D

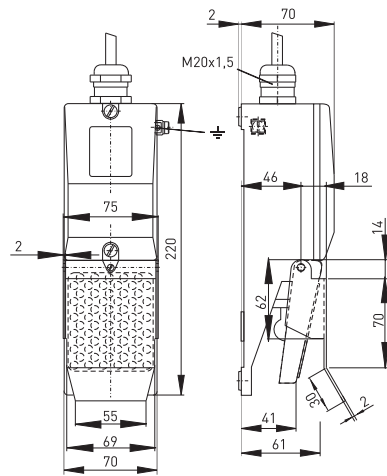
Equipment Categ. 3D,  
dust Ex zone 22  
1 NC/1 NO contact  
Pedal cover  
M Snap action (without M slow action)  
Series  
Ex certified component

Ex foot switches  
// Series EEx GF, variants

// Pedal cover K



// Pedal cover K



# Ex foot switches

## // Series EEx GFS

### Features/Options

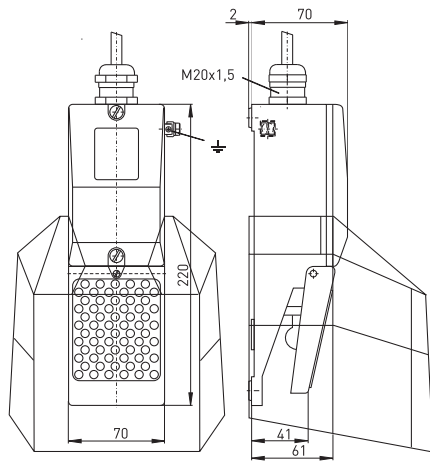
- Ex zone 1 and 2, as well as 21 and 22
- Metal enclosure
- With protective shield
- Max. 2 contacts
- Low pedal height
- With pre-wired cable, cable length 3 metres
- Available with special finish in RAL colour tones
- Special version only for equipment category 3D, available for dust Ex zone 22
- Inmetro approval for Brazil to be ordered separately

### Technical data

<b>Standards</b>	IEC/EN 60947-5-1; EN 50014; EN 50018; EN 50281-1-1
<b>Enclosure</b>	aluminium die casting, enamel finish, RAL 5011
<b>Cover</b>	-
<b>Pedal</b>	glass-fibre reinforced thermoplastic
<b>Protective shield</b>	aluminium die casting, enamel finish, RAL 5011
<b>Termination</b>	cable H05VV-F
<b>Cable section</b>	4 x 0.75 mm <sup>2</sup>
<b>Cable length</b>	3 m
<b>Contact material</b>	silver
<b>Protection class</b>	IP 65 to EN 60529
<b>Switching system</b>	slow action with double break, positive break NC contact ⊖ or snap action with single break
<b>Switch insert</b>	slow action: EEx 14 snap action: EExM 14
<b>Utilisation category</b>	AC-15; DC-13
<b>I<sub>e</sub>/U<sub>e</sub></b>	slow action: 6 A/250 VAC; 0.25 A/230 VDC snap action: 5 A/250 VAC; 0.25 A/230 VDC
<b>Max. fuse rating</b>	slow action: 6 A gL/gG D-fuse snap action: 5 A gL/gG D-fuse
<b>Ambient temperature</b>	-20 °C ... +65 °C, T5: +75 °C
<b>Mechanical life</b>	> 1 million operations
<b>Ex certification</b>	⊕ II 2G EEx d IIC T6, II 2D IP65 T80°C
<b>Approvals</b>	EEx GFS: PTB 03 ATEX 1070 X; EEx GFSM: PTB 03 ATEX 1069 X, referring to the switch insert



// EEX GFS



### Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact	EEx GFSM BN GY BK	EEx GFS 10/15 BN 11 12 BU BK 23 24 GY

### Ordering details

**EEx GFSM K 10/15-3D**

- Equipment Categ. 3D, dust Ex zone 22
- 1 NC/1 NO contact
- Pedal cover
- M Snap action (without M slow action)
- S Protective shield
- Series
- Ex certified component

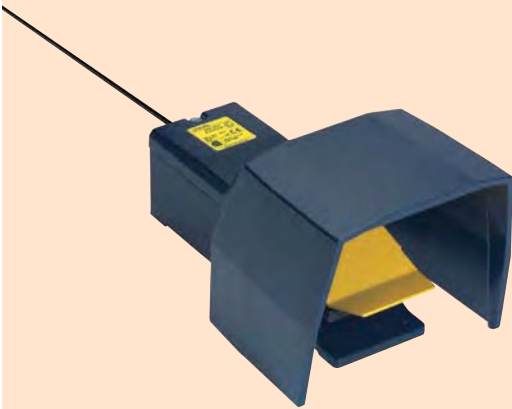
# Ex foot switches

## // Series EEx GFS, variants

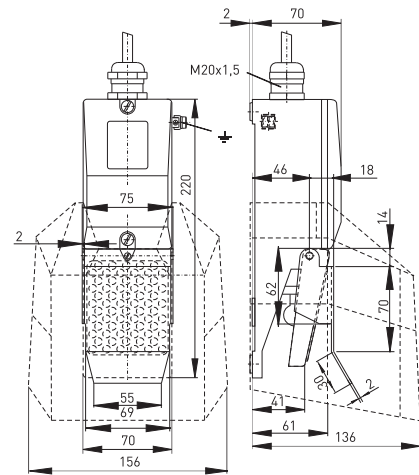
### Features/Options

- Carrying handle: stainless steel 4104 with thermoplastic grip

// Pedal cover K



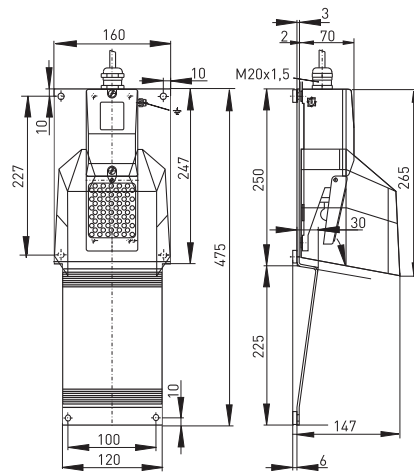
// Pedal cover K



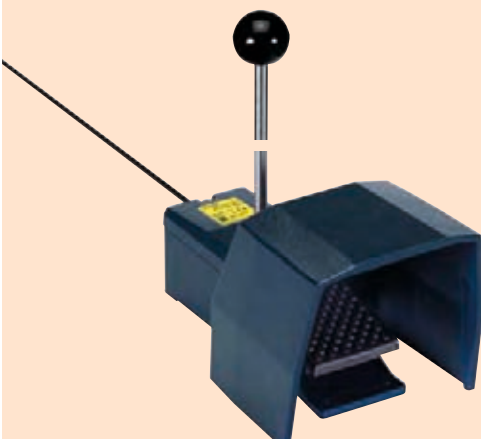
// Foot rest FST



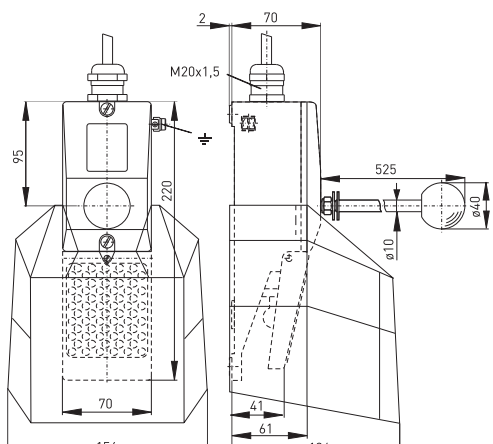
// Foot rest FST



// Carrying handle TST



// Carrying handle TST



# Ex foot switches

## // Series EEx GFI

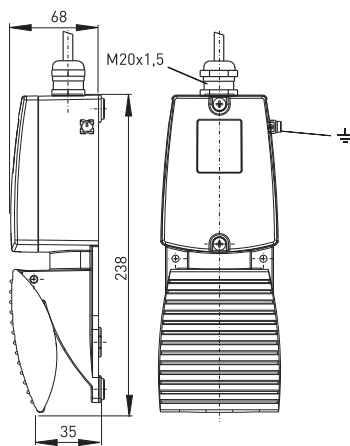
### Features/Options

- Ex zone 1 and 2, as well as 21 and 22
- Metal enclosure
- Without protective shield
- Max. 2 contacts
- Low pedal height
- With pre-wired cable, cable length 3 metres
- Available with special finish in RAL colour tones
- Special version only for equipment category 3D, available for dust Ex zone 22
- Inmetro approval for Brazil to be ordered separately

### Technical data

<b>Standards</b>	IEC/EN 60947-5-1; EN 50014; EN 50018; EN 50281-1-1
<b>Enclosure</b>	aluminium die casting, enamel finish, RAL 5011
<b>Cover</b>	aluminium die casting, enamel finish, RAL 2004
<b>Pedal</b>	aluminium die casting, enamel finish, RAL 5011
<b>Protective shield</b>	-
<b>Termination</b>	cable H05VV-F
<b>Cable section</b>	4 x 0.75 mm <sup>2</sup>
<b>Cable length</b>	3 m
<b>Contact material</b>	silver
<b>Protection class</b>	IP 65 to EN 60529
<b>Switching system</b>	slow action with double break, positive break NC contact ⊖ or snap action with single break
<b>Switch insert</b>	slow action: EEx 14 snap action: EExM 14
<b>Utilisation category I<sub>e</sub>/U<sub>e</sub></b>	AC-15; DC-13 slow action: 6 A/250 VAC; 0.25 A/230 VDC snap action: 5 A/250 VAC; 0.25 A/230 VDC
<b>Max. fuse rating</b>	slow action: 6 A gL/gG D-fuse snap action: 5 A gL/gG D-fuse
<b>Ambient temperature</b>	-20 °C ... +65 °C, T5: +75 °C
<b>Mechanical life</b>	> 1 million operations
<b>Ex certification</b>	⊕ II 2G EEx d IIC T6, II 2D IP65 T80°C
<b>Approvals</b>	EEx GFI: PTB 03 ATEX 1070 X; EEx GFIM: PTB 03 ATEX 1069 X, referring to the switch insert

