

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/EEExM 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/EEExM 61



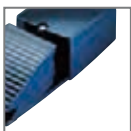
232 Ex belt-alignment switches

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/EEExM 61 Z



254 Ex foot switches

258 Series EEx GF
 260 Series EEx GFS
 262 Series EEx GFI
 263 Series EEx GFSl
 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



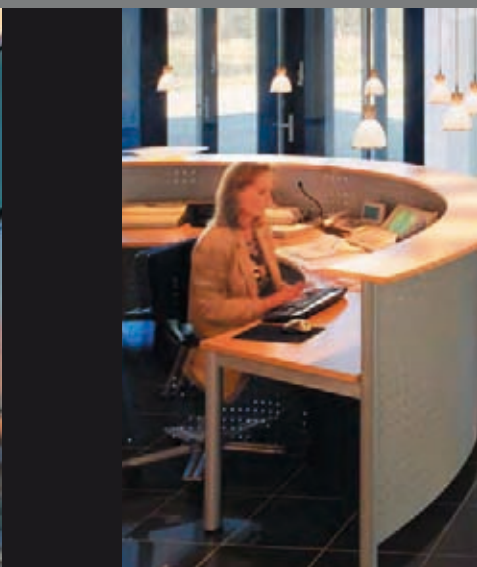
286 Ex inductive sensors

- 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.

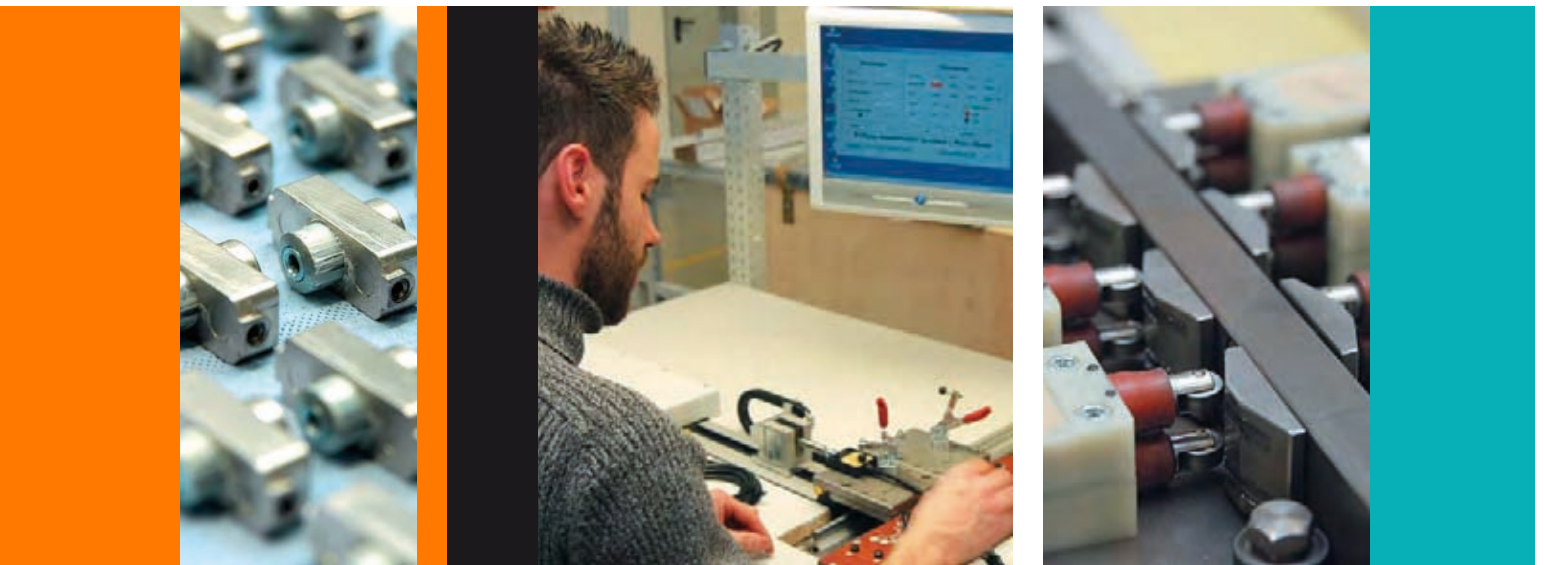
The industrial culture of Westphalia is mostly characterised by SME companies; the region is also the home of many unexpected champions and world-market leaders, specialist machine and systems manufacturers, as well as of electronic and connecting technology.

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

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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.

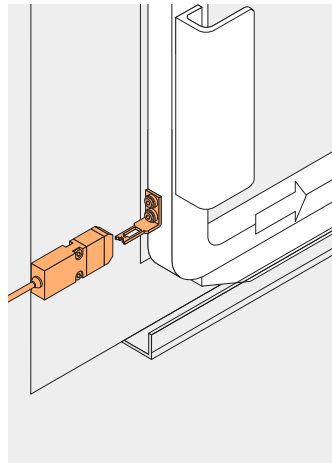
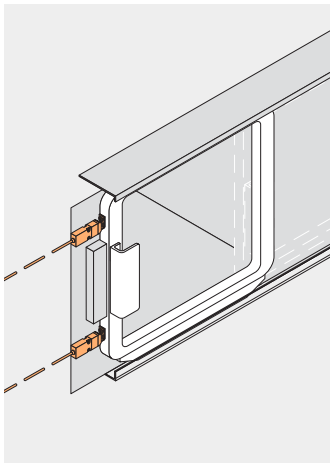
Design and operating principle

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.

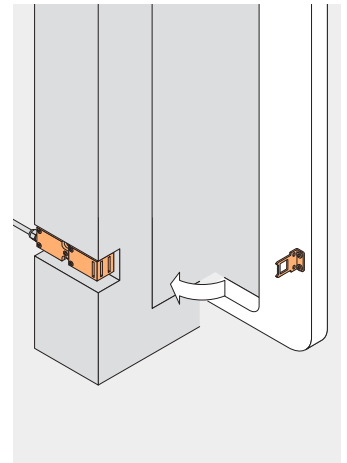
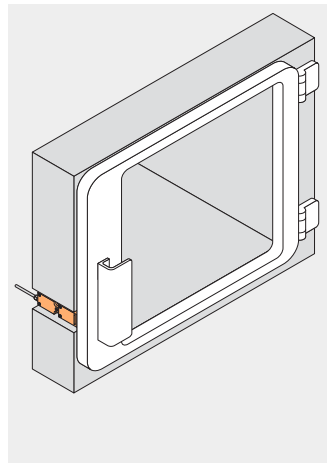
The protection class of all the safety switches is IP 65/67. The safety switches can be fitted in any desired mounting position.

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.

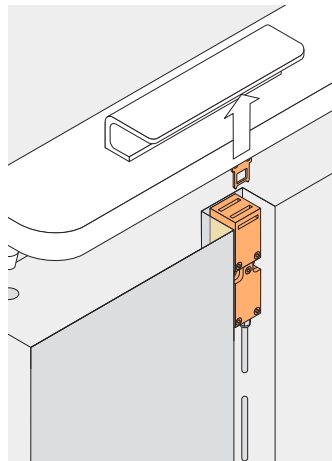
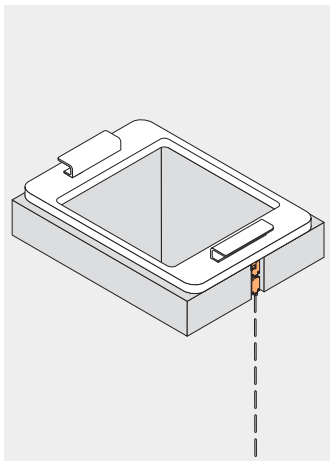
Application on sliding guards



on hinged guards




on removable guards



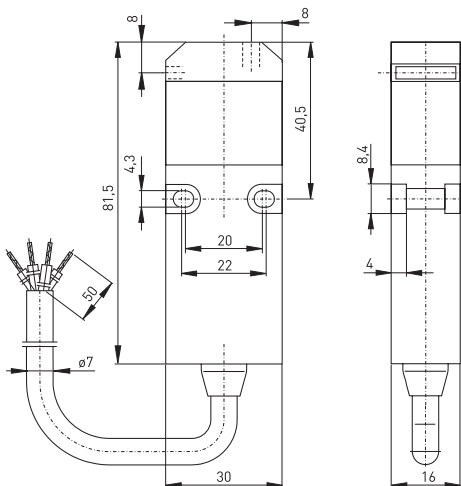
Ex safety switches with separate actuators

// 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

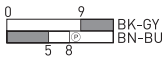
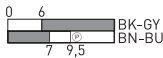
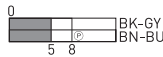


Technical data

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 stainless steel 1.4301
Actuator	-
Switch insert	-
Protection class	IP 65 according to EN 60529
Contact material	silver
Switching system	slow action, positive break NC contact \ominus
Switching elements	change-over contact with double break Zb or 2 NC contacts, galvanically separated contact bridges
Termination	cable H05VV-F 4 x 0.75 mm ²
Cable section	4 x 0.75 mm ²
Cable length	1, 2, 5 and 10 m
U _{imp}	4 kV
U _i	250 V
I _{the}	6 A
I _e /U _e	6 A/250 VAC; 4 A/24 VDC; 0.25 A/230 VDC
Utilisation category	AC-15, DC-13
Max. fuse rating	6 A gL/gG D-fuse
Positive break travel	10/1S, 20: 8 mm, UE: 9.5 mm
Positive break force	-
Ambient temperature	-20 °C ... +65 °C
Mechanical life	> 1 million operations
Ex certification	 II 2G EEx d IIC T6, II 2D IP65 T80°C
Approvals	PTB 03 ATEX 1070 X



Contact variants: switch travel/contacts

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

Ordering details

EEx ST 14 10/1S-S-1m-3D
Equipment Categ. 3D, dust Ex zone 22
Cable length 1 m, (2 m, 5 m, 10 m)
Cable on side
Contact type 1NC/1NO, (20, 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

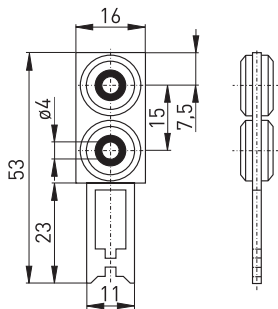
ST 14-B5

- 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

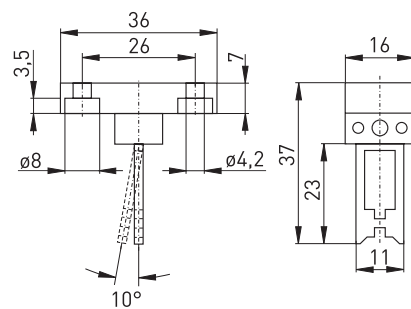
Note

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

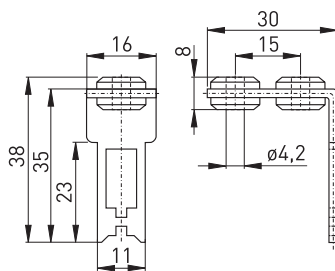
// Straight actuator ST 14-B1



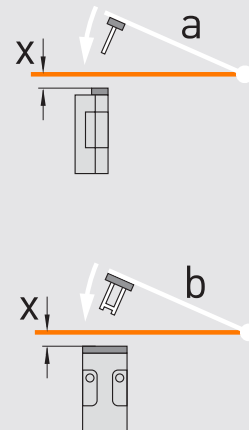
// Flexible actuator ST 14-B3



// 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

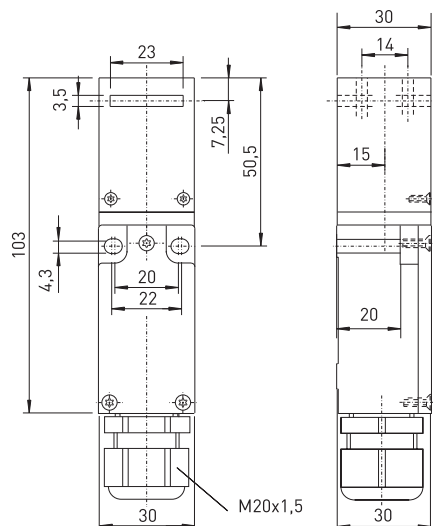
- Ex zone 1 and 2, as well as 21 and 22
- Thermoplastic enclosure, double insulated ☐
- Slow action ☹, change-over contact with double break
- Wiring compartment
- Mounting details to EN 50 047
- Horizontal mounting slots
- Actuator head can be repositioned in factory in 4 x 90° steps
- Special version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

// EEX 95 AZ

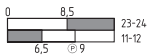
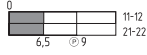


Technical data

Standards	IEC/EN 60947-5-1; EN 1088; EN 50014; EN 50018; EN 50019; EN 50281-1-1
Enclosure	glass-fibre reinforced, shock-proof thermoplastic, self-extinguishing UL 94-V0 stainless steel 1.4301
Actuator	-
Switch insert	-
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 or 2 NC contacts, galvanically separated contact bridges
Termination	M3 screw clamps
Cable section	max. 1.5 mm ² (incl. conductor ferrules)
Cable length	-
U _{imp}	4 kV
U _i	250 V
I _{the}	6 A
I _e /U _e	6 A/250 VAC; 0.25 A/230 VDC
Utilisation category	AC-15, DC-13
Max. fuse rating	6 A gL/gG D-fuse
Positive break travel	9 mm
Positive break force	-
Ambient temperature	-20 °C ... +60 °C
Mechanical life	> 1 million operations
Ex certification	☉ II 2G EEx de IIC T6, II 2D IP67 T80°C
Approvals	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, (20)
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