// EEX GFI



262



### Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact	<b>EEx GFIM</b> BN GY BK	<b>EEx GFI 10/1S</b> BN 11 12 BU BK 23 24 GY

### Ordering details

#### EEx GFIM 10/1S-3D

Equipment Categ. 3D,  
dust Ex zone 22  
1 NC/1 NO contact  
M Snap action (without M slow action)  
Series  
Ex certified component

# Ex foot switches

## // Series EEx GFSI

### Features/Options

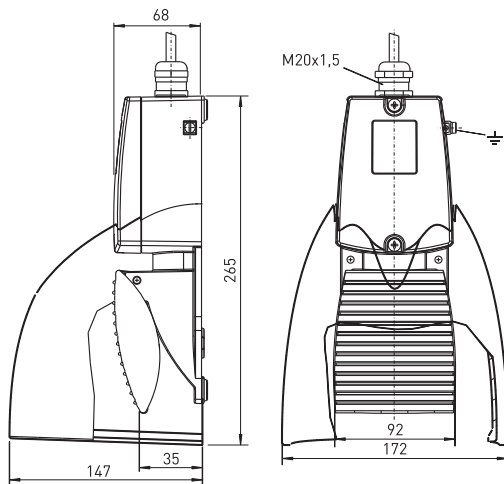
- Ex zone 1 and 2, as well as 21 and 22
- Metal enclosure
- With protective shield
- Max. 2 contacts
- Low pedal height
- With pre-wired cable, cable length 3 metres
- Available with special finish in RAL colour tones
- Special version only for equipment category 3D, available for dust Ex zone 22
- Inmetro approval for Brazil to be ordered separately

### Technical data

<b>Standards</b>	IEC/EN 60947-5-1; EN 50014; EN 50018; EN 50281-1-1
<b>Enclosure</b>	aluminium die casting, enamel finish, RAL 5011
<b>Cover</b>	-
<b>Pedal</b>	aluminium die casting, enamel finish, RAL 5011
<b>Protective shield</b>	aluminium die casting, enamel finish, RAL 2004
<b>Termination</b>	cable H05VV-F
<b>Cable section</b>	4 x 0.75 mm <sup>2</sup>
<b>Cable length</b>	3 m
<b>Contact material</b>	silver
<b>Protection class</b>	IP 65 to EN 60529
<b>Switching system</b>	slow action with double break, positive break NC contact ⊖ or snap action with single break
<b>Switch insert</b>	slow action: EEx 14 snap action: EExM 14
<b>Utilisation category</b>	AC-15; DC-13
<b>I<sub>e</sub>/U<sub>e</sub></b>	slow action: 6 A/250 VAC; 0.25 A/230 VDC snap action: 5 A/250 VAC; 0.25 A/230 VDC
<b>Max. fuse rating</b>	slow action: 6 A gL/gG D-fuse snap action: 5 A gL/gG D-fuse
<b>Ambient temperature</b>	-20 °C ... +65 °C, T5: +75 °C
<b>Mechanical life</b>	> 1 million operations
<b>Ex certification</b>	⊕ II 2G EEx d IIC T6, II 2D IP65 T80°C
<b>Approvals</b>	EEx GFSI: PTB 03 ATEX 1070 X; EEx GFSIM: PTB 03 ATEX 1069 X, referring to the switch insert

263

// EEX GFSI



### Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact	EEx GFSIM BN GY BK	EEx GFSI 10/1S BN 11; 12 BU BK 23 24 6Y

### Ordering details

<b>EEx GFSIM 10/1S-3D</b>	Equipment Categ. 3D, dust Ex zone 22
	1 NC/1 NO contact
	M Snap action (ohne M Slow action)
	Series, S Protective shield
	Ex certified component



# Ex foot switches

## // Series EEx GF 2

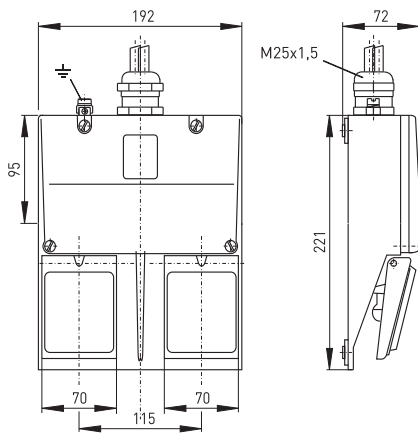
### Features/Options

- Ex zone 1 and 2, as well as 21 and 22
- Metal enclosure
- Without protective shield
- Max. 2 contacts per pedal
- Low pedal height
- With pre-wired cable, cable length 3 metres
- Available with special finish in RAL colour tones
- Special version only for equipment category 3D, available for dust Ex zone 22
- Inmetro approval for Brazil to be ordered separately

### Technical data

<b>Standards</b>	IEC/EN 60947-5-1; EN 50014; EN 50018; EN 50281-1-1
<b>Enclosure</b>	aluminium die casting, enamel finish, RAL 5011
<b>Cover</b>	aluminium die casting, enamel finish, RAL 5011
<b>Pedal</b>	glass-fibre reinforced thermoplastic
<b>Protective shield</b>	-
<b>Termination</b>	cable H05VV-F
<b>Cable section</b>	4 x 0.75 mm <sup>2</sup>
<b>Cable length</b>	3 m
<b>Contact material</b>	silver
<b>Protection class</b>	IP 65 to EN 60529
<b>Switching system</b>	slow action with double break, positive break NC contact ⊖ or snap action with single break
<b>Switch insert</b>	slow action: EEx 14 snap action: EExM 14
<b>Utilisation category</b>	AC-15; DC-13
<b>I<sub>e</sub>/U<sub>e</sub></b>	slow action: 6 A/250 VAC; 0.25 A/230 VDC snap action: 5 A/250 VAC; 0.25 A/230 VDC
<b>Max. fuse rating</b>	slow action: 6 A gL/gG D-fuse snap action: 5 A gL/gG D-fuse
<b>Ambient temperature</b>	-20 °C ... +65 °C, T5: +75 °C
<b>Mechanical life</b>	> 1 million operations
<b>Ex certification</b>	⊕ II 2G EEx d IIC T6, II 2D IP65 T80°C
<b>Approvals</b>	EEx GF 2: PTB 03 ATEX 1070 X; EEx GFM 2: PTB 03 ATEX 1069 X, referring to the switch insert

// EEX GF 2



264



### Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact per pedal	EEx GFM 2 BN GY BK	EEx GF 2 1ÖS/1ÖS BN 11 12 BU BK 23 24 GY

### Ordering details

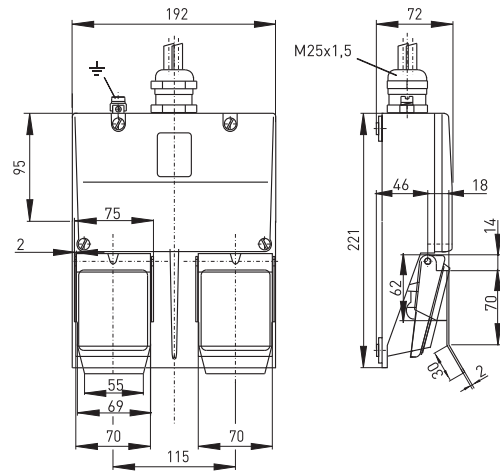
<b>EEx GFM 2 1ÖS/1ÖS-3D</b>	Equipment Categ. 3D, dust Ex zone 22
	1 NC/1 NO contact per pedal
	2 pedals
	M Snap action (without M slow action)
	Series
	Ex certified component

**Ex foot switches**  
**// Series EEx GF 2, variants**

**// Pedal cover K**



**// Pedal cover K**





# Ex foot switches

## // Series EEx GFS 2

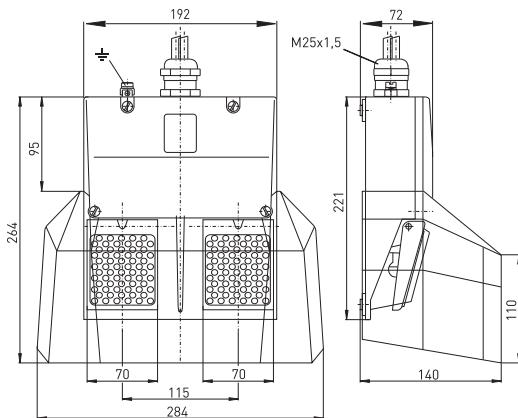
### Features/Options

- Ex zone 1 and 2, as well as 21 and 22
- Metal enclosure
- With protective shield
- Max. 2 contacts per pedal
- Low pedal height
- With pre-wired cable, cable length 3 metres
- Available with special finish in RAL colour tones
- Special version only for equipment category 3D, available for dust Ex zone 22
- Inmetro approval for Brazil to be ordered separately

### Technical data

<b>Standards</b>	IEC/EN 60947-5-1; EN 50014; EN 50018; EN 50281-1-1
<b>Enclosure</b>	aluminium die casting, enamel finish, RAL 5011
<b>Cover</b>	-
<b>Pedal</b>	glass-fibre reinforced thermoplastic
<b>Protective shield</b>	aluminium die casting, enamel finish, RAL 5011
<b>Termination</b>	cable H05VV-F
<b>Cable section</b>	4 x 0.75 mm <sup>2</sup>
<b>Cable length</b>	3 m
<b>Contact material</b>	silver
<b>Protection class</b>	IP 65 to EN 60529
<b>Switching system</b>	slow action with double break, positive break NC contact ⊖ or snap action with single break
<b>Switch insert</b>	slow action: EEx 14 snap action: EExM 14
<b>Utilisation category</b>	AC-15; DC-13
<b>I<sub>e</sub>/U<sub>e</sub></b>	slow action: 6 A/250 VAC; 0.25 A/230 VDC snap action: 5 A/250 VAC; 0.25 A/230 VDC
<b>Max. fuse rating</b>	slow action: 6 A gL/gG D-fuse snap action: 5 A gL/gG D-fuse
<b>Ambient temperature</b>	-20 °C ... +65 °C, T5: +75 °C
<b>Mechanical life</b>	> 1 million operations
<b>Ex certification</b>	⊕ II 2G EEx d IIC T6, II 2D IP65 T80°C
<b>Approvals</b>	EEx GFS 2: PTB 03 ATEX 1070 X; EEx GFSM 2: PTB 03 ATEX 1069 X, referring to the switch insert