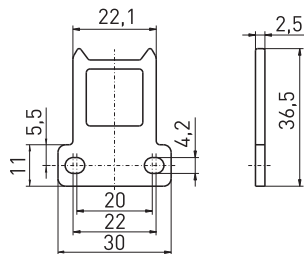
95 AZ-B5

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

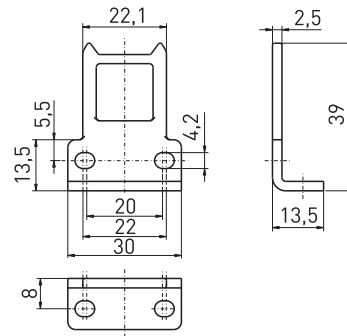
Note

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

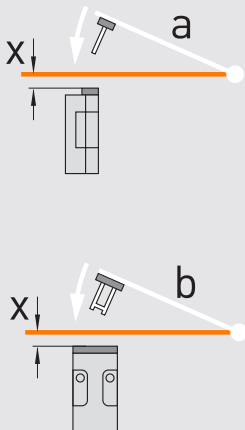
// Straight actuator 95 AZ-B1



// 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

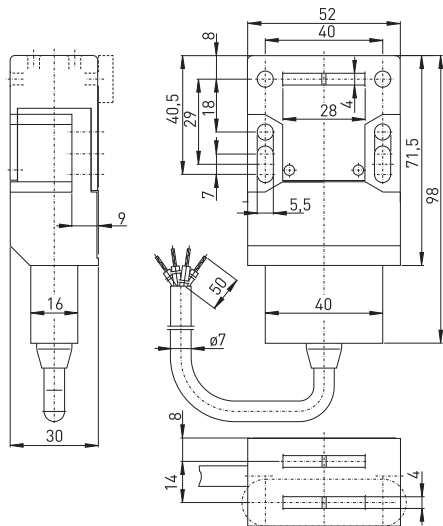
Ex safety switches with separate actuators

// Series EEx AZ 16

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

// EEX AZ 16



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
Actuator	stainless steel 1.4301
Switch insert	EEx 13
Protection class	IP 65 according to EN 60529
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	cable H05VV-F 4 x 0.75 mm ²
Cable section	4 x 0.75 mm ²
Cable length	2 and 5 m
U _{imp}	4 kV
U _i	250 V
I _{the}	6 A
I _e /U _e	6 A/250 VAC; 4 A/24 VDC
Utilisation category	AC-15, DC-13
Max. fuse rating	6 A gL/gG D-fuse
Positive break travel	9.5 mm
Positive break force	ca. 15 N
Ambient temperature	-20 °C ... +65 °C
Mechanical life	> 1 million operations
Ex certification	⊕ II 2G EEx d IIC T6, II 2D IP65 T80°C
Approvals	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 10/15

Ordering details

EEx AZ 16 10/15-30N-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

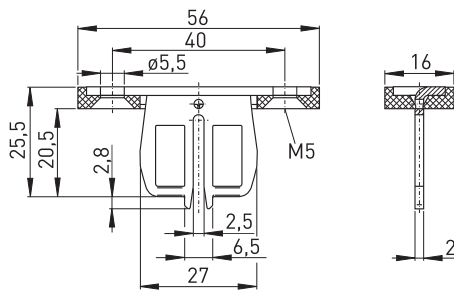
AZ 15/16-B6

- Actuating radius on hinged guards
a = 25 mm and b = 38 mm
- Axial misalignment x = 11 mm

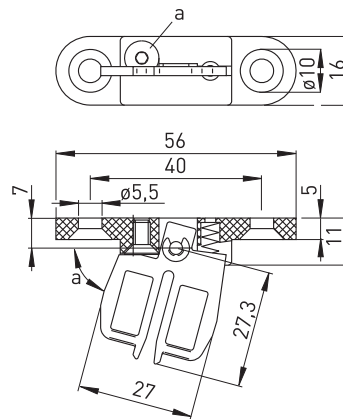
Note

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

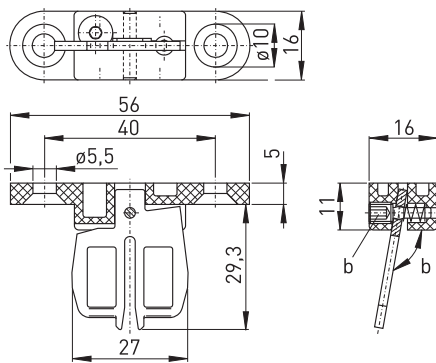
// Straight actuator AZ 15/16-B1



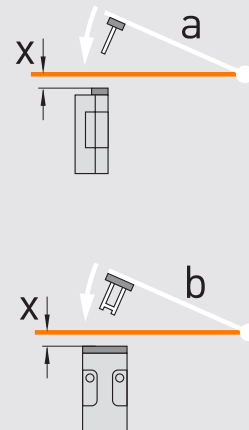
// Flexible actuator AZ 15/16-B2



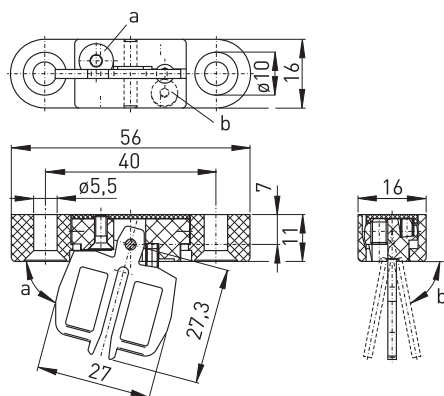
// Flexible actuator AZ 15/16-B3



// 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

Features/Options

AZ 15/16-B1-1747

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

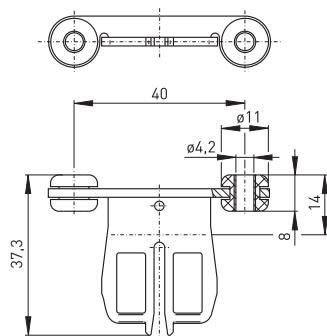
AZ 15/16-B2-1747

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

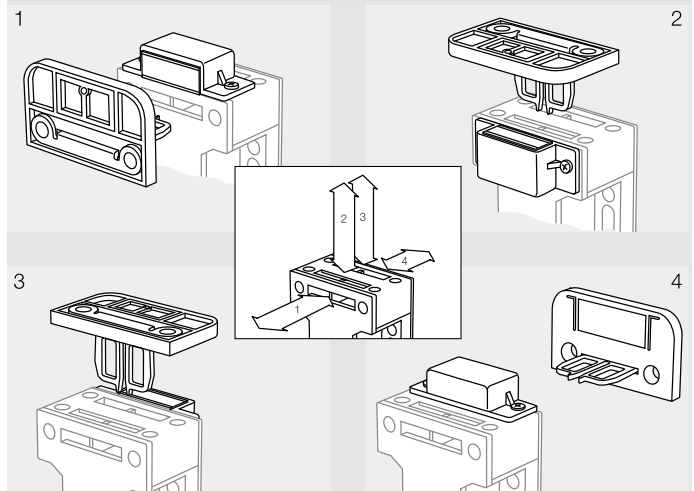
AZ 15/16-B3-1747

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

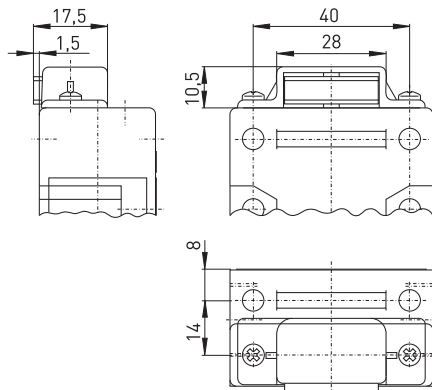
// Actuator with rubber AZ 15/16-B1-2245



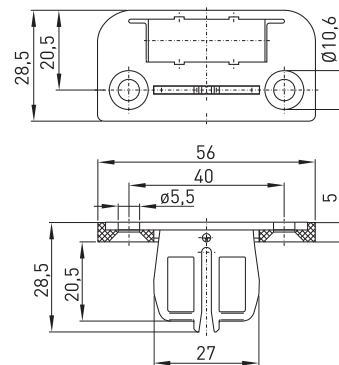
// Actuator with magnetic latch



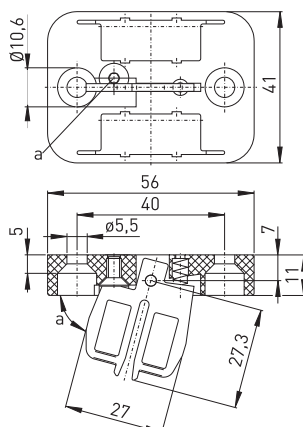
// Magnetic latch



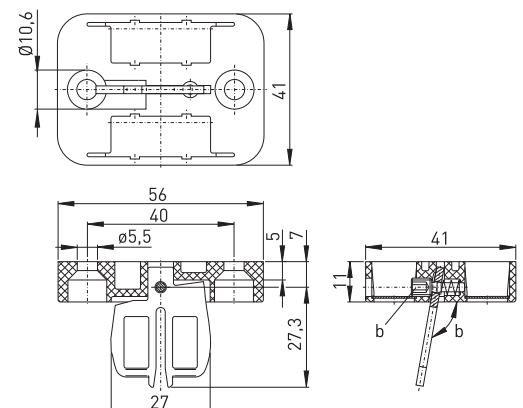
// Actuator magn. latch AZ 15/16-B1-1747



// 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

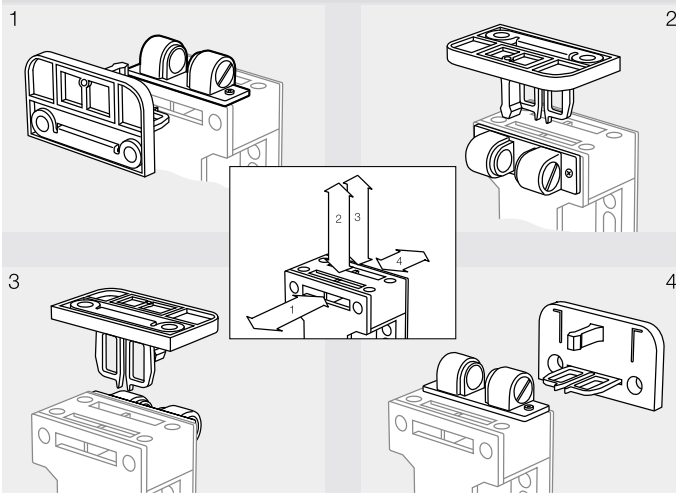
Actuator with centering guide

- For interlocking of light, unguided guards

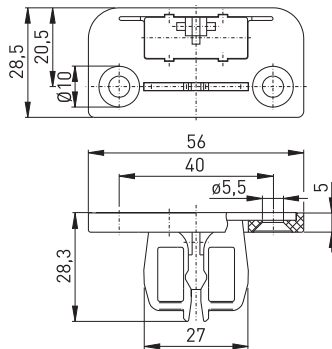
AZ 15/16-B1-2177

- Actuating radius on hinged guards
a = 150 mm and b = 150 mm
- Axial misalignment x = 11 mm

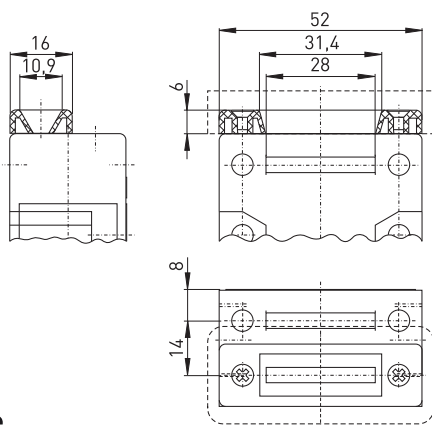
// Actuator with ball latch



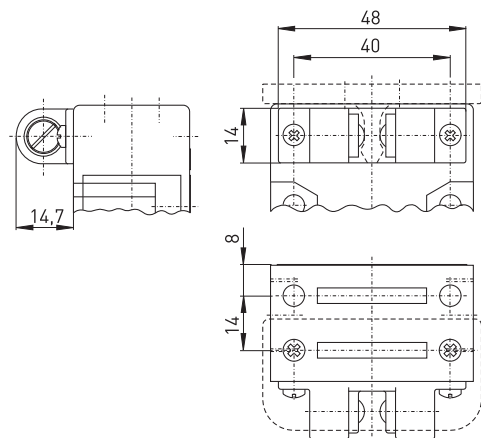
// Actuator ball latch AZ 15/16-B1-2053



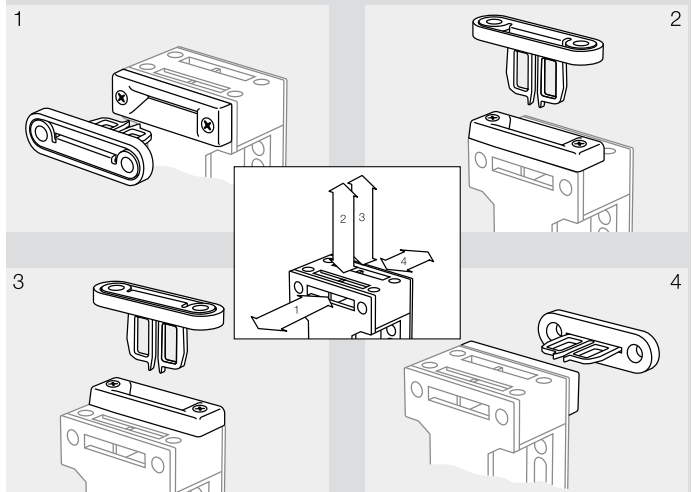
// Centering guide



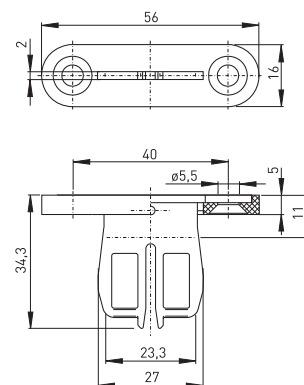
// Ball latch



// 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

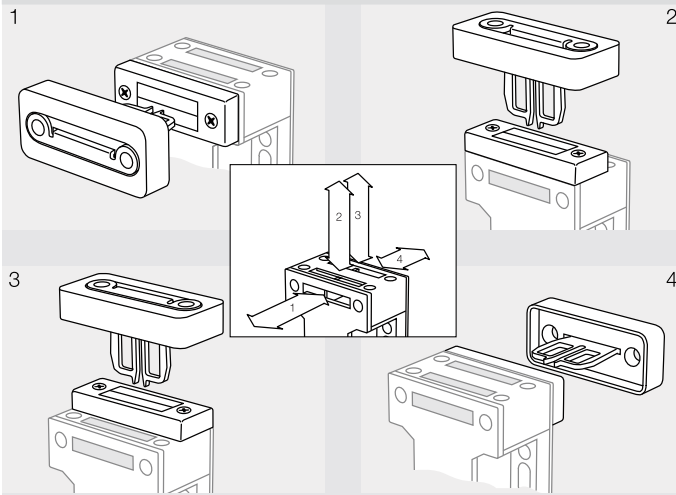
- To prevent inadvertent closing, e. g. during maintenance by preventing actuation of the switch