### // EEX GFS 2



266



### Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact per pedal	EEx GFSM 2 BN GY BK	EEx GFS 2 1ÖS/1ÖS BN 11 12 BU BK 23 24 GY

### Ordering details

EEx GFSM 2 K 1ÖS/1ÖS-3D	Equipment Categ. 3D, dust Ex zone 22
	1 NC/1 NO contact per pedal
	Pedal cover
	2 pedals
	M Snap action (without M slow action)
	S Protective shield
	Series
	Ex certified component

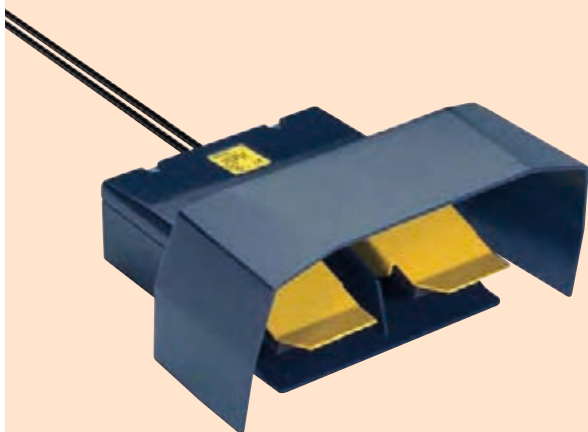
# Ex foot switches

## // Series EEx GFS 2, variants

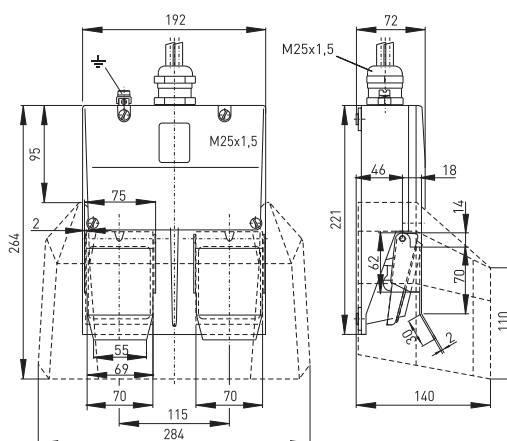
### Features/Options

- Carrying handle: stainless steel 4104 with thermoplastic grip

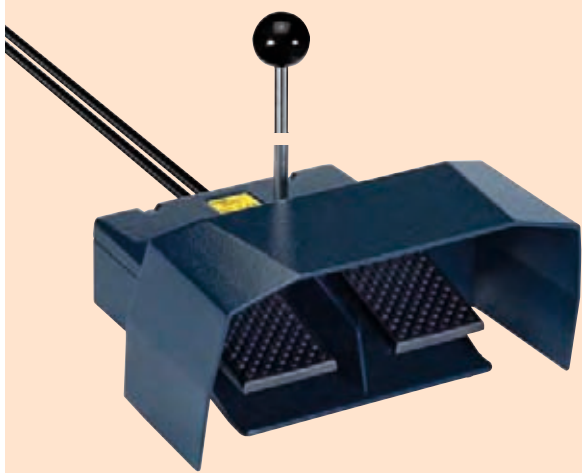
// Pedal cover K



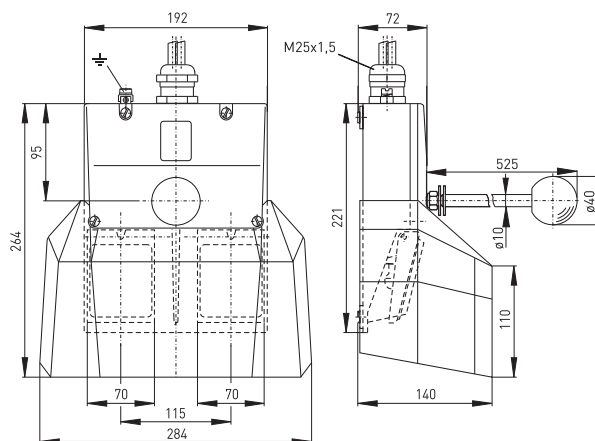
// Pedal cover K



// Carrying handle TST



// Carrying handle TST



# Ex foot switches

## // Series EEx GF 3

### Features/Options

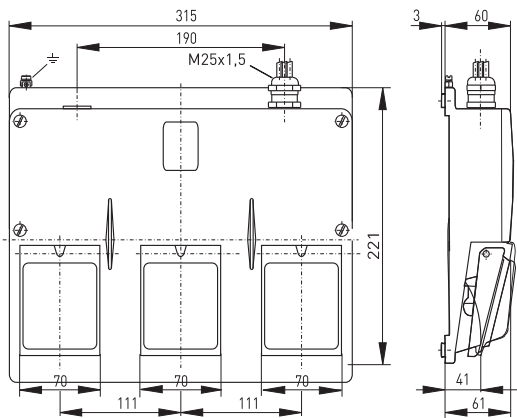
- Ex zone 1 and 2, as well as 21 and 22
- Metal enclosure
- Without protective shield
- Max. 2 contacts per pedal
- Low pedal height
- With pre-wired cable, cable length 3 metres
- Available with special finish in RAL colour tones
- Special version only for equipment category 3D, available for dust Ex zone 22
- Inmetro approval for Brazil to be ordered separately

// EEX GF 3



### Technical data

Standards	IEC/EN 60947-5-1; EN 50014; EN 50018; EN 50281-1-1
Enclosure	aluminium die casting, enamel finish, RAL 5011
Cover	aluminium die casting, enamel finish, RAL 5011
Pedal	glass-fibre reinforced thermoplastic
Protective shield	-
Termination	cable H05VV-F
Cable section	4 x 0.75 mm <sup>2</sup>
Cable length	3 m
Contact material	silver
Protection class	IP 65 to EN 60529
Switching system	slow action with double break, positive break NC contact ⊖ or snap action with single break
Switch insert	slow action: EEx 14 snap action: EExM 14
Utilisation category	AC-15; DC-13
I <sub>e</sub> /U <sub>e</sub>	slow action: 6 A/250 VAC; 0.25 A/230 VDC snap action: 5 A/250 VAC; 0.25 A/230 VDC
Max. fuse rating	slow action: 6 A gL/gG D-fuse snap action: 5 A gL/gG D-fuse
Ambient temperature	-20 °C ... +65 °C, T5: +75 °C
Mechanical life	> 1 million operations
Ex certification	⊕ II 2G EEx d IIC T6, II 2D IP65 T80°C
Approvals	EEx GF 3: PTB 03 ATEX 1070 X; EEx GFM 3: PTB 03 ATEX 1069 X, referring to the switch insert



### Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact per pedal	EEx GFM 3 BN GY BK	EEx GF 3 10S/10S/10S BN 11 12 BU BK 23 24 GY

### Ordering details

EEx GFM 3 K 10S/10S/10S-3D

Equipment Category 3D, dust Ex zone 22  
1 NC/1 NO contact per pedal  
Pedal cover  
3 pedals  
M Snap action (without M slow action)  
Series  
Ex certified component



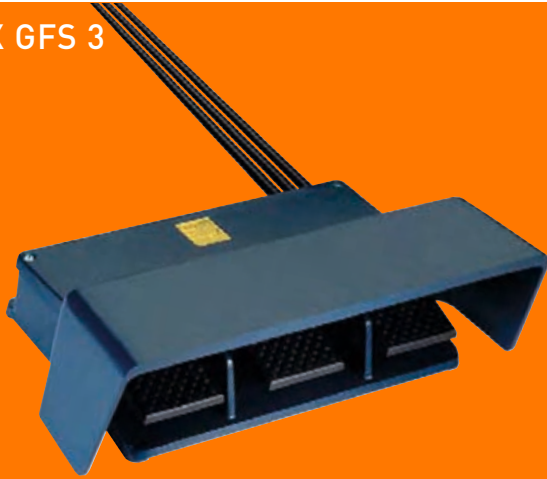
# Ex foot switches

## // Series EEx GFS 3

### Features/Options

- Ex zone 1 and 2, as well as 21 and 22
- Metal enclosure
- With protective shield
- Max. 2 contacts per pedal
- Low pedal height
- With pre-wired cable, cable length 3 metres
- Available with special finish in RAL colour tones
- Special version only for equipment category 3D, available for dust Ex zone 22
- Inmetro approval for Brazil to be ordered separately