- For complex plants

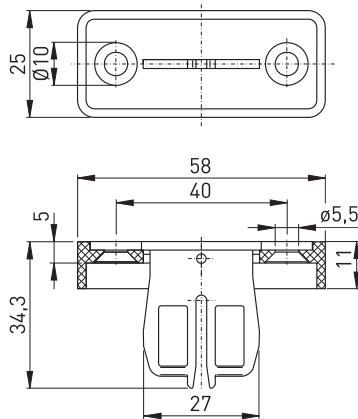
- Up to 6 padlocks can be fitted

- The lockout tag can be fixed on a chain near to the safety switch

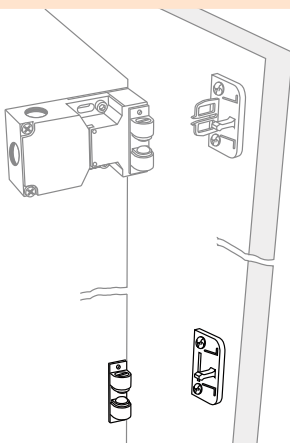
// Actuator with slot lip-seal



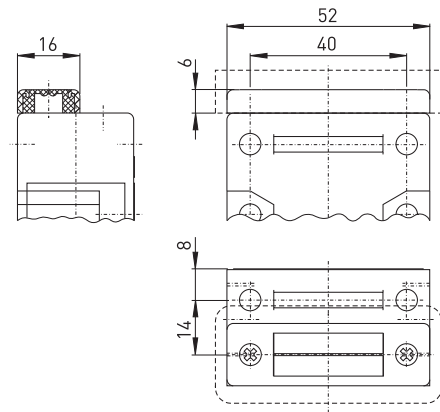
// Actuator slot lip-seal AZ 15/16-B1-2024



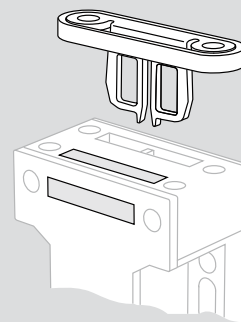
// Ball latch 2053-2



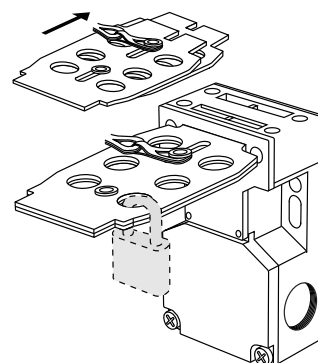
// Slot lip-seal



// 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



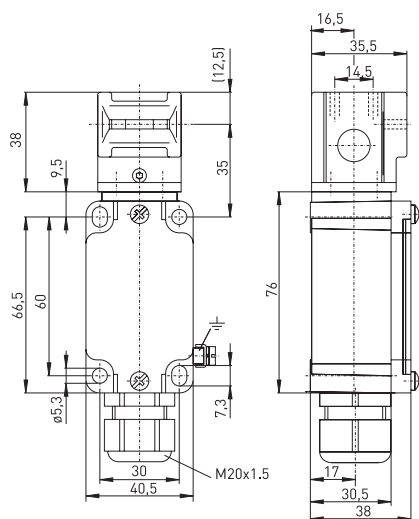
Ex safety switches with separate actuators

// 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

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

EEx 335 AZ 10/1S-3D
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

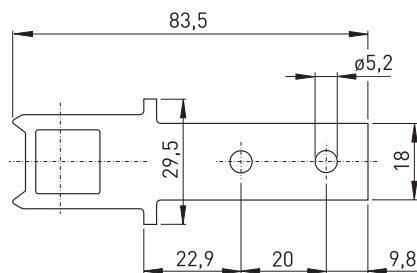
- Axial misalignment x = 15.4 mm

Note

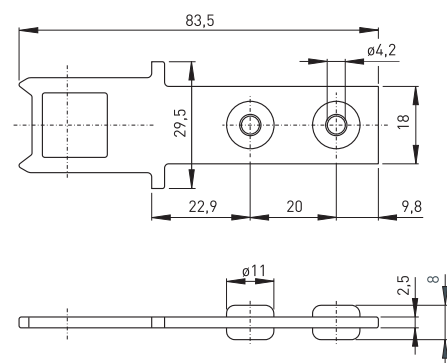
Inserted position of actuator = 0 in switch travel diagram

The actuators are not included with the switches.

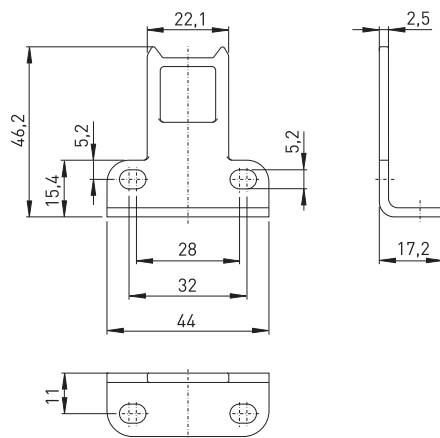
// Straight actuator AZ 335/355-B1



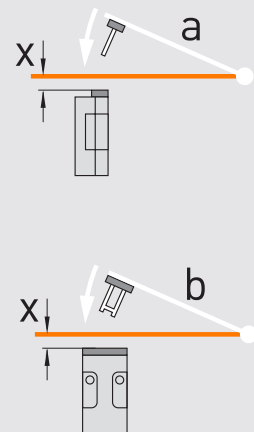
// Straight actuator AZ 335/355-B1-2246



// 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 ± 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

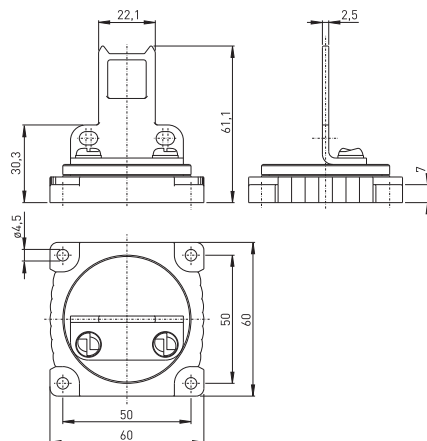
AZ 335/355-B6-Flex

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

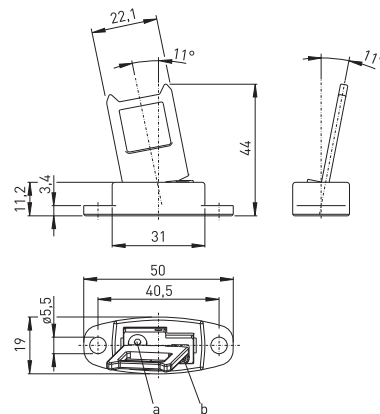
Lockout tag SZ 16/335

- 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

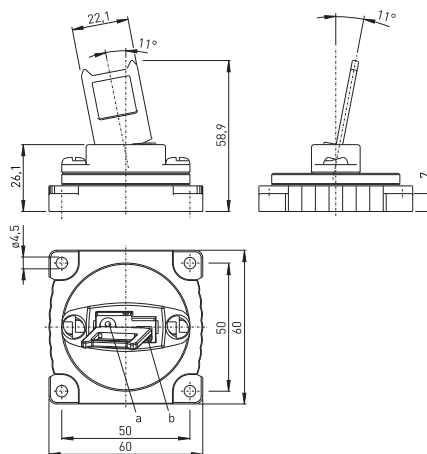
// Angled actuator AZ 335/355-B5-Flex



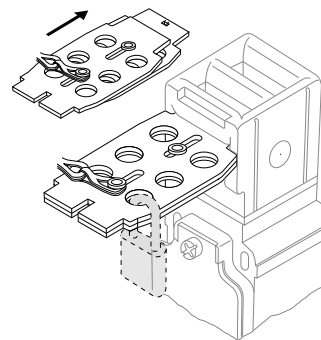
// Flexible actuator AZ 335/355-B6



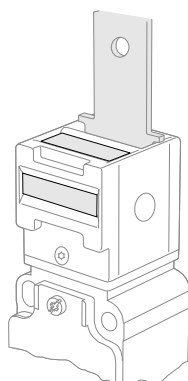
// Flexible actuator AZ 335/355-B6-Flex



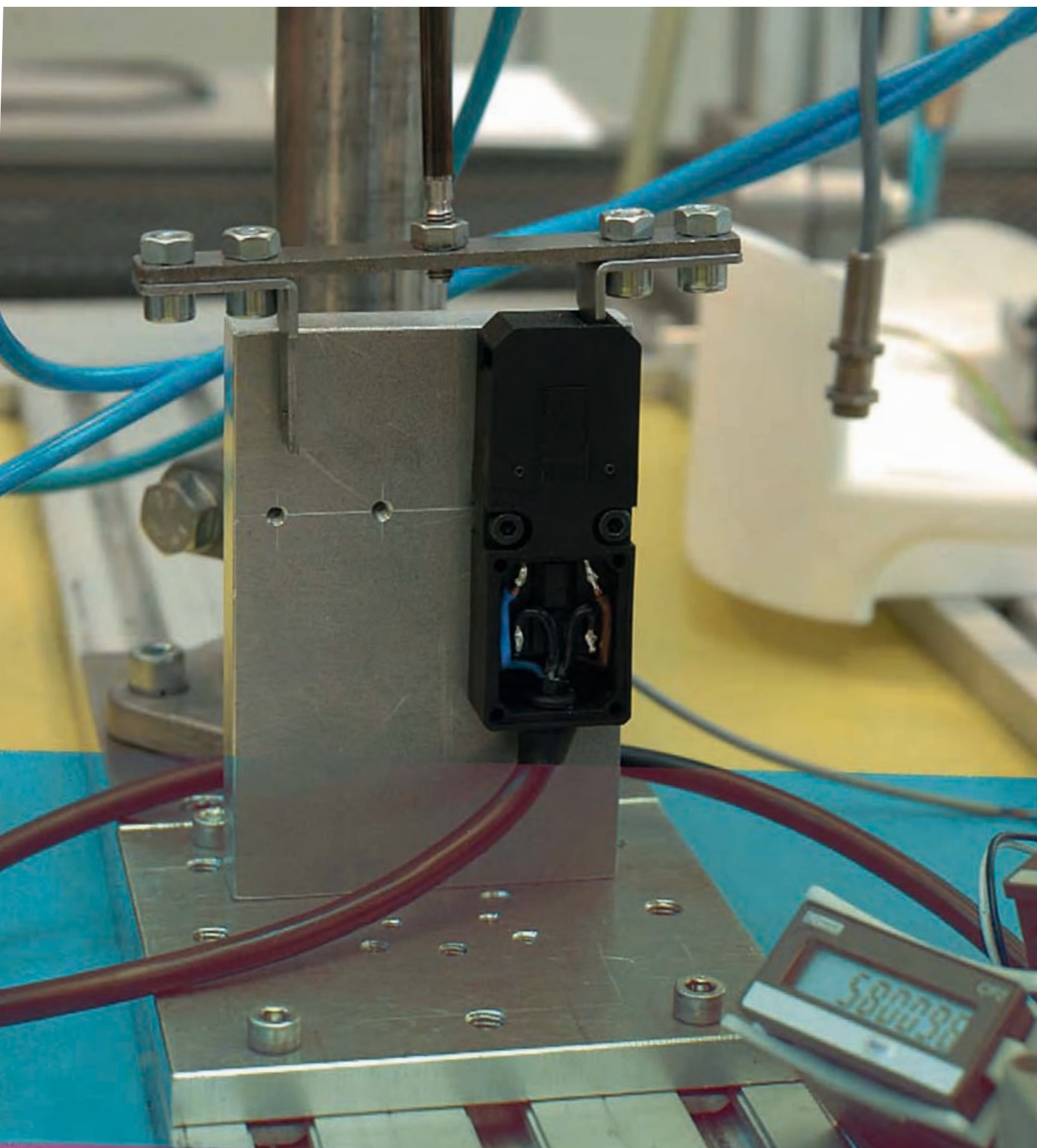
// Lockout tag SZ 16/335



// Slot sealing plug AZ 335/355-1990



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



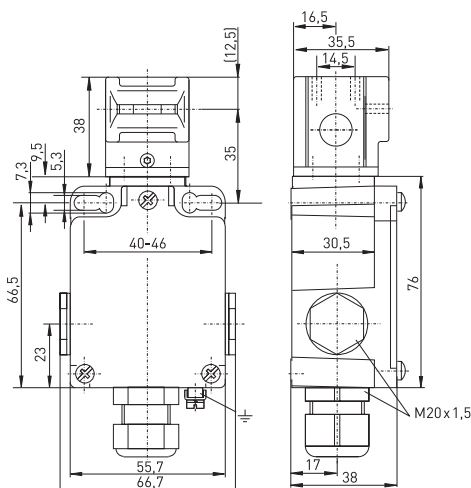
Ex safety switches with separate actuators

// 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

Standards	IEC/EN 60947-5-1; EN 1088; EN 50014; EN 50018; EN 500190; EN 50281-1-1
Enclosure	zinc die casting, enamelled
Actuator	stainless steel 1.4301
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 or 2 NC contacts, galvanically separated contact bridges
Termination	M3 screw clamps
Cable section	max. 1.5 mm ² (incl. conductor ferrules)
Cable length	-
U _{imp}	4 kV
U _i	250 V
I _{the}	6 A
I _e /U _e	6 A/250 VAC; 4 A/24 VDC
Utilisation category	AC-15, DC-13
Max. fuse rating	6 A gL/gG D-fuse
Positive break travel	8.3 mm
Positive break force	-
Ambient temperature	-20 °C ... +65 °C
Mechanical life	> 1 million operations
Ex certification	⊕ II 2G EEx d IIC T6, II 2D IP65 T80°C
Approvals	BVS 04 ATEX 126



Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	EEx 355 AZ 10/1S
2 NC contacts	EEx 355 AZ 20

Ordering details

EEx 355 AZ 10/1S-3D
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 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

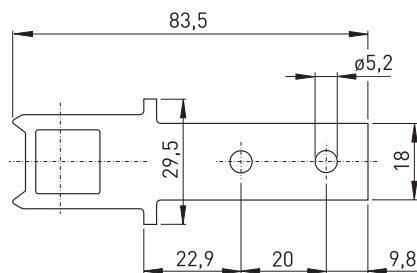
- Axial misalignment x = 15.4 mm

Note

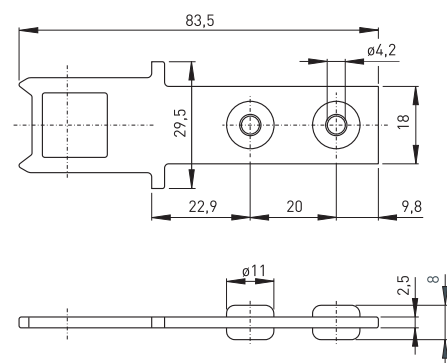
Inserted position of actuator = 0 in switch travel diagram

The actuators are not included with the switches.

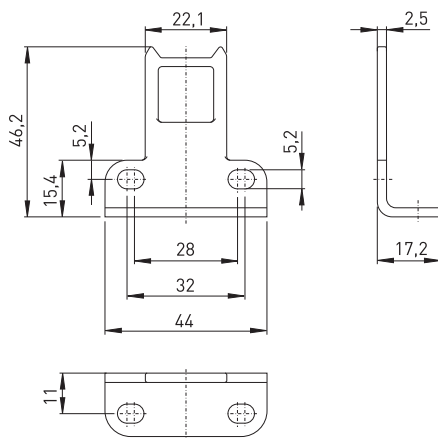
// Straight actuator AZ 335/355-B1



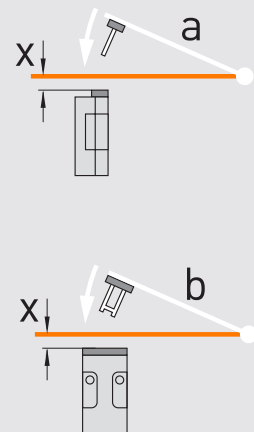
// Straight actuator AZ 335/355-B1-2246



// 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 ± 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

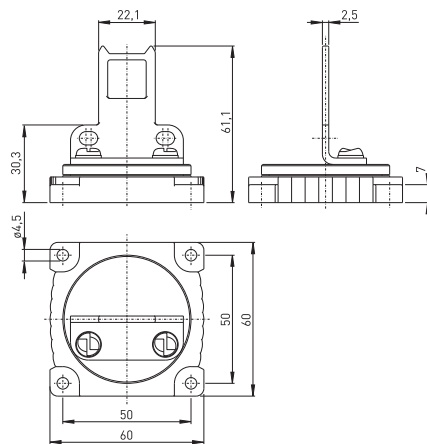
AZ 335/355-B6-Flex

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

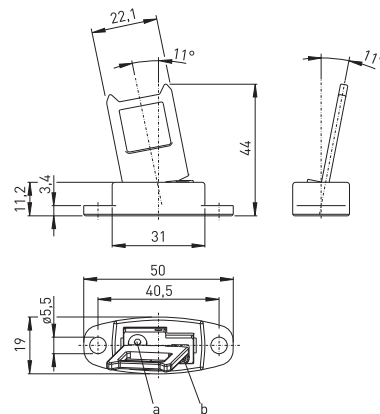
Lockout tag SZ 16/335

- 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

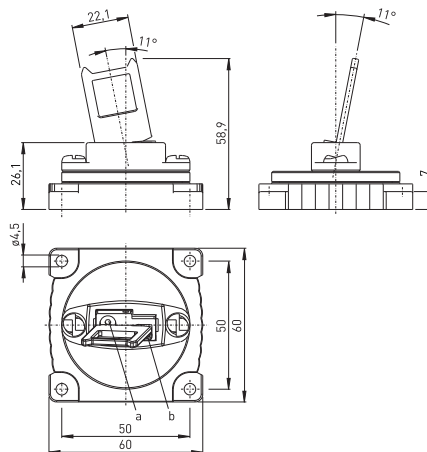
// Angled actuator AZ 335/355-B5-Flex



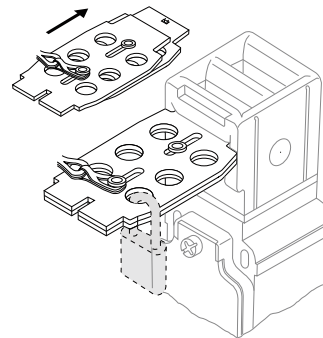
// Flexible actuator AZ 335/355-B6



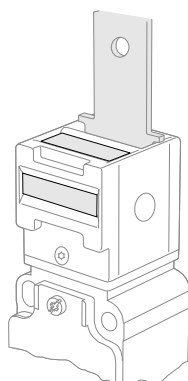
// Flexible actuator AZ 335/355-B6-Flex



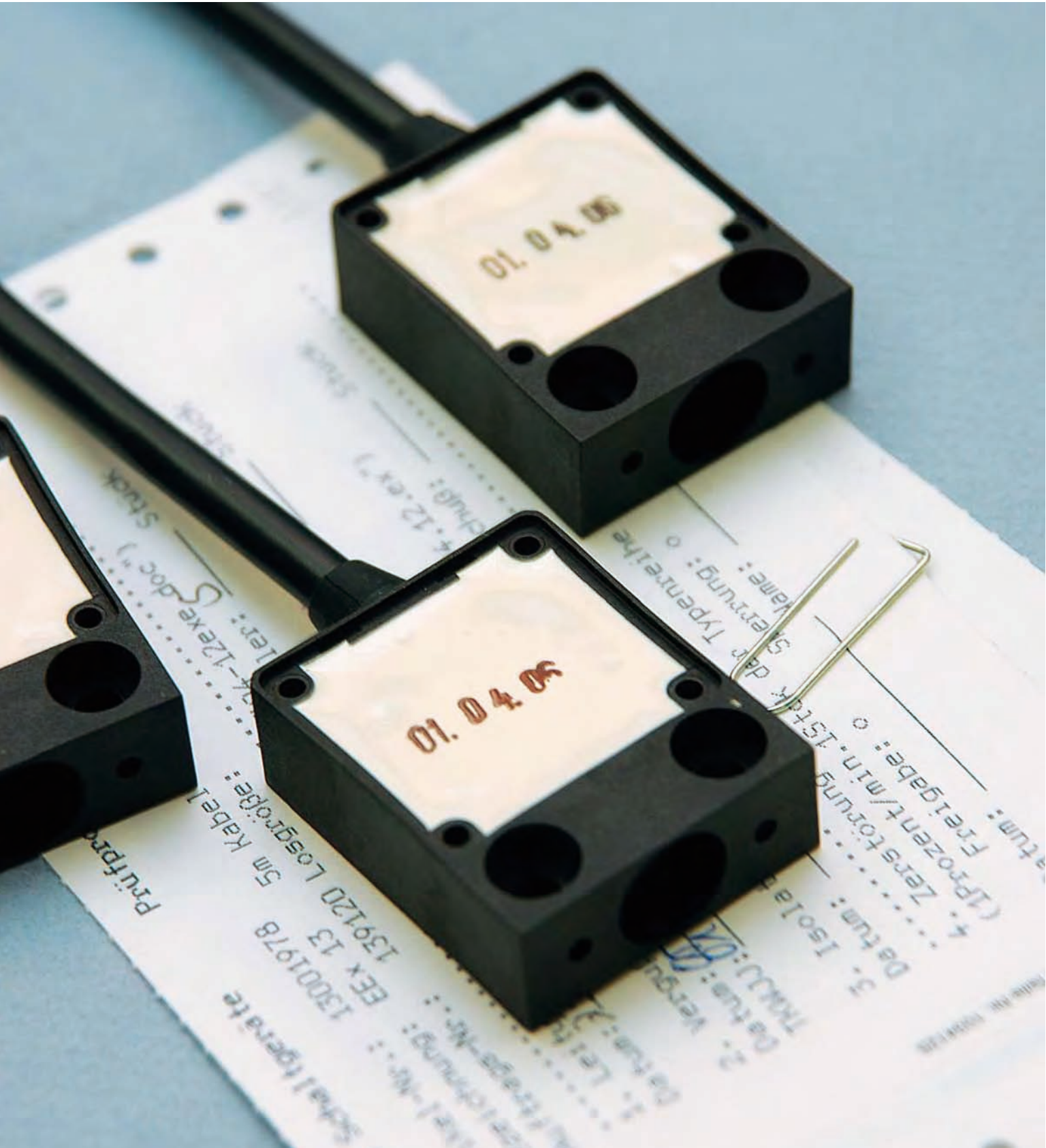
// Lockout tag SZ 16/335



// Slot sealing plug AZ 335/355-1990





PRODUCTION PROCESS ASSEMBLY
EX SWITCH INSERT AFTER MOULDING



// Series EEx ST 61

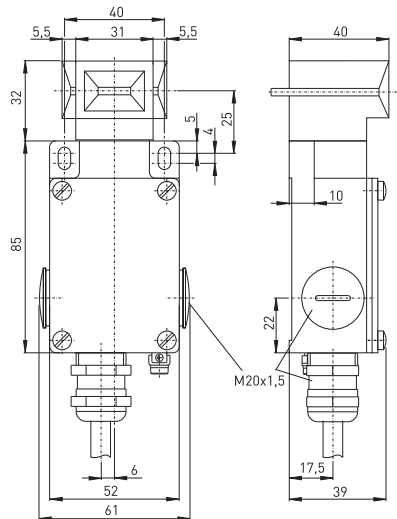
Features/Options

- Ex zone 1 and 2, as well as 21 and 22
- Metal enclosure
- Double insulated 
- Slow action , 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
```




32



Technical data

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

Contact variants: switch travel/contacts

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

Ordering details

Ex 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

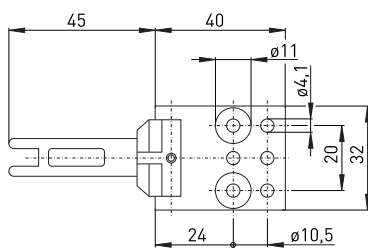
ST 61-B5

- 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

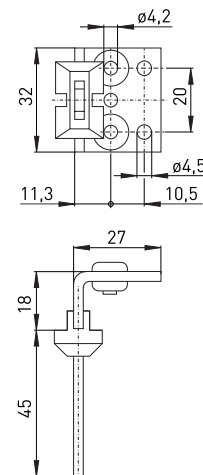
Note

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

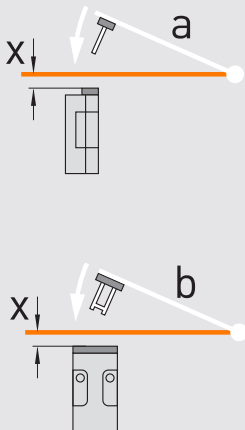
// Straight actuator ST 61-B1



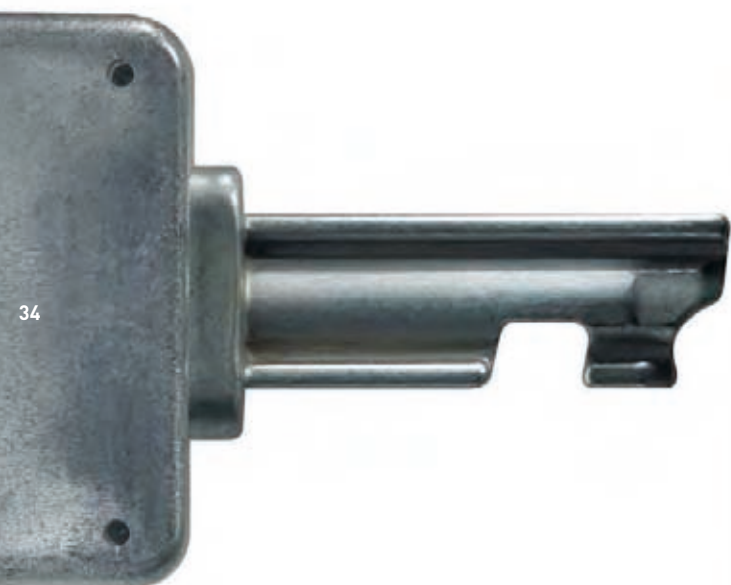
// Angled actuator ST 61-B5



// 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 E255 X

250V / 6A AC 15

-20°C ≤ Ta ≤ +55°C



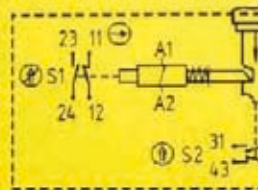
24 V DC - 12 W max.

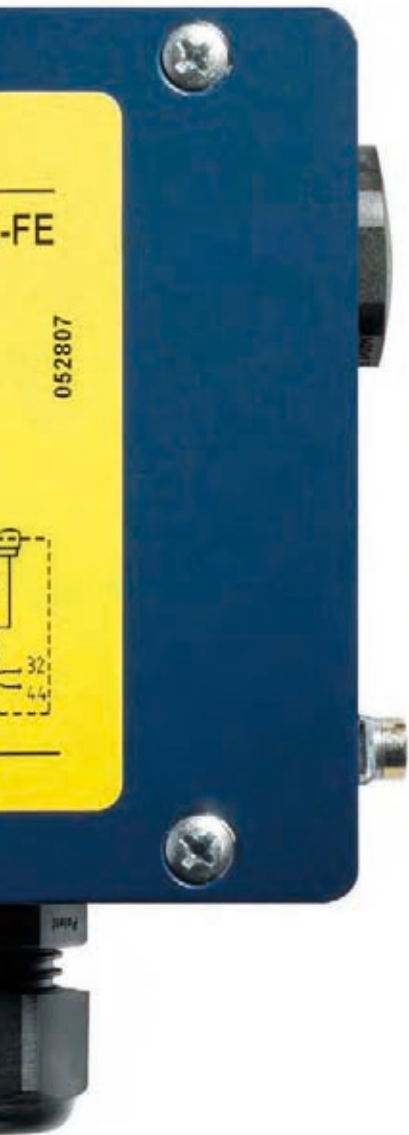


0158

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.

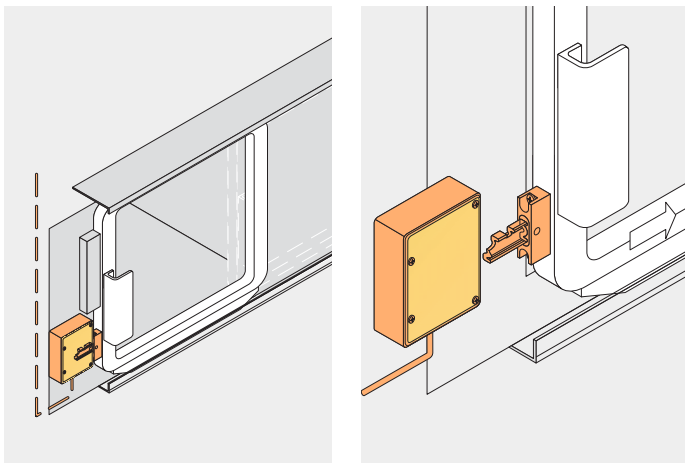
Design and operating principle

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.

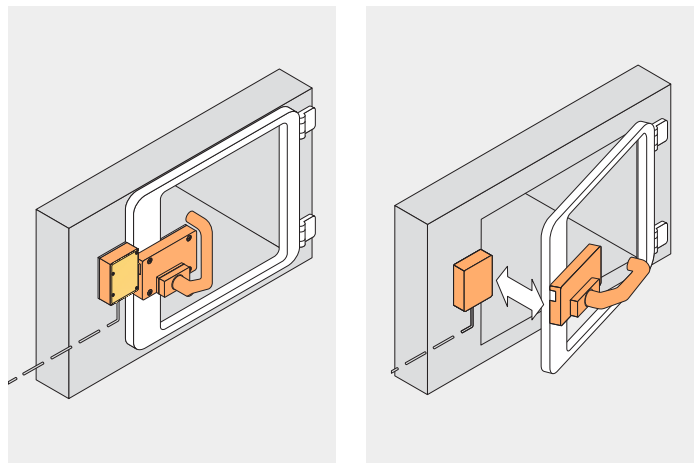
The Ex solenoid interlocks shown in this chapter bear the CE mark according to the Machinery Directive 98/37/EC and according to ATEX 94/9/EC. The Ex solenoid interlocks per equipment category 3D bear the CE mark without the number of the notified body and have received a CE declaration of manufacturer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

Application

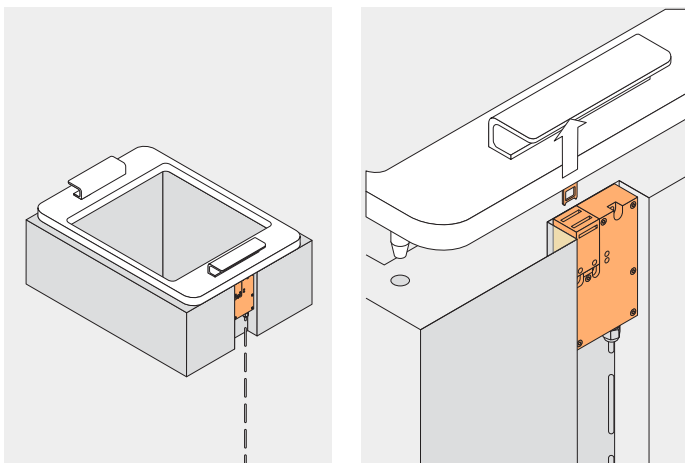
on sliding guards



on hinged guards




on removable guards



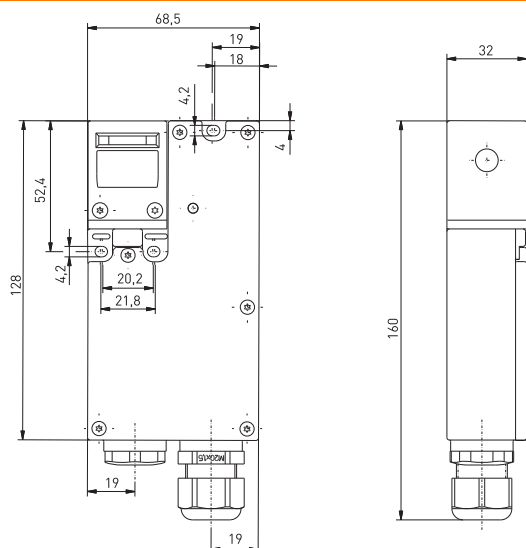
Ex solenoid interlocks

// 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

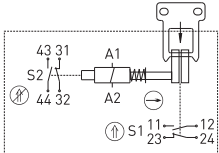
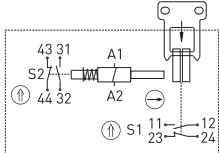
// EEX STM 295



Technical data

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 stainless steel 1.4301
Actuator	Ex 95
Switch insert	IP 65 according to EN 60529
Protection class	silver
Contact material	slow action, positive break NC contact \ominus
Switching system	2 NC and 2 NO contacts with positive break, galvanically separated contact bridges
Switching elements	M3 screw clamps
Termination	max. 1.5 mm ² (incl. conductor ferrules)
Cable section	1 x M20 x 1.5 for cable section 5 ... 9 mm
Cable entries	–
Cable length	–
U _{imp}	4 kV
U _i	250 V
I _{the}	6 A
I _{e/Ue}	6 A/250 VAC; 0.25 A/230 VDC
Utilisation category	AC-15; DC-13
Max. fuse rating	6 A gL/gG D-fuse
U _s	24 VDC
Magnet	100 % ED
Unlocking	100 % ED
Power consumption	max. 23 W
Ambient temperature	–20 °C ... +55 °C
Mechanical life	> 1 million operations
Holding force F	max. 1000 N
Holding force of integrated ball catch	–
Ex certification	⊕ II 3G Ex nR IIC T4, II 3D Ex tD A22 IP67 T100°C
Approvals	–

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

EEx STM 295 1Ö/1S-R-3G/D
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

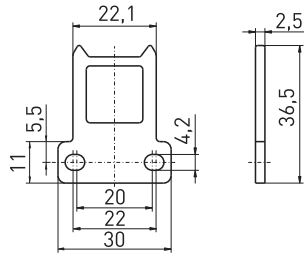
95 AZ-B5

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

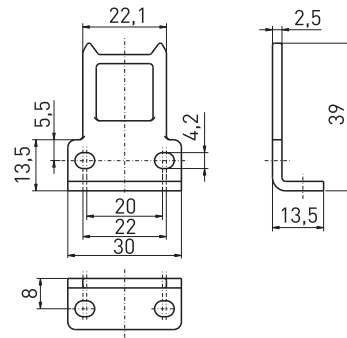
Note

The actuators are not included with the switches.

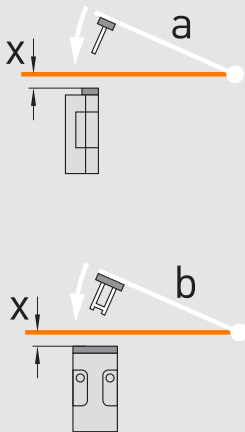
// Straight actuator 95 AZ-B1



// 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

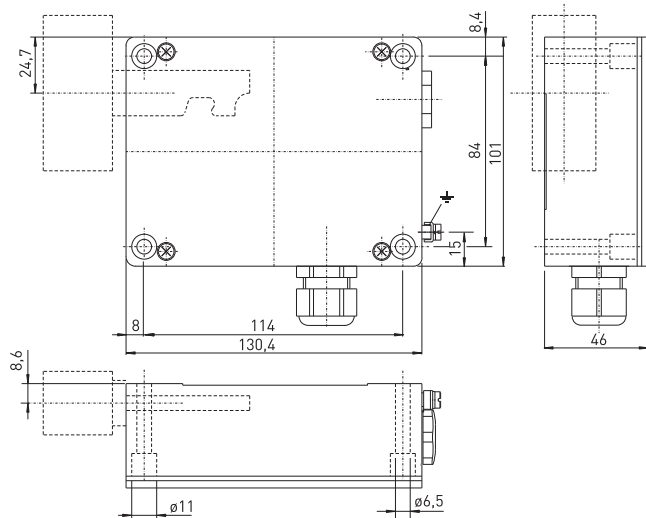
- Ex zone 1 and 2, as well as 21 and 22
- Two Ex switch inserts in one enclosure
- Spring-to-lock or power-to-lock principle
- Problem-free opening of stressed doors by means of bell-crank system
- High holding force 3.500 N
- Ball catch
- Special version only for equipment category 3D, available for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

// EEX AZM 415



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 ² (incl. conductor ferrules)
Cable entries	2 x M20 x 1.5 for cable section 5 ... 9 mm
Cable length	-
U _{imp}	4 kV
U _i	250 V
I _{the}	6 A
I _e /U _e	6 A/250 VAC; 40 mA/24 VDC
Utilisation category	AC-15
Max. fuse rating	6 A gL/gG D-fuse
U _s	24 VDC
Magnet	100 % ED
Unlocking	100 % ED
Power consumption	max. 12 W
Ambient temperature	-20 °C ... +55 °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 dem IIC T6, II 2D IP67 T80°C
Approvals	DMT 02 ATEX E 255 X



Contact variants: switch travel/contacts

	Spring-to-lock principle	Power-to-lock principle
2 NC/2 NO contact	<p>EEx AZM 415 20/2S-R</p>	<p>EEx AZM 415 20/2S-A</p>

Ordering details

EEx AZM 415 10/1S-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