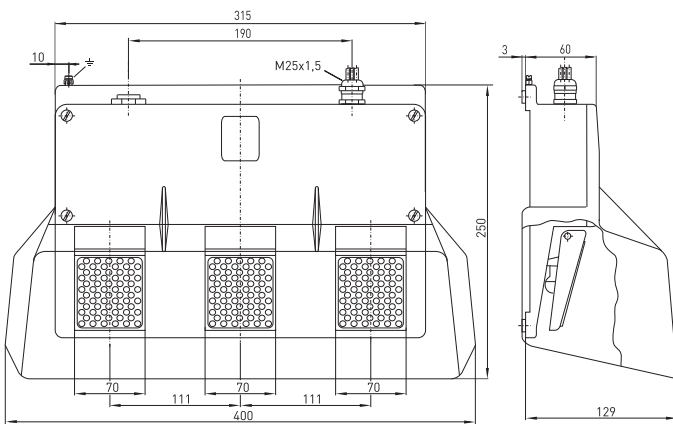
// EEX GFS 3



### Technical data

Standards	IEC/EN 60947-5-1; EN 50014; EN 50018; EN 50281-1-1
Enclosure	aluminium die casting, enamel finish, RAL 5011
Cover	-
Pedal	glass-fibre reinforced thermoplastic
Protective shield	aluminium die casting, enamel finish, RAL 5011
Termination	cable H05VV-F
Cable section	4 x 0.75 mm <sup>2</sup>
Cable length	3 m
Contact material	silver
Protection class	IP 65 to EN 60529
Switching system	slow action with double break, positive break NC contact ⊖ or snap action with single break
Switch insert	slow action: EEx 14 snap action: EExM 14
Utilisation category	AC-15; DC-13
I <sub>e</sub> /U <sub>e</sub>	slow action: 6 A/250 VAC; 0.25 A/230 VDC snap action: 5 A/250 VAC; 0.25 A/230 VDC
Max. fuse rating	slow action: 6 A gL/gG D-fuse snap action: 5 A gL/gG D-fuse
Ambient temperature	-20 °C ... +65 °C, T5: +75 °C
Mechanical life	> 1 million operations
Ex certification	⊕ II 2G EEx d IIC T6, II 2D IP65 T80°C
Approvals	EEx GFS 3: PTB 03 ATEX 1070 X; EEx GFSM 3: PTB 03 ATEX 1069 X, referring to the switch insert

269



### Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact per pedal	EEx GFSM 3 BN GY BK	EEx GFS 3 10S/10S/10S BN 11; 12 BU BK 23 24 6Y

### Ordering details

EEx GFSM 3 K 10S/10S/10S-3D

Equipment Category 3D, dust Ex zone 22
1 NC/1 NO contact per pedal
Pedal cover
3 pedals
M Snap action (without M slow action)
S Protective shield
Series
Ex certified component



## Ex magnetic sensors

// Series EEx RC 12  
from page 274

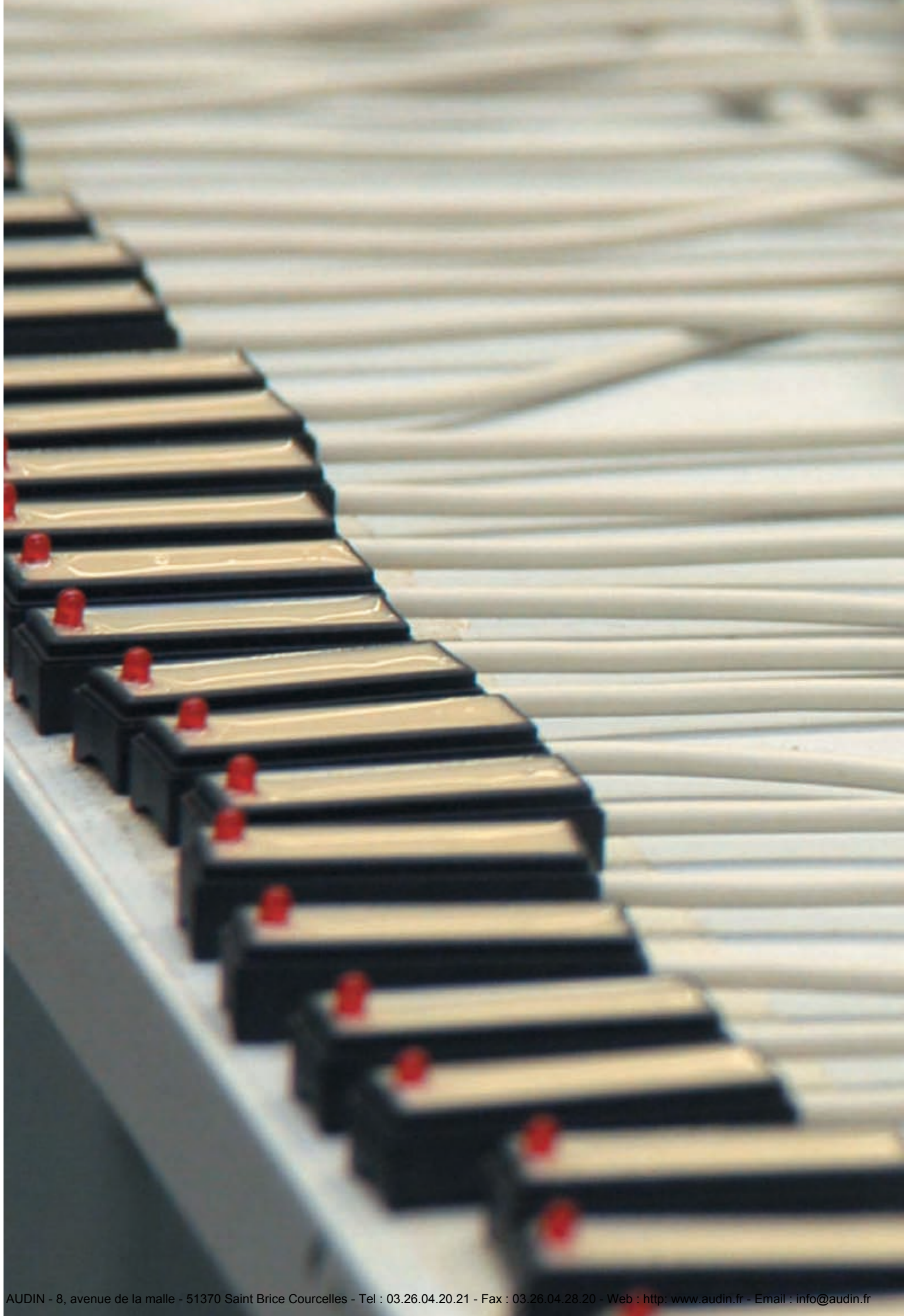
// Series EEx RC 13,5  
from page 276

// Series EEx RC 15  
from page 278

// Series EEx RC M20  
from page 280



EEx RC



# Ex magnetic sensors

## Range of application

Ex magnetic sensors are preferable where extreme dirt occurs or strict hygienic requirements must be met. This is because they are easy to clean. The high protection class allows for outside applications.

Even in the presence of aggressive materials, e.g. in galvanisation technology, safe switching is ensured through encapsulation of the contacts. A further advantage is the possibility of concealed mounting behind non-magnetic materials. Workplace surfaces can be designed without dirt-catching edges, functional spacings or covers.

For applications where a precise approach of the magnet to the sensor is not possible and highly fluctuating actuating distances occur Ex magnetic sensors are also suitable.

## Design and operating principle

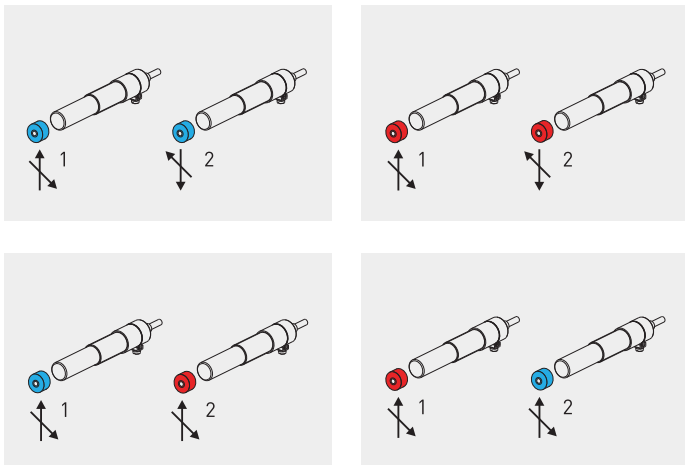
The Ex magnetic sensors are actuated by an M series permanent magnet, described at the end of this chapter, without any mechanical contact. The devices can be selected with NO, change-over or bistable contacts. All magnetic sensors described in this chapter are supplied with pre-wired cables.

The mounting site for magnetic sensors must be free of magnetic fields.

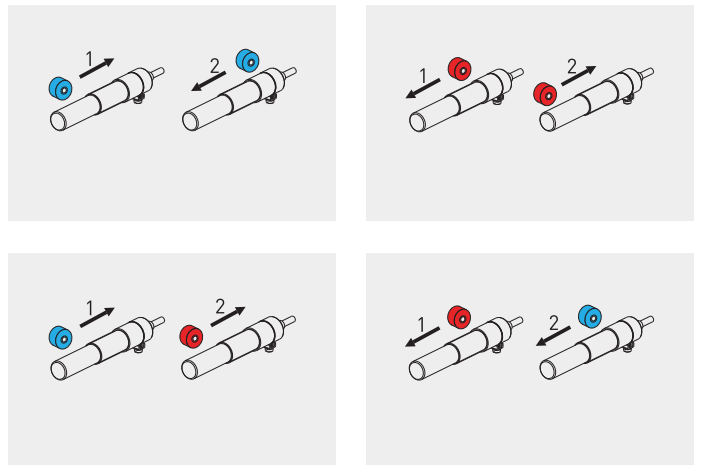
The magnetic sensors described in this chapter bear the CE mark according to the Low Voltage Directive 06/95/EC and to ATEX 94/9/EC. The Ex magnetic sensors per equipment category 3G/D bear the CE mark without the number of the notified body and have received a CE declaration of manufacturer conformity.