```
// Series EEx AZM 415, variants
```

EEx AZM 415-FE

- EEEx AZM 415-TE

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

- With emergency release and auxiliary unlocking

[illegible]

- Mounting of the device inside a hazardous area

- With emergency release, actuation in case of emergency

- Mounting of the device outside a hazardous area

- With emergency release and auxiliary unlocking

- Auxiliary unlocking with M5 triangular key

- Mounting of the device outside a hazardous area

[illegible][illegible]

Ex solenoid interlocks

// Series EEx AZP 415

Features/Options

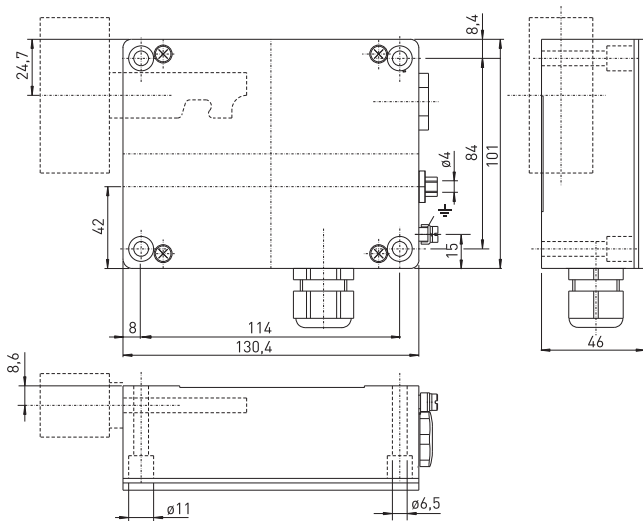
- Ex zone 1 and 2, as well as 21 and 22
- Two Ex switch inserts in one enclosure
- Release by means of pneumatic cylinder
- Problem-free opening of stressed doors by means of bell-crank system
- High holding force 3,500 N
- Ball catch
- Special version only for equipment category 3D, available for dust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

// EEX AZP 415



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 ² (incl. conductor ferrules)
Cable entries	2 x M20 x 1.5 for cable section 5 ... 9 mm
Cable length	-
U _{imp}	4 kV
U _i	250 V
I _{the}	6 A
I _e /U _e	6 A/250 VAC; 40 mA/24 VDC
Utilisation category	AC-15
Max. fuse rating	6 A gL/gG D-fuse
U _s	-
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

	Actuation with air supply off
2 NC/2 NO contact	<p>EEx AZP 415 20/25</p>

Ordering details

EEx AZP 415 10/1S-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
 $b = 250 \text{ mm}$, axial misalignment $x = 36 \text{ mm}$

AZM 415-B3

- Especially suitable for sliding and hinged guards

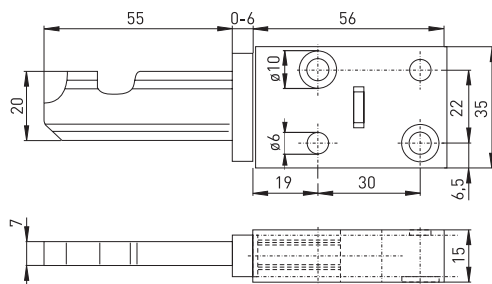
Features/Options

- Actuating radius on hinged guards
 $a = 250 \text{ mm}$, axial misalignment $x = 36 \text{ mm}$

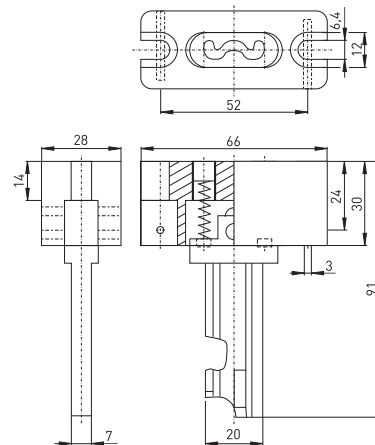
Note

- 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.

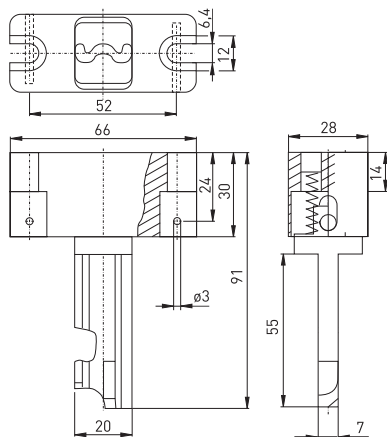
// Straight actuator AZM 415-B1



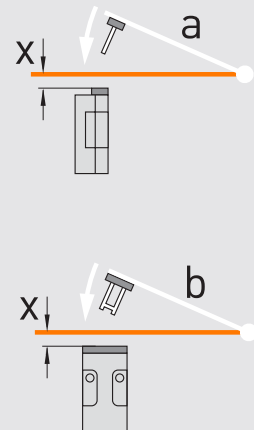
// Flexible actuator AZM 415-B2



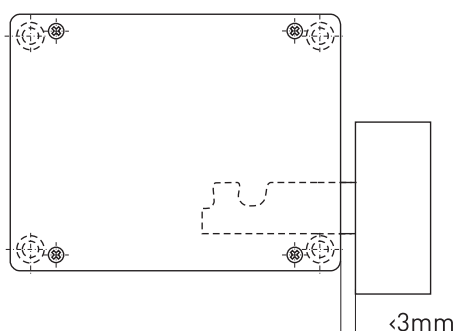
// Flexible actuator AZM 415-B3



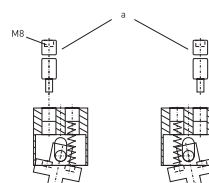
// Actuating radius



// 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

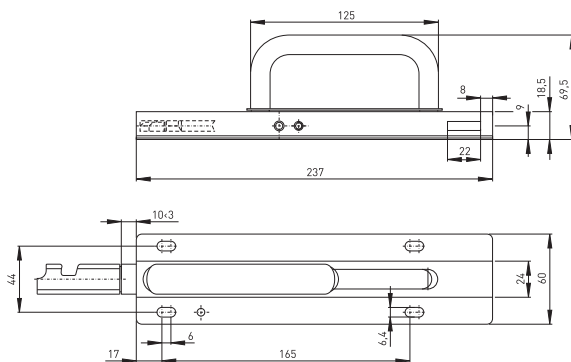
Features/Options

- 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

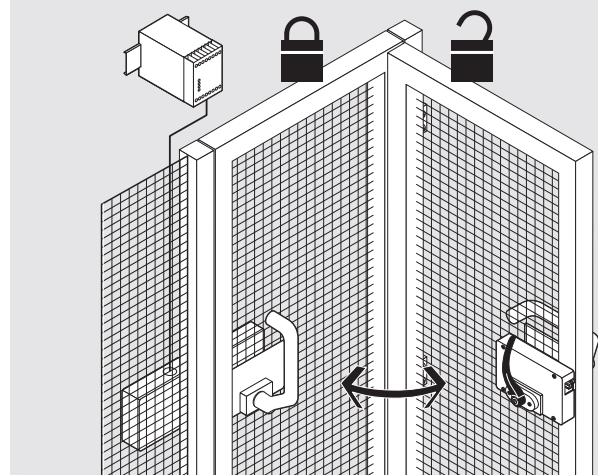
AZM 415-B30-01

- 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

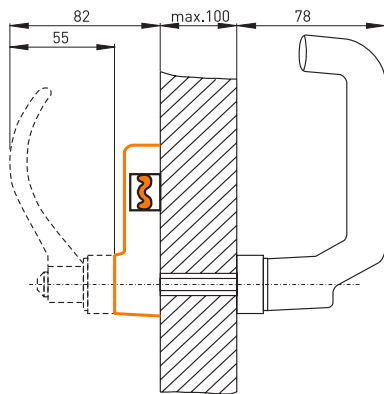
// Actuator AZM 415-B4pS with grip



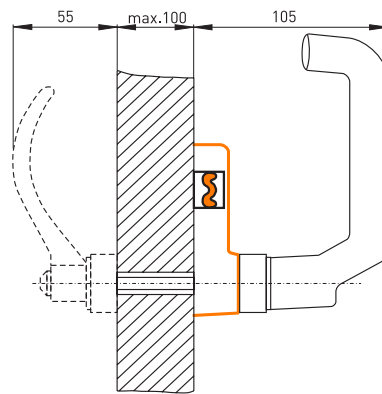
// Actuator AZM 415-B30



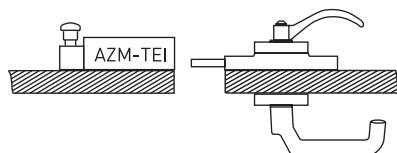
// Actuator mounted inside



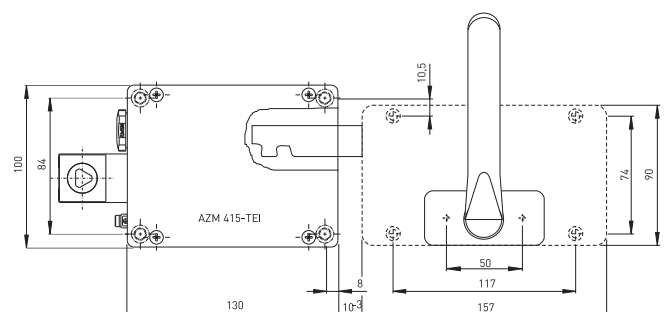
// Actuator mounted outside



// 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

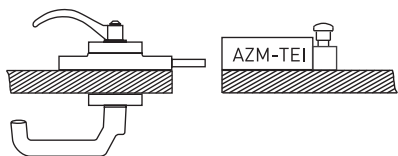
- Actuator mounted inside, see yellow marking in drawing page 44
- Door hinge on right-hand side

Features/Options

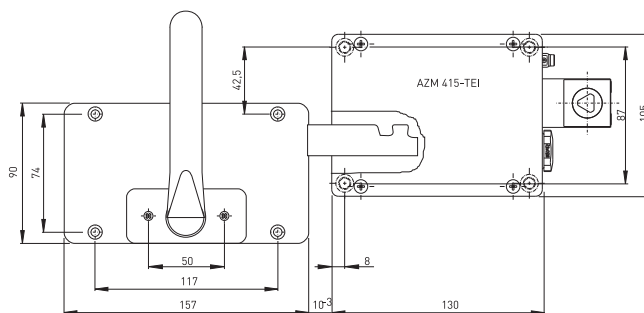
AZM 415-B30-04

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

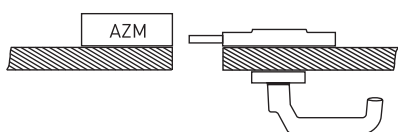
// Mounting AZM 415-B30-02



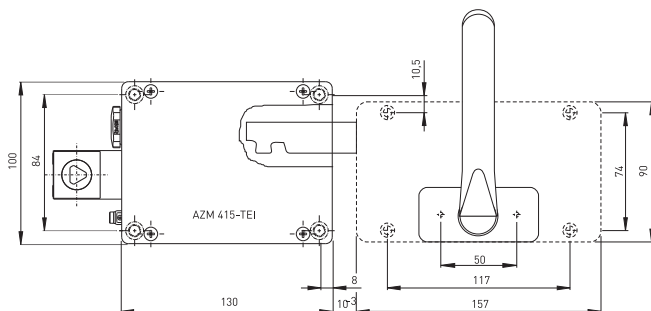
// Actuator AZM 415-B30-02



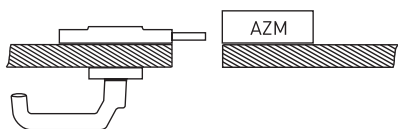
// Mounting AZM 415-B30-03



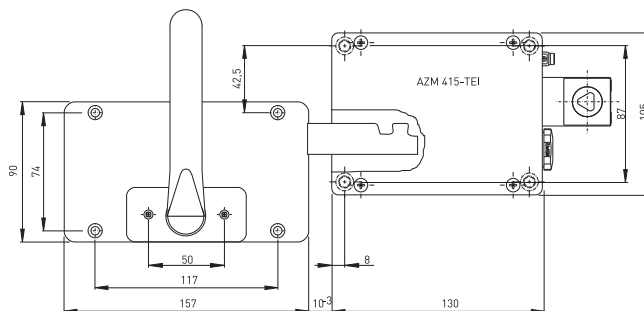
// Actuator AZM 415-B30-03



// 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

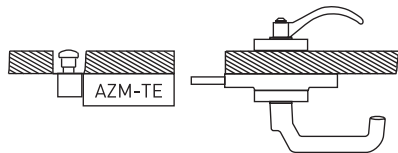
- Only to be used in combination with EEx AZM 415-2Ö/2S-TE
- Actuator mounted outside, see yellow marking in drawing page 44
- Door hinge on left-hand side

Features/Options

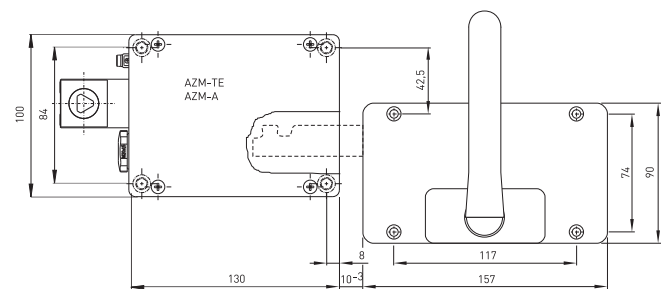
AZM 415-B30-07

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

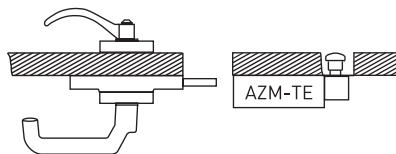
// Mounting AZM 415-B30-05



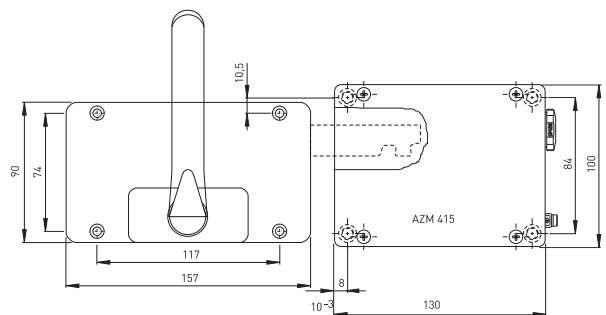
// Actuator AZM 415-B30-05



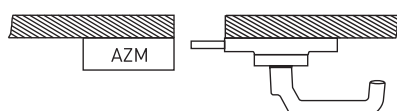
// Mounting AZM 415-B30-06



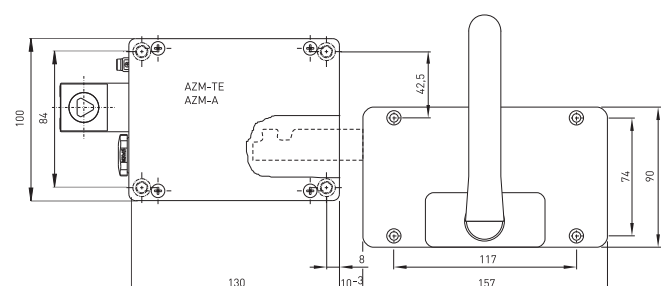
// Actuator AZM 415-B30-06



// 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

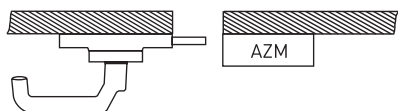
Lockout tag SZ 415-B4pS

- 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

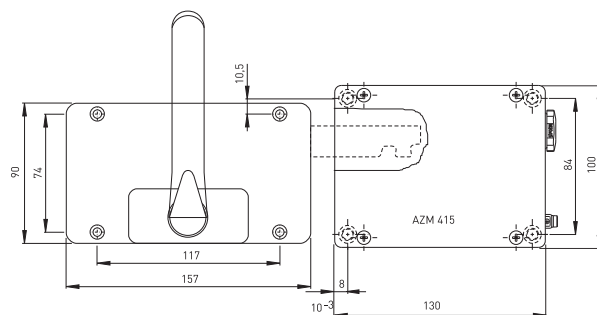
Mounting plate MP

- 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

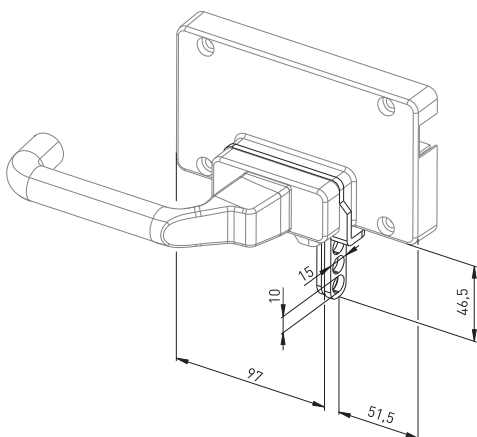
// Mounting AZM 415-B30-08



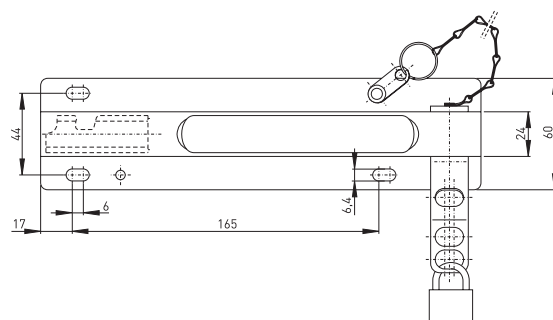
// Actuator AZM 415-B30-08



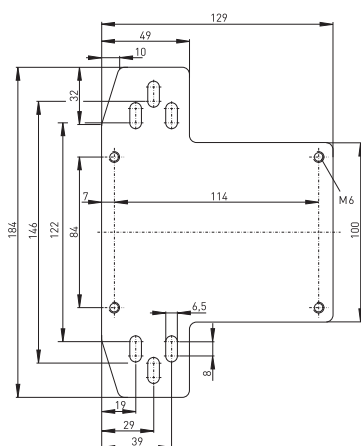
// Lockout tag SZ 415-1/-2



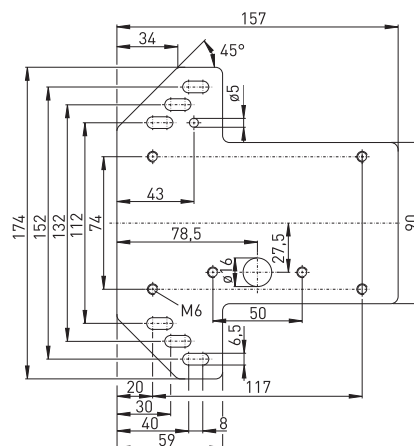
// Lockout tag SZ 415-B4pS



// Mounting plate MP AZM 415-22



// Mounting plate MP AZM 415-B30



Ex solenoid interlocks

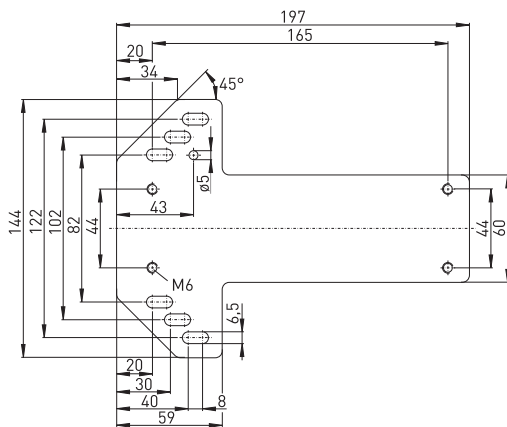
// Series EEx AZM/AZP 415, accessories

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
ENCLOSURE FINISH







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

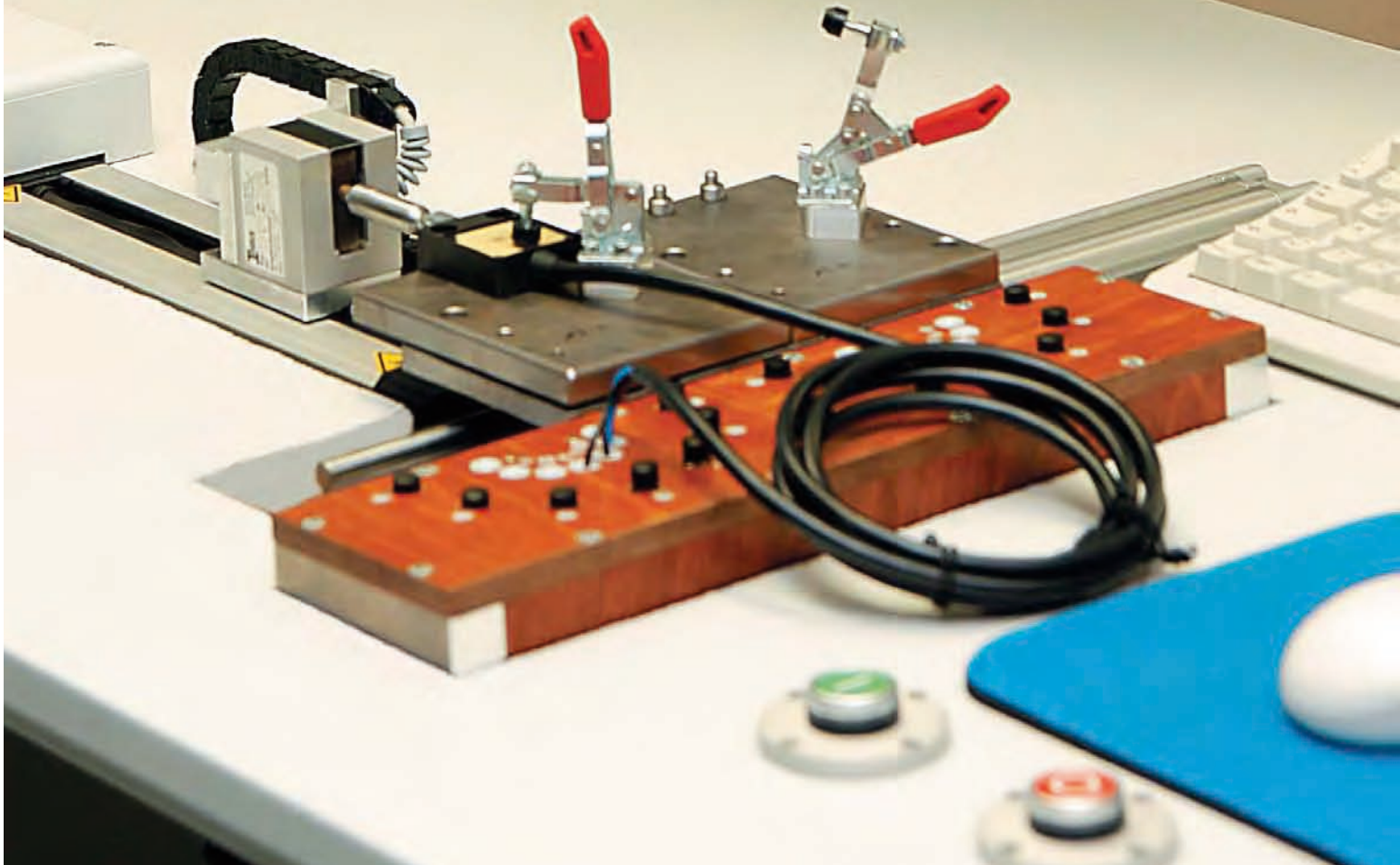
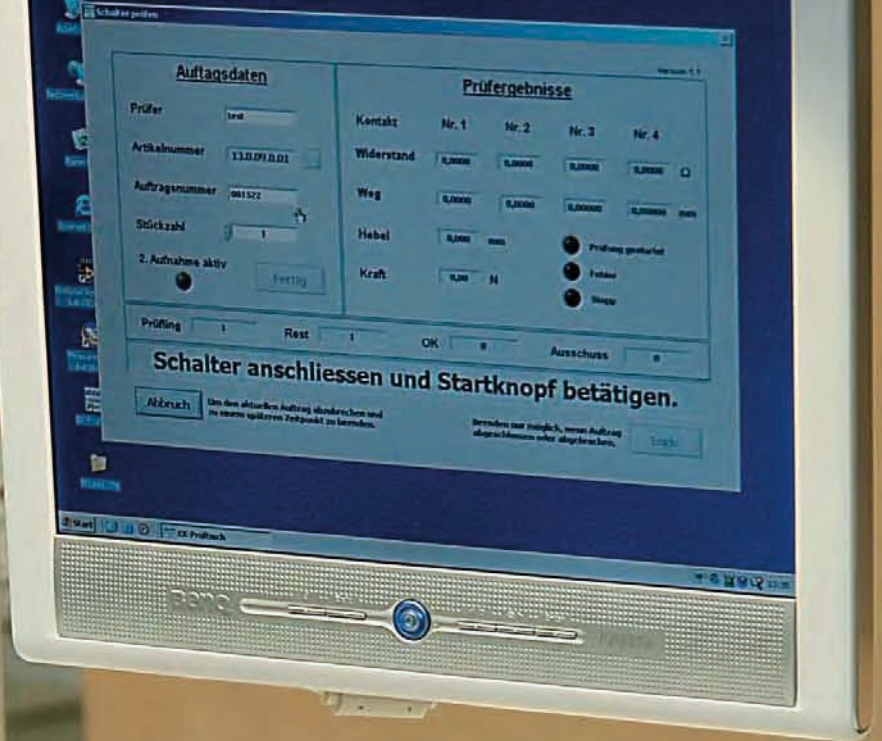
from page 84

// Series EEx 355

from page 90

// Series EEx 61

from page 96



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.

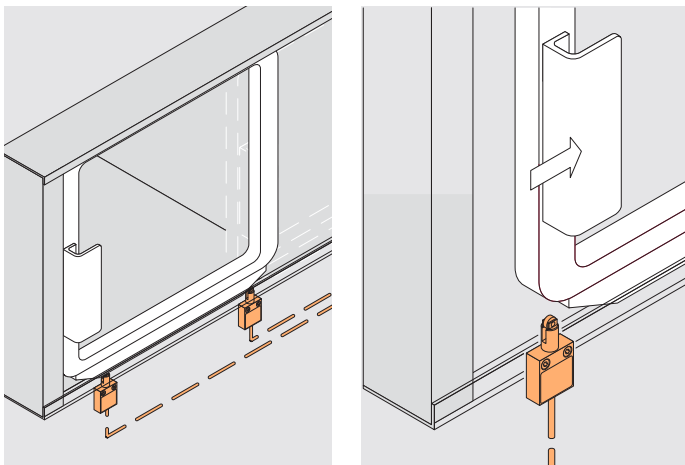
Design and operating principle

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.

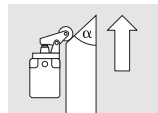
All Ex position switches with safety function shown in this chapter bear the CE mark according to the Machinery Directive 98/37/EC and according to ATEX 94/9/EC. The Ex position switches with safety function per equipment category 3D bear the CE mark without the number of the notified body and have received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

Application on sliding guards

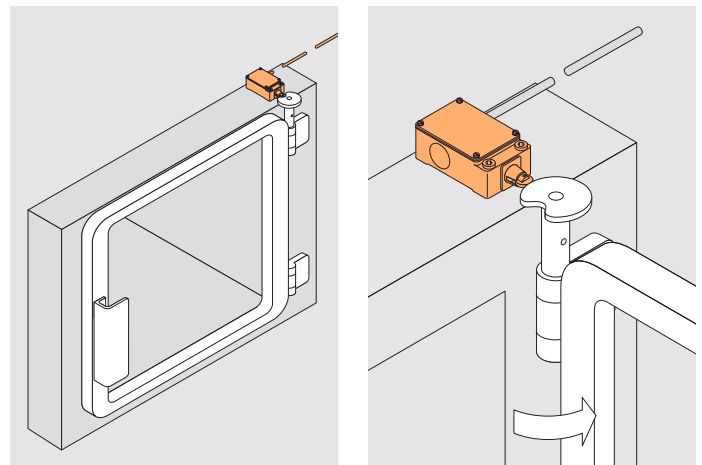


Legend

α : Actuating angle from below as shown in picture

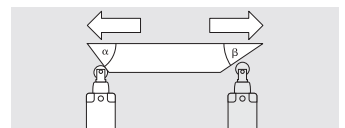


on hinged guards



α : Actuating angle from right of switch axis

β : 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

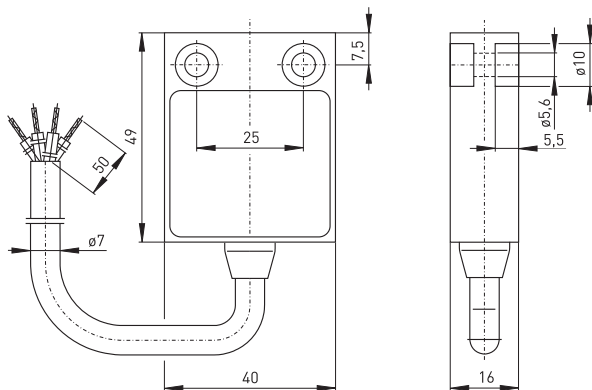
		↓	↓	↺	↺	↺	
							
EEx 13 , from page 56 - Thermoplastic enclosure - Cable 		+ W	F	KU WKU	FKU		
EEx 14 , from page 66 - Thermoplastic enclosure - Cable 		+ W	F	KU WKU	FKU	VKU	
EEx 95 , from page 74 - Thermoplastic enclosure - Wiring compartment - 1 cable entry - Design according to DIN EN 50 047		W	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

	↔	↔	↔	↔	↔	↑	↔	↔	↔	↔	
											
	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 ²
Cable length	1, 2, 5 and 10 m
U _{imp}	4 kV
U _i	250 V
I _{the}	6 A
I _e /U _e	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 PTB 03 ATEX 1068 X
Approvals	



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

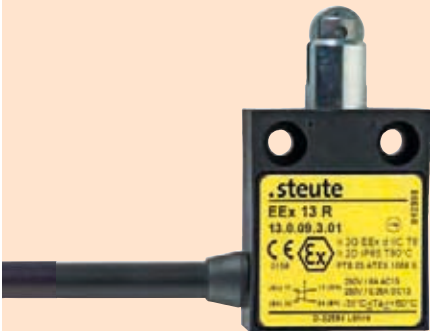
Features/Options

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

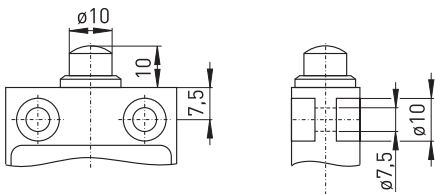
Features/Options

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

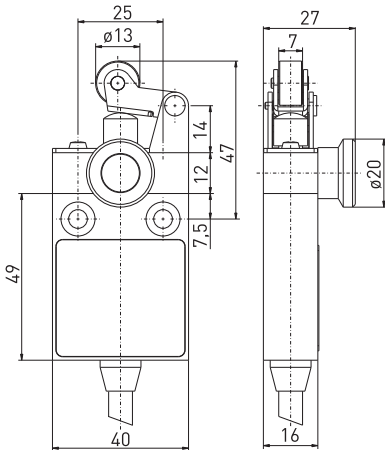
// Cable entry on side S



// Plunger

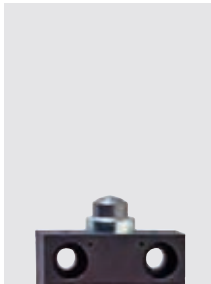


// Mechanical latching V



Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	EEx 13
	<div> <div>0</div> <div>3</div> <div>5.5</div> <div>1.5</div> <div>2.8</div> <div>BK-GY</div> <div>BN-BU</div> </div>



Ex position switches with safety function

// Series EEx 13, actuator

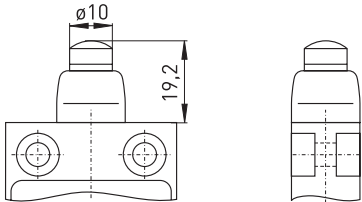
Features/Options

- 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°

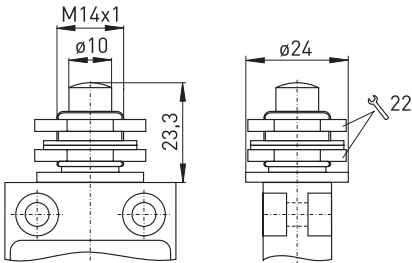
// Plunger with collar W



Contact variants: switch travel/contacts

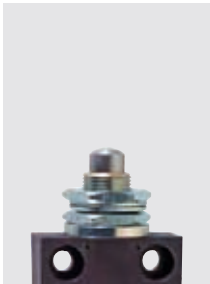
	Slow action
1 NC/1 NO contact	EEx 13 W 10/15
	<div> <div>0</div> <div>3</div> <div>5.5</div> <div>1.5</div> <div>2.8</div> <div>BK-GY</div> <div>BN-BU</div> </div>

// Plunger for front mounting F



Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	EEx 13 F 10/15
	<div> <div>0</div> <div>3</div> <div>5.5</div> <div>1.5</div> <div>2.8</div> <div>BK-GY</div> <div>BN-BU</div> </div>



Features/Options

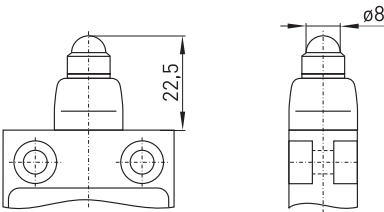
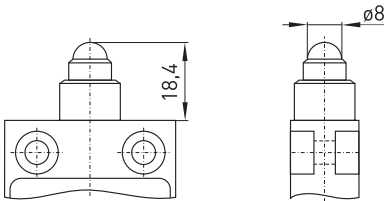
- Actuating speed 0.5 m/s with an actuating angle of 20°
- Can be actuated in line with or from side of switch axis
- Actuator head with captive stainless steel ball actuator
- Exact repeatability of switching point

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

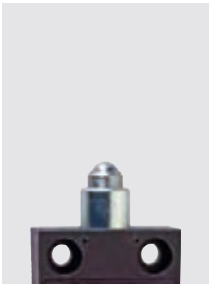


Contact variants: switch travel/contacts

Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<div>EEEx 13 KU 10/1S</div> <div><div><div>035,5</div><div>1,52,8</div></div><div>BK-GYBN-BU</div></div>

	Slow action