## Operating principle

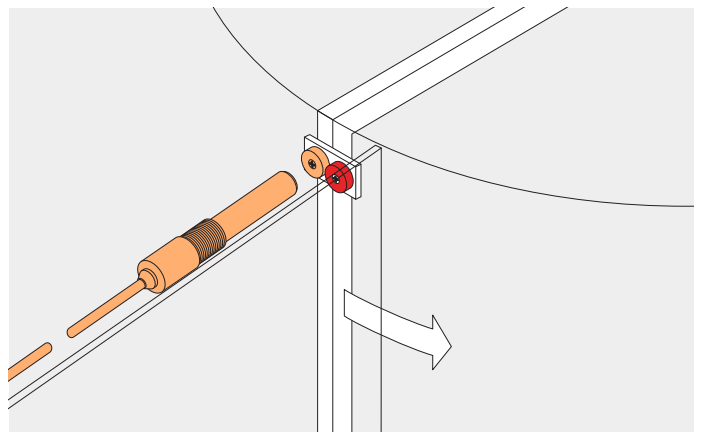
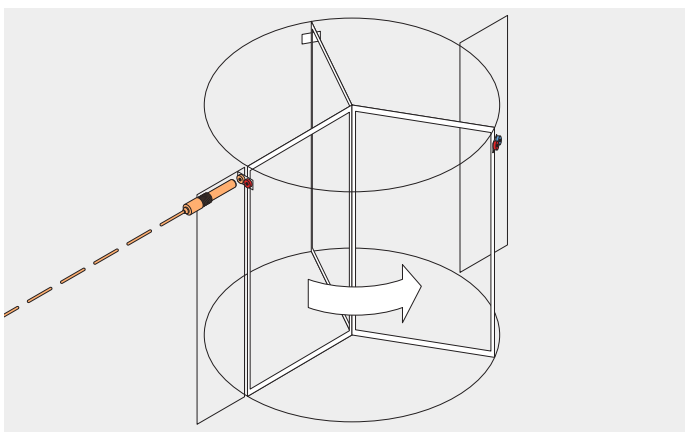
### Magnetic sensors change-over contact, actuation from front



### Magnetic sensors change-over contact, actuation from side



### Magnetic sensors on a revolving door





# Ex magnetic sensors

## // Series EEx RC 12

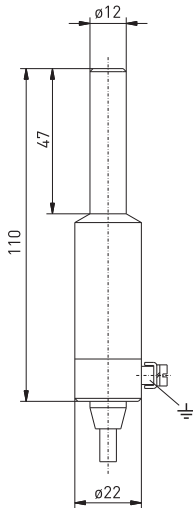
### Features/Options

- Ex zone 1 and 2, as well as 21 and 22
- Brass enclosure, nickeled
- Long life
- 1 Reed contact
- Actuation from front
- Switching distance up to 25 mm depending on the actuating magnet
- With pre-wired cable, cable length 1 metre
- Special version only for equipment category 3G/D, available for gas Ex zone 2 and dust Ex zone 22
- Inmetro approval for Brazil to be ordered separately

### Technical data

<b>Standards</b>	IEC 60947-5-2; EN 60079-0; EN 60079-18; EN 61241-0; EN 61241-1
<b>Enclosure</b>	brass, nickeled
<b>Actuator</b>	series M permanent magnet
<b>Protection class</b>	IP 67 according to EN 60529
<b>Contact material</b>	silver
<b>Switching system</b>	reed contacts
<b>Contact types</b>	NC contact, NO contact or change-over contact
<b>Termination</b>	cable, H05VV-F or Lappterm 145
<b>Cable section</b>	1S, 1Ö: 3 x 0.75 mm <sup>2</sup> , 1W: 4 x 0.75 mm <sup>2</sup>
<b>Cable length</b>	1, 2 and 5 m
<b>Switching voltage</b>	250 V
<b>Switching current</b>	1,5 A
<b>Switching capacity</b>	1Ö, 1W: max. 50 VA/W, 1S: max. 100 VA/W
<b>Utilisation category</b>	AC-15, DC-13
<b>Bounce duration</b>	0.3 ... 0.6 ms
<b>Ambient temperature</b>	H05VV-F: -20 °C ... +70 °C, Lappterm 145: -40 °C ... +70 °C
<b>Mechanical life</b>	> 1 million operations
<b>Electrical life</b>	10 <sup>6</sup> ... 10 <sup>7</sup> operations
<b>Resistance to vibrations</b>	1S: 50 ... 100 g, 1Ö, 1W: 10 ... 50 g
<b>Ex certification</b>	⊕ II 2G EEx mb IIC T6, II 2D Ex tD A21 IP67 T80°C
<b>Approvals</b>	DMT 01 ATEX E 058 X

## // EEX RC 12



274

### Contact variants: switch travel/contacts

	actuation from front
1 change-over	<b>EEx RC 12 1W</b> BN — BK BU
1 NC contact	<b>EEx RC 12 1Ö</b> BU — BN
1 NO contact	<b>EEx RC 12 1S</b> BU — BN

### Ordering details

#### EEx RC 12 1W-3G/D

Equipment Categ. 3G/D,  
Ex Zone 2 and 22  
1 change-over (1Ö, 1S)  
Enclosure diameter 12 mm  
Series  
Ex certified component

Features/Options

- Version for low temperatures up to -40 °C with Lappterm 145 cable available

## Actuating distances

Actuating direction	from front	from front	from front
Switch travel			
Contacts	1 NC contact	1 NO contact	1 change-over contact
Actuating direction	N or S	N or S	N or S
Actuating magnet	Switching distance [mm] on off	Switching distance [mm] on off	Switching distance [mm] on off
M 50 U	4 7	- -	4 7
M 100	10 13	3 11	10 13
M 100 U	10 13	3 11	10 13
M 200	13 16	7 17	13 16
M 200 U	13 16	7 17	13 16
M 300	17 20	10 24	17 20
M 300 U	17 20	10 24	17 20
M 400 U	33 37	28 43	33 37
M 700	30 35	25 40	30 35

# Ex magnetic sensors

## // Series EEx RC 13,5

### Features/Options

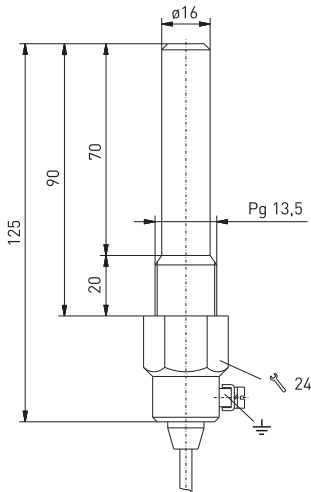
- Ex zone 1 and 2, as well as 21 and 22
- Brass enclosure, nickered
- Long life
- 1 Reed contact
- Actuation from front
- Switching distance up to 30 mm depending on the actuating magnet
- With pre-wired cable, cable length 1 metre
- Special version only for equipment category 3G/D, available for gas Ex zone 2 and dust Ex zone 22
- Inmetro approval for Brazil to be ordered separately

### Technical data

<b>Standards</b>	IEC 60947-5-2; EN 60079-0; EN 60079-18; EN 61241-0; EN 61241-1
<b>Enclosure</b>	brass, nickered
<b>Actuator</b>	series M permanent magnet
<b>Protection class</b>	IP 67 according to EN 60529
<b>Contact material</b>	silver
<b>Switching system</b>	reed contacts
<b>Contact types</b>	NC contact, NO contact or change-over contact
<b>Termination</b>	cable, H05VV-F or Lappterm 145
<b>Cable section</b>	1S, 1Ö: 3 x 0.75 mm <sup>2</sup> , 1W: 4 x 0.75 mm <sup>2</sup>
<b>Cable length</b>	1, 2 and 5 m
<b>Switching voltage</b>	250 V
<b>Switching current</b>	1.5 A
<b>Switching capacity</b>	1Ö, 1W: max. 50 VA/W, 1S: max. 100 VA/W
<b>Utilisation category</b>	AC-15, DC-13
<b>Bounce duration</b>	0.3 ... 0.6 ms
<b>Ambient temperature</b>	H05VV-F: -20 °C ... +70 °C, Lappterm 145: -40 °C ... +70 °C
<b>Mechanical life</b>	> 1 million operations
<b>Electrical life</b>	10 <sup>6</sup> ... 10 <sup>7</sup> operations
<b>Resistance to vibrations</b>	1S: 50 ... 100 g, 1Ö, 1W: 10 ... 50 g
<b>Ex certification</b>	⊕ II 2G EEx mb IIC T6, II 2D Ex tD A21 IP67 T80°C
<b>Approvals</b>	DMT 01 ATEX E 058 X



// EEX RC 13,5



### Contact variants: switch travel/contacts

	actuation from front
1 NC contact	EEx RC 13,5 1Ö BU — BN
1 NO contact	EEx RC 13,5 1S BU — BN
1 change-over	EEx RC 13,5 1W BN — BK BU

### Ordering details

<b>EEx RC 13,5 1W-3G/D</b>	Equipment Categ. 3G/D, Ex Zone 2 and 22
	1 change-over, (1S, 1Ö)
	Enclosure diameter Pg 13,5: 16 mm
	Series
	Ex certified component

Features/Options

- Version for low temperatures up to -40 °C with Lappterm 145 cable available

## Actuating distances

Actuating direction	from front	from front	from front
Switch travel			
Contacts	1 NC contact	1 NO contact	1 change-over contact
Actuating direction	N or S	N or S	N or S
Actuating magnet	Switching distance [mm] on    off	Switching distance [mm] on    off	Switching distance [mm] on    off
M 50 U	4    7	-    -	4    7
M 100	10   13	3   11	10   13
M 100 U	10   13	3   11	10   13
M 200	13   16	7   17	13   16
M 200 U	13   16	7   17	13   16
M 300	17   20	10   24	17   20
M 300 U	17   20	10   24	17   20
M 400 U	33   37	28   43	33   37
M 700	30   35	25   40	30   35

# Ex magnetic sensors

## // Series EEx RC 15

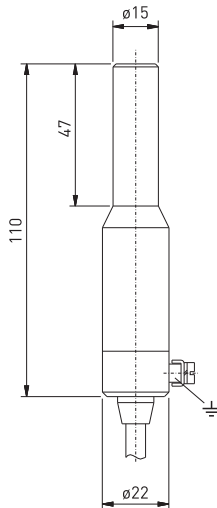
### Features/Options

- Ex zone 1 and 2, as well as 21 and 22
- Brass enclosure, nickeled
- Long life
- 1 Reed contact
- Actuation from front
- Switching distance up to 30 mm depending on the actuating magnet
- With pre-wired cable, cable length 1 metre
- Special version only for equipment category 3G/D, gas Ex zone 2 and dust Ex zone 22 available
- Inmetro approval for Brazil to be ordered separately

### Technical data

<b>Standards</b>	IEC 60947-5-2; EN 60079-0; EN 60079-18; EN 61241-0; EN 61241-1
<b>Enclosure</b>	brass, nickeled
<b>Actuator</b>	series M permanent magnet
<b>Protection class</b>	IP 67 according to EN 60529
<b>Contact material</b>	silver
<b>Switching system</b>	reed contacts
<b>Contact types</b>	NC contact, NO contact or change-over contact
<b>Termination</b>	cable, H05VV-F or Lapptherm 145
<b>Cable section</b>	1S, 1Ö: 3 x 0.75 mm <sup>2</sup> , 1W: 4 x 0.75 mm <sup>2</sup>
<b>Cable length</b>	1, 2 and 5 m
<b>Switching voltage</b>	250 V
<b>Switching current</b>	1.5 A
<b>Switching capacity</b>	1Ö, 1W: max. 50 VA/W, 1S: max. 100 VA/W
<b>Utilisation category</b>	AC-15, DC-13
<b>Bounce duration</b>	0.3 ... 0.6 ms
<b>Ambient temperature</b>	H05VV-F: -20 °C ... +70 °C, Lapptherm 145: -40 °C ... +70 °C
<b>Mechanical life</b>	> 1 million operations
<b>Electrical life</b>	10 <sup>6</sup> ... 10 <sup>7</sup> operations
<b>Resistance to vibrations</b>	1S: 50 ... 100 g, 1Ö, 1W: 10 ... 50 g
<b>Ex certification</b>	⊕ II 2G EEx mb IIC T6, II 2D Ex tD A21 IP67 T80°C
<b>Approvals</b>	DMT 01 ATEX E 058 X

### // EEX RC 15



278



### Contact variants: switch travel/contacts

	actuation from front
1 NC contact	EEx RC 15 1Ö BU — BN
1 NO contact	EEx RC 15 1S BU — BN
1 change-over	EEx RC 15 1W BN — BK BU

### Ordering details

<b>EEx RC 15 1W-3G/D</b>	
	Equipment Categ. 3G/D, Ex Zone 2 and 22
	1 change-over, (1S, 1Ö)
	Enclosure diameter 15 mm
	Series
	Ex certified component

Features/Options

- Version for low temperatures up to -40 °C with Lappterm 145 cable available

## Actuating distances

Actuating direction	from front	from front	from front
Switch travel			
Contacts	1 NC contact	1 NO contact	1 change-over contact
Actuating direction	N or S	N or S	N or S
Actuating magnet	Switching distance [mm] on    off	Switching distance [mm] on    off	Switching distance [mm] on    off
M 50 U	4    7	-    -	4    7
M 100	10   13	3   11	10   13
M 100 U	10   13	3   11	10   13
M 200	13   16	7   17	13   16
M 200 U	13   16	7   17	13   16
M 300	17   20	10   24	17   20
M 300 U	17   20	10   24	17   20
M 400 U	33   37	28   43	33   37
M 700	30   35	25   40	30   35

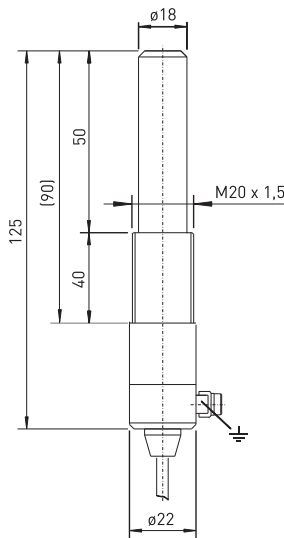
# Ex magnetic sensors

## // Series EEx RC M20

### Features/Options

- Ex zone 1 and 2, as well as 21 and 22
- Brass enclosure, nicked, available in stainless steel
- Including 2 mounting nuts
- 1 Reed contact
- Actuation from front, from side only with bistable contact
- Switching distance up to 30 mm depending on the actuating magnet
- With pre-wired cable, cable length 1 metre
- Special version only for equipment category 3G/D, gas Ex zone 2 and dust Ex zone 22 available
- Inmetro approval for Brazil to be ordered separately

### // EEX RC M20



### Technical data

<b>Standards</b>	IEC 60947-5-2; EN 60079-0; EN 60079-18; EN 61241-0; EN 61241-1
<b>Enclosure</b>	brass, nicked
<b>Actuator</b>	series M permanent magnet
<b>Protection class</b>	IP 67 according to EN 60529
<b>Contact material</b>	silver
<b>Switching system</b>	reed contacts
<b>Switching elements</b>	NO contact or change-over, bistable contact or bistable change-over contact
<b>Termination</b>	cable, H05VV-F or Laptherm 145
<b>Cable section</b>	1S, 1Sr: 3 x 0.75 mm <sup>2</sup> , 1W, 1Wr: 4 x 0.75 mm <sup>2</sup>
<b>Cable length</b>	1, 2 and 5 m
<b>Switching voltage</b>	250 V
<b>Switching current</b>	1.5 A
<b>Switching capacity</b>	1W, 1Wr: max. 50 VA/W, 1S, 1Sr: max. 100 VA/W
<b>Utilisation category</b>	AC-15, DC-13
<b>Bounce duration</b>	0.3 ... 0.6 ms
<b>Ambient temperature</b>	H05VV-F: -20 °C ... +70 °C, Laptherm 145: -40 °C ... +70 °C
<b>Mechanical life</b>	> 1 million operations
<b>Electrical life</b>	10 <sup>6</sup> ... 10 <sup>7</sup> operations
<b>Resistance to vibrations</b>	1S: 50 ... 100 g, 1Ö, 1W: 10 ... 50 g
<b>Ex certification</b>	© II 2G EEx mb IIC T6, II 2D Ex tD A21 IP67 T80°C
<b>Approvals</b>	DMT 01 ATEX E 058 X



### Contact variants: switch travel/contacts

	actuation from front	actuation from side
1 NO contact	EEx RC M20 1S BU → BN	
1 bistable contact	EEx RC M20 1Sr BU → BN	EEx RC M20 1Sr BU → BN
1 change-over	EEx RC M20 1W BN → BK BU	
1 change-over bistable	EEx RC M20 1Wr BN → BK BU	EEx RC M20 1Wr BN → BK BU

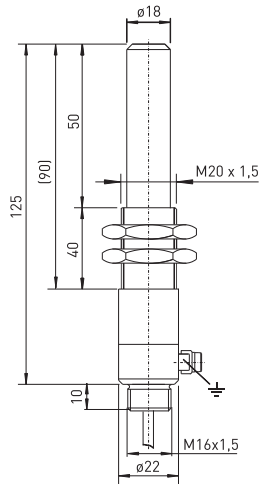
### Ordering details

EEx RC M20 1W-B-3G/D	Equipment Categ. 3G/D, Ex Zone 2 and 22
	B Tapped bushing M16 x 1.5
	1 change-over, (1S, 1Sr, 1Wr)
	Enclosure diameter 18 mm, mounting thread M20 x 1.5
	Series
	Ex certified component

Features/Options

- EEx RC M20-B, variant with tapped bushing M16 x 1.5
- Version for low temperatures up to -40 °C with Lapptherm 145 cable available

// Tapped bushing B





# Ex magnetic sensors

## // Series EEx RC M20

### Actuating distances

	from front		from front		from front	
	on	off	on	off	on	off
Actuating direction	from front		from front		from front	
Switch travel						
Contacts Actuating direction	1 change-over contact N or S		1 bistable contact N/S		1 change-over contact bistable N/S	
Actuating magnet	Switching distance [mm]		Switching distance [mm]		Switching distance [mm]	
M 50 U	4	7	12	6	-	-
M 100	10	13	22	12	20	40
M 100 U	10	13	22	12	20	40
M 200	13	16	30	30	25	50
M 200 U	13	16	30	30	25	50
M 300	17	20	37	23	30	60
M 300 U	17	20	37	23	30	60
M 400 U	33	37	63	43	50	90
M 700	30	35	60	40	50	75
Actuating direction	from side		from side			
Switch travel						
Contacts Actuating direction	1 bistable contact N or S		1 change-over contact bistable N or S			
Actuating magnet	Switching distance [mm]		Switching distance [mm]			
M 50 U			-	-		
M 100			15	20		
M 100 U			15	20		
M 200			20	25		
M 200 U			20	25		
M 300			25	30		
M 300 U			25	30		
M 400 U			30	35		
M 700			40	50		

# Ex magnetic sensors

## // Actuating magnets

### Features/Options

M 50 N U, M 100 N U, M 200 N U

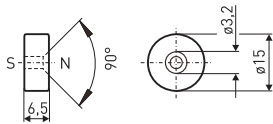
- Not encapsulated
- Barium ferrite
- Ambient temperature: -20 °C ... +80 °C

### Features/Options

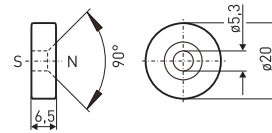
M 100 S, M 100 N, M 200 S

- Thermoplastic enclosure polyamide 6.6, blue S or red N
- Barium ferrite
- Ambient temperature: -20 °C ... +80 °C

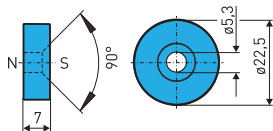
### // Actuator M 50 N U



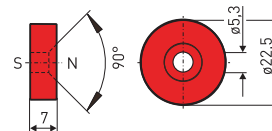
### // Actuator M 100 N U



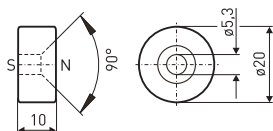
### // Actuator M 100 S



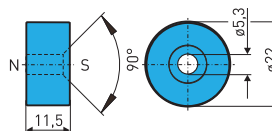
### // Actuator M 100 N



### // Actuator M 200 N U



### // Actuator M 200 S



# Ex magnetic sensors

## // Actuating magnets

### Features/Options

M 300 N U, M 300 U B, M 400 N U

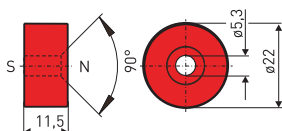
- Not encapsulated
- M 300 U: North pole with colour marking (red dot)
- Barium ferrite
- Ambient temperature: -20 °C ... +80 °C