1 NC/1 NO contact	<div>EEEx 13 WKU 10/1S</div> <div><div><div>035,5</div><div>1,52,8</div></div><div>BK-GYBN-BU</div></div>



Ex position switches with safety function

// Series EEx 13, actuator

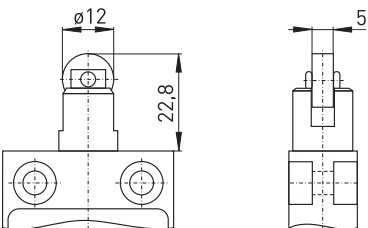
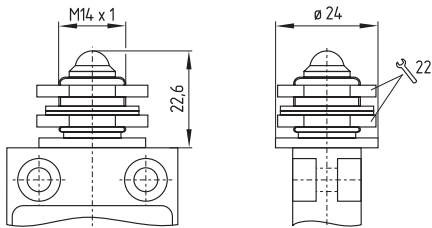
Features/Options

- 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

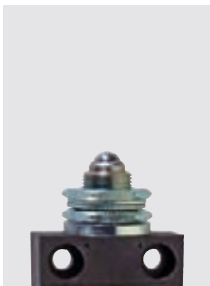


Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	EEx 13 FKU 10/1S
	<div> <div>0</div> <div>3</div> <div>5.5</div> <div>1.5</div> <div>2.8</div> <div>BK-GY</div> <div>BN-BU</div> </div>

Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	EEx 13 R 10/1S
	<div> <div>0</div> <div>3</div> <div>5.5</div> <div>1.5</div> <div>2.8</div> <div>BK-GY</div> <div>BN-BU</div> </div>



Features/Options

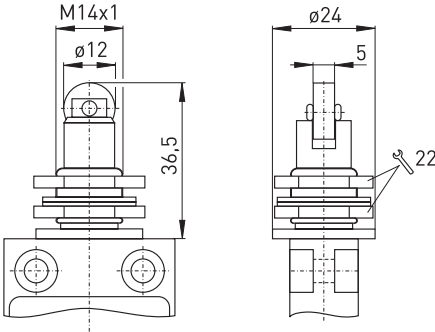
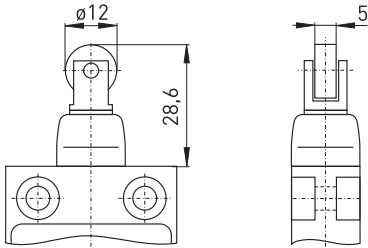
- Actuating speed 0.5 m/s with an actuating angle of 25°
- Metal roller
- Available with actuator repositioned by 90°
- Collar to protect against the entry of foreign bodies

Features/Options

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

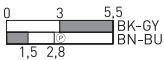
// Roller plunger with collar WR

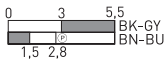
// Roller plunger for front mounting FR

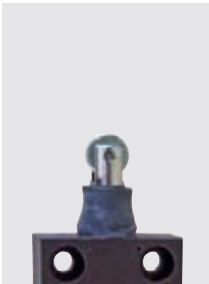


Contact variants: switch travel/contacts

Contact variants: switch travel/contacts

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

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



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°
- 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.

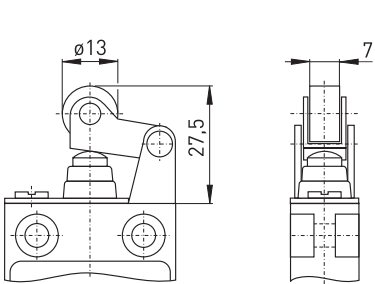
Features/Options

- 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°
- Collar to protect against the entry of foreign bodies
- With plastic roller available on request

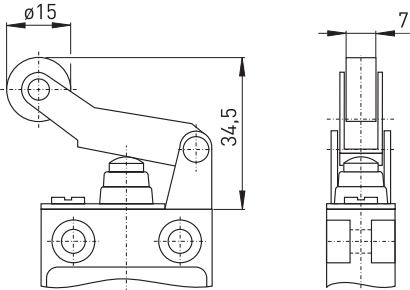
Note

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

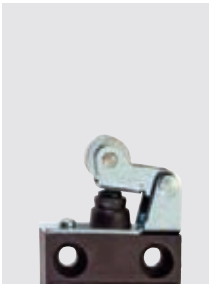


Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	EEx 13 WH 10/1S
	<div> <div>0</div> <div>3</div> <div>5,5</div> <div>1,5</div> <div>2,8</div> <div>10</div> <div>BK-GY</div> <div>BN-BU</div> </div>

Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	EEx 13 WHL 10/1S
	<div> <div>0</div> <div>7</div> <div>12,2</div> <div>3,4</div> <div>4,9</div> <div>10</div> <div>BK-GY</div> <div>BN-BU</div> </div>



Features/Options

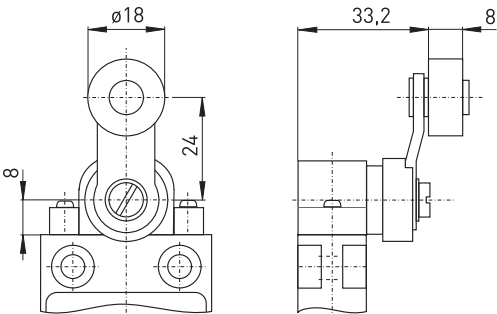
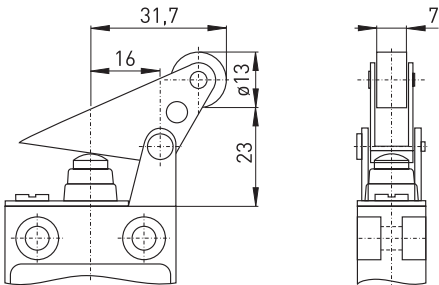
- Actuating speed 0.5 m/s with an actuating angle of $\alpha = 30^\circ$
- Actuation parallel to switch from below
- Metal roller
- Available with actuator repositioned by 180°
- Collar to protect against the entry of foreign bodies
- With plastic roller available on request

Features/Options

- Actuating speed 0.5 m/s with an actuating angle of 45°
- Wear-resistant thermoplastic roller
- Lever can be repositioned in 10° steps clockwise or counter-clockwise
- Available with actuator repositioned by 180°
- 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	EEx 13 WPH 10/1S
	<div><div>03,25,4</div><div>1,53</div><div>BK-GYBN-BU</div></div>

	Slow action
1 NC/1 NO contact	EEx 13 D 10/1S
	<div><div>65°35°0°35°65°</div><div>15°15°</div><div>BK-GYBN-BU</div></div>



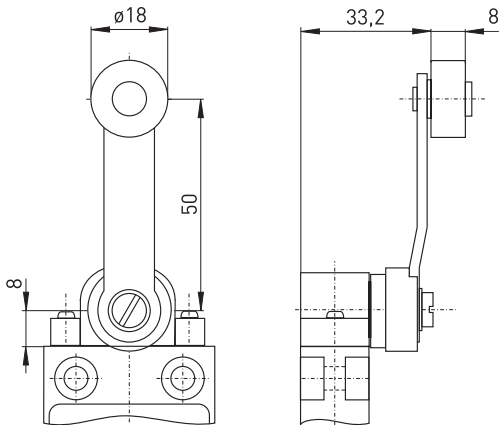
Ex position switches with safety function

// 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	EEx 13 DL 10/1S <div> <div> 65° 35° 0° 35° 65° </div> <div> 15° 15° </div> <div> BK-GY BN-BU </div> </div>





Ex position switches with safety function

// Series 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

// EEX 14

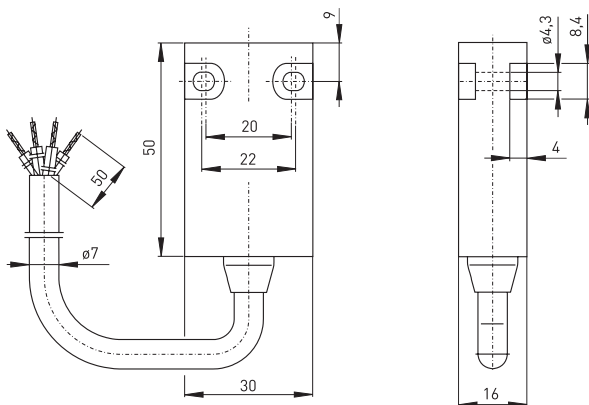


Technical data

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 \ominus
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 ²
U _{imp}	4 kV
U _i	250 V
I _{the}	6 A
I _e /U _e	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 PTB 03 ATEX 1070 X
Approvals	 

Note

Switch must be protected from mechanical damage!



Ordering details

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

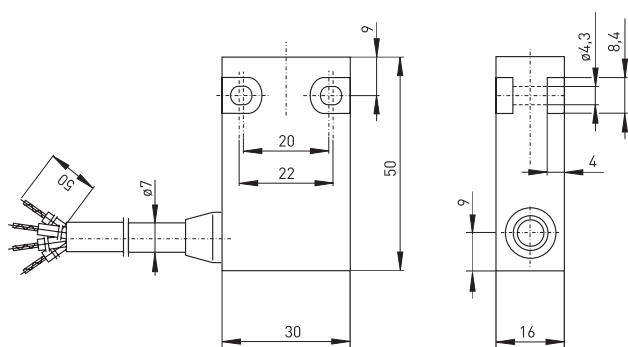
Equipment Categ.
3D, Staub-Ex
Zone 22
Cable length 1 m,
(2 m, 5 m, 10 m)
Cable entry on side
Latching
Contact type 10/1S, (UE, 20)
Actuator R (H, TK, D, etc. ...)
Collar
Series
Ex certified component