### Features/Options

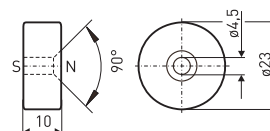
M 200 N, M 300 S, M 300 N

- Thermoplastic enclosure polyamide 6.6, blue S or red N
- Barium ferrite
- Ambient temperature: -20 °C ... +80 °C

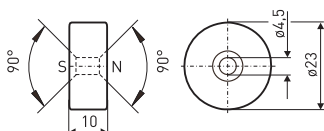
### // Actuator M 200 N



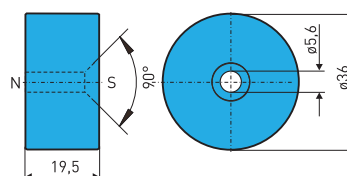
### // Actuator M 300 N U



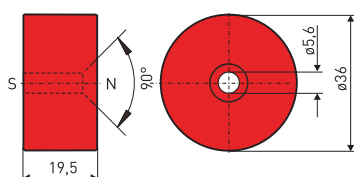
### // Actuator M 300 U B



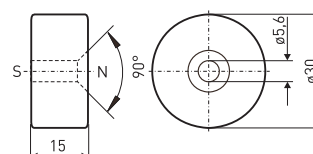
### // Actuator M 300 S



### // Actuator M 300 N



### // Actuator M 400 N U



# Ex magnetic sensors

## // Actuating magnets

### Features/Options

#### M 400 U B

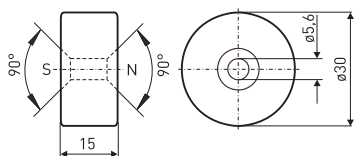
- Not encapsulated
- Barium ferrite
- Ambient temperature: -20 °C ... +80 °C

### Features/Options

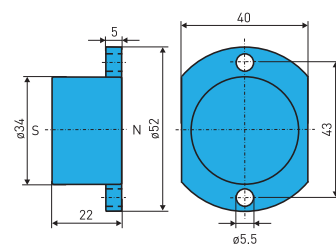
#### M 700 S, M 700 N

- Thermoplastic enclosure polyamide 6.6, blue S or red N
- Barium ferrite
- Ambient temperature: -20 °C ... +80 °C

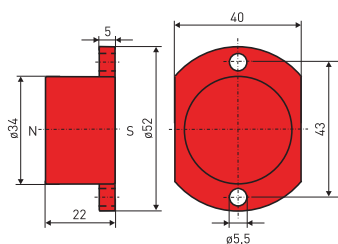
## // Actuating magnet M 400 U B



## // Actuator M 700 S



## // Actuating magnet M 700 N







## Ex inductive sensors

// Series EEx IS M12

from page 290

// Series EEx IS M18

from page 292

// Series EEx IS M30

from page 294

// Relay module EEx RM 1W 1

from page 296



# Ex inductive sensors

## Range of application

Ex inductive sensors are suitable for the positioning and controlling of machines and systems in many areas with explosive endangered industrial applications.

They are generally used as an alternative to mechanically operated limit switches in cases where unfavourable operating conditions, such as high or low actuating speeds, large switching frequencies, extreme dirt or dust production, high humidity, chemical atmospheres, highly fluctuating actuating distances, etc., occur. Even in the presence of aggressive materials, safe switching is ensured through encapsulation of the contacts.

## Design and mode of operation

The Ex inductive sensors change their current consumption or their internal resistance with the approach of metal to the sensor surface. As output signals the changed current or the changed internal resistance are available.

The protection class IP 67 even permits safe application under rough ambient conditions. In addition, Ex inductive sensors are available with plug-in connectors for equipment category 3D, dust Ex zone 22.

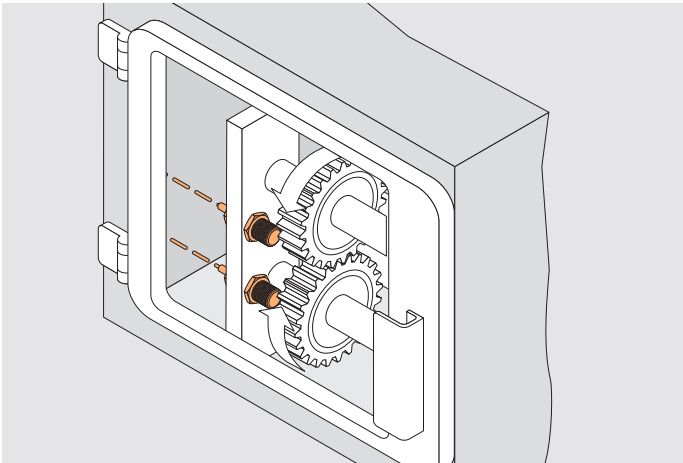
The EEx IS M12/M18/M30 range is offered as a complete system with a relay module. The relay module, which is suitable for cabinet mounting, supplies the required intrinsic power for the sensor and transmits the sensor signal. The function of the input circuit can be programmed as NO or NC contact.

The LEDs of the EEx RM 1W 1 relay module indicate the operational condition of the sensor, as well as possible malfunctions such as wire breakages and short-circuits.

All Ex inductive sensors shown in this chapter bear the CE mark according to the EMC Directive 2004/108/EC and according to ATEX 94/9/EC. The Ex safety switches for hinged guards per equipment category 3D bear the CE mark without the number of the notified body and have received a CE declaration of manufacturer conformity.

## Anwendung

### Ex inductive sensors for standstill monitoring





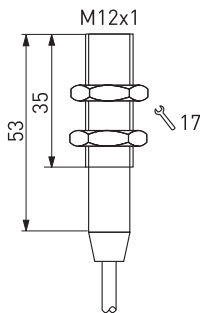
# Ex inductive sensors

## // Series EEx IS M12

### Features/Options

- Ex zone 0, 1 and 2, as well as 20, 21 and 22
- Metal enclosure
- Variants for flush or non-flush mounting
- Long life, no mechanical wear
- Suitable for the food processing industry
- Insensitive to soiling
- Enclosure diameter M12 x 1
- Version for equipment category 3D, Dust-Ex zone 22 available
- 3D version with integrated LED

### // EEX IS M12 B



### Technical data

<b>Standards</b>	IEC 60947-5-2; EN 50014; EN 50020; EN 50284; EN 50281-1-1
<b>Enclosure</b>	brass-nickel, PA
<b>Nuts</b>	2, brass-nickel
<b>Switching system</b>	3-wire DC; 3D version: namur per DIN EN 60947-5-6
<b>Termination</b>	2 m pre-wired cable PVC 2 x 0.5 mm <sup>2</sup> , 3D version: plug-in connector M12 x 1, 4-pole
<b>Protection class</b>	IP 67
<b>Switching distance <math>s_n</math></b>	EEx IS M12 b: 2 mm, EEx IS M12 nb: 4 mm
<b>Switching distance in %</b>	steel St 37: 100 %, stainless steel: 70 %, brass: 50 %, copper: 45 %, aluminium: 40 %
<b>Input power <math>P_i</math></b>	max. 50 mW
<b>Input voltage <math>U_i</math></b>	max. 12.6 VDC
<b>Input current <math>I_i</math></b>	max. 15.9 mA
<b>Tightening torque for the nuts</b>	M12 x 1: 10 Nm
<b>Ambient temperature</b>	-25 °C ... +75 °C
<b>Ex certification</b>	⊕ II 1G EEx ia IIC T6, II 1D IP67 T100 °C
<b>Approvals</b>	TÜV 06 ATEX 553179

### Ordering details

<b>EEx IS M12 NB-ST-3D</b>	
Ex certified component	Series
Enclosure diameter M12	NB Non-flush, (B flush)
ST Plug-in connector M12 x 1	
Equipment Categ. 3D, dust Ex zone 22	

## Ex inductive sensors

### // Series EEx IS M12, variants

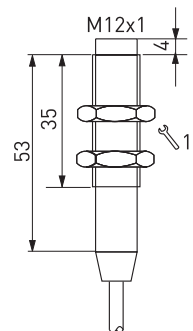
#### Features/Options

- 3D version with plug-in connector M12 x 1, 4-pole and integrated LED
- Lock for plug-in connector STESI-M12 available

#### // EEX IS M12 NB



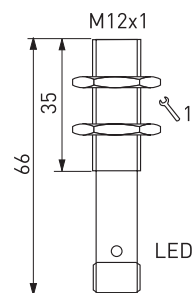
#### // EEX IS M12 NB



#### // EEX IS M12 B-ST-3D



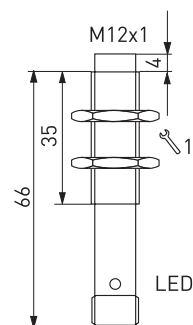
#### // EEX IS M12 B-ST-3D



#### // EEX IS M12 NB-ST-3D



#### // EEX IS M12 NB-ST-3D



# Ex inductive sensors

## // Series EEx IS M18

### Features/Options

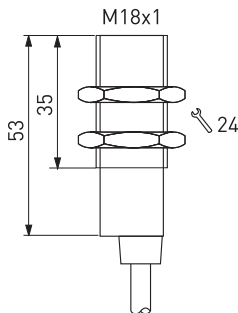
- Ex zone 0, 1 and 2, as well as 20, 21 and 22
- Metal enclosure
- Variants for flush or non-flush mounting
- Long life, no mechanical wear
- Suitable for the food processing industry
- Insensitive to soiling
- Enclosure diameter M18 x 1
- Version for equipment category 3D, Dust-Ex zone 22 available
- 3D version with integrated LED

// EEX IS M18 B



### Technical data

Standards	IEC 60947-5-2; EN 50014; EN 50020; EN 50284; EN 50281-1-1
Enclosure	brass-nickel, PA
Nuts	2, brass-nickel
Switching system	3-wire DC; 3D version: namur per DIN EN 60947-5-6
Termination	2 m pre-wired cable PVC 2 x 0.5 mm <sup>2</sup> , 3D version: plug-in connector M12 x 1, 4-pole
Protection class	IP 67
Switching distance $s_n$	EEx IS M18 b: 5 mm, EEx IS M18 nb: 8 mm
Switching distance in %	steel St 37: 100 %, stainless steel: 70 %, brass: 50 %, copper: 45 %, aluminium: 40 %
Input power $P_i$	max. 50 mW
Input voltage $U_i$	max. 12.6 VDC
Input current $I_i$	max. 15.9 mA
Tightening torque for the nuts	M18 x 1: 36 Nm
Ambient temperature	-25 °C ... +75 °C
Ex certification	⊕ II 1G EEx ia IIC T6, II 1D IP67 T100°C
Approvals	TÜV 06 ATEX 553179



### Ordering details

EEx IS M18 NB-ST-3D	
Equipment Categ. 3D, dust Ex zone 22	3D
ST Plug-in connector M12 x 1	ST
NB Non-flush, (B flush)	NB
Enclosure diameter M18	M18
Series	IS
Ex certified component	EEx

## Ex inductive sensors

### // Series EEx IS M18, variants

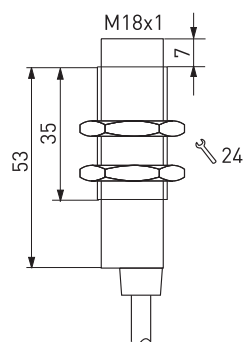
#### Features/Options

- 3D version with plug-in connector M12 x 1, 4-pole and integrated LED
- Lock for plug-in connector STESI-M12 available

#### // EEX IS M18 NB



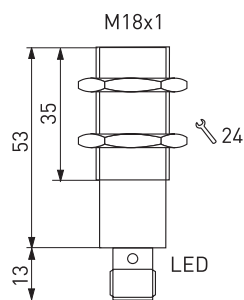
#### // EEX IS M18 NB



#### // EEX IS M18 B-ST-3D



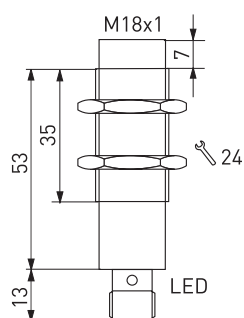
#### // EEX IS M30 B-ST-3D



#### // EEX IS M18 NB-ST-3D



#### // EEX IS M30 NB-ST-3D



# Ex inductive sensors

## // Series EEx IS M30

### Features/Options

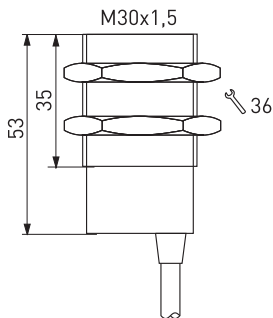
- Ex zone 0, 1 and 2, as well as 20, 21 and 22
- Metal enclosure
- Variants for flush or non-flush mounting
- Long life, no mechanical wear
- Suitable for the food processing industry
- Insensitive to soiling
- Enclosure diameter M30 x 1.5
- Version for equipment category 3D, Dust-Ex zone 22 available
- 3D version with integrated LED

### // EEX IS M30 B



### Technical data

<b>Standards</b>	IEC 60947-5-2; EN 50014; EN 50020; EN 50284; EN 50281-1-1
<b>Enclosure</b>	brass-nickel, PA
<b>Nuts</b>	2, brass-nickel
<b>Switching system</b>	3-wire DC; 3D version: namur per DIN EN 60947-5-6
<b>Termination</b>	2 m pre-wired cable PVC 2 x 0.5 mm <sup>2</sup> , 3D version: plug-in connector M12 x 1, 4-pole IP 67
<b>Protection class</b>	IP 67
<b>Switching distance s<sub>n</sub></b>	EEx IS M30 b: 10 mm, EEx IS M30 nb: 15 mm
<b>Switching distance in %</b>	steel St 37: 100 %, stainless steel: 70 %, brass: 50 %, copper: 45 %, aluminium: 40 %
<b>Input power P<sub>i</sub></b>	max. 50 mW
<b>Input voltage U<sub>i</sub></b>	max. 12.6 VDC
<b>Input current I<sub>i</sub></b>	max. 15.9 mA
<b>Tightening torque for the nuts</b>	M30 x 1,5: 100 Nm
<b>Ambient temperature</b>	-25 °C ... +75 °C
<b>Ex certification</b>	⊕ II 1G EEx ia IIC T6, II 1D IP67 T100°C
<b>Approvals</b>	TÜV 06 ATEX 553179



### Ordering details

<b>EEx IS M30 NB-ST-3D</b>	
Ex certified component	Series
Enclosure diameter M30	NB Non-flush, (B flush)
ST Plug-in connector M12 x 1	Equipment Categ. 3D, dust Ex zone 22

## Ex inductive sensors

### // Series EEx IS M30, variants

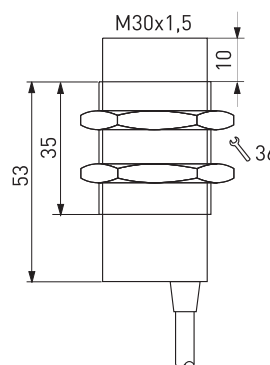
#### Features/Options

- 3D version with plug-in connector M12 x 1, 4-pole and integrated LED
- Lock for plug-in connector STESI-M12 available

#### // EEx IS M30 NB



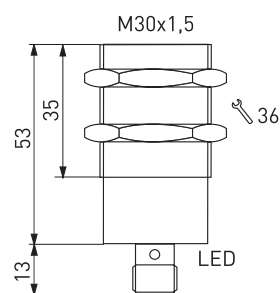
#### // EEx IS M30 NB



#### // EEx IS M30 B-ST-3D



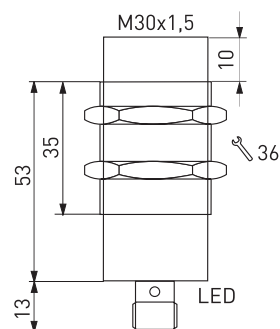
#### // EEx IS M30 B-ST-3D



#### // EEx IS M30 NB-ST-3D



#### // EEx IS M30 NB-ST-3D



# Ex Relay module

## // Series EEx RM 1W 1

### Features/Options

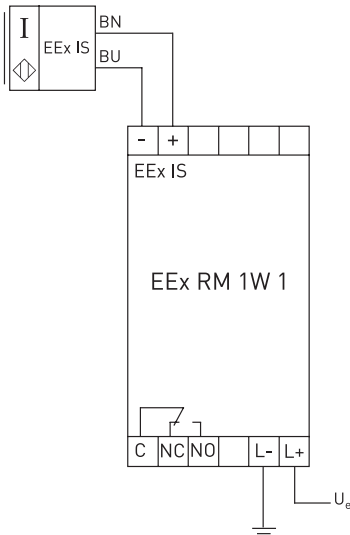
- Thermoplastic enclosure
- Output: Relay
- 40 mm housing width
- 24 VDC or 230 VAC operating voltage

## // EEx RM 1W 1



## Technical data

Standards	IEC/EN 60947-5-2; EN 50014; EN 50020
Enclosure	thermoplastic, PA
Dimensions	40 x 70 x 110 mm (BxHxT)
Mounting	DIN rail mounting per DIN EN 50022
Termination	screw clamps
Protection class	IP 20
Rated operating voltage $U_e$	24 VDC $\pm 15\%$ , 230 VAC $+10/-15\%$
Power consumption	1.8 W, 1.5 VA
Output power $P_o$	max. 50 mW
Output voltage $U_o$	max. 12.6 VDC
Output current $I_o$	max. 15.9 mA
Output	relay: change-over contact
Switching voltage	250 VAC/24 VDC
Switching current	4 A, $\cos \varphi > 0.7$
Display	LEDs, red: wire-break and short-circuits, yellow: relay pulled, green: operating voltage
Ambient temperature	-20°C ... +60°C
Ex certification	Ⓒ II (1)GD [EEx ia] IIC
Approvals	TÜV 06 ATEX 553146


















### Ordering details

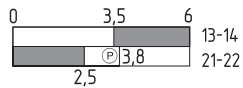
**EEx RM 1W 1**



1 input  
Relay output: 1 change-over contact  
Series  
Ex certified component

# LEGENDS

	Explosive protected to ATEX
	A/F
	Double insulated
	Positive break NC contact
	Positive break travel/angle
	Latching point
	Wire breakage detection
	Wire pull detection
	Actuated
	Not actuated
	Trade association type-tested
	Ex approval to IEC standards
	Ex approval for Brazil
	Ex approval for Russia
	Directive-compliance, see Declaration of Conformity
$I_e$	Rated operating current
$I_{the}$	Thermal test current
$U_e$	Rated operating voltage
$U_i$	Rated insulation voltage
$U_{imp}$	Rated impulse withstand voltage

## Explanation of switch travel diagrams



 Contact opened  
 Contact closed

X1-X2 NC contact  
 X3-X4 NO contact  
 X5-X6 Contact overlapping

## colour codes to DIN IEC 757

BK	black
BN	brown
BU	blue
GN	green
GY	grey
OG	orange
PK	pink
RD	red
TQ	turquoise
VI	violet
WH	white
YE	yellow



## NOTES

Besides Ex switchgear steute also manufactures devices for complex and critical applications in industry – for example pull-wire switches, door handle switches, foot and safety switches. The section medical devices develops and manufactures control

devices complying with medical technology directives and standards. The product range covers standard devices for medical equipment, as well as complex, customised multifunctional switches.

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