```
// Series EEx 14, actuator
```

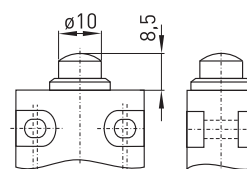
- Snap action, change-over contact available with double break
e.g. EExM 14 R 10/1S
- Slow action available with 2 NC contacts
- With gold-plated contacts available on request
- With latching: On-/Off principle

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

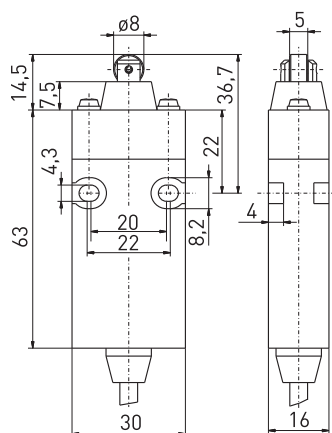
```
// Cable entry on side S
```




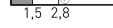
// Plunger



```
// With latching RE
```



Contact variants: switch travel/contacts

<p>1 NC/1 NO contact</p>	<p>Slow action</p> <p>EEx 14 10/1S</p>  <p>0 3 5,5 1,5 2,8 BK-GY BN-BU</p>
<p>2 NC contacts</p>	<p>EEx 14 20</p>  <p>0 3 5,5 1,5 2,8 BK-GY BN-BU</p>

Ex position switches with safety function

// Series EEx 14, actuator

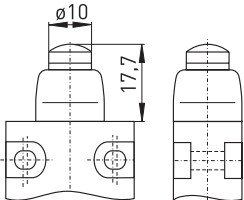
Features/Options

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

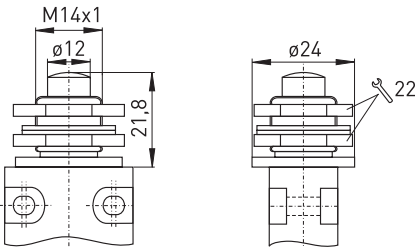
Features/Options

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

// Plunger with collar W



// Plunger for front mounting F

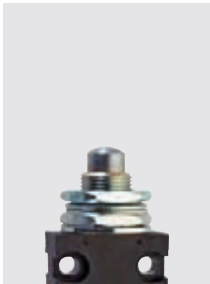


Contact variants: switch travel/contacts

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

Contact variants: switch travel/contacts

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



Features/Options

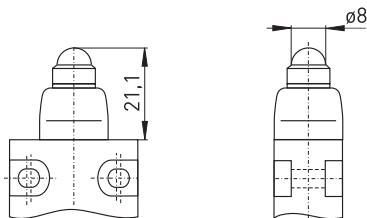
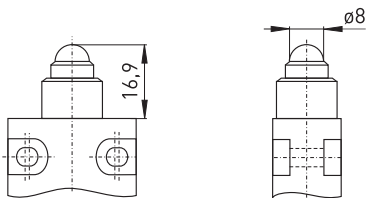
- Actuating speed 0.5 m/s with an actuating angle of 20°
- Can be actuated in line with or from side of switch axis
- Actuator head with captive stainless steel ball actuator
- Exact repeatability of switching point

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	<div>EEEx 14 KU 10/1S</div> <div><div><div>0</div><div>3</div><div>5,5</div></div><div><div>BK-GY</div><div>BN-BU</div></div><div><div>1,5</div><div>2,8</div></div></div>
2 NC contacts	<div>EEEx 14 KU 20</div> <div><div><div>0</div><div>5,5</div></div><div><div>BK-GY</div><div>BN-BU</div></div><div><div>1,5</div><div>2,8</div></div></div>

	Slow action
1 NC/1 NO contact	<div>EEEx 14 WKU 10/1S</div> <div><div><div>0</div><div>3</div><div>5,5</div></div><div><div>BK-GY</div><div>BN-BU</div></div><div><div>1,5</div><div>2,8</div></div></div>
2 NC contacts	<div>EEEx 14 WKU 20</div> <div><div><div>0</div><div>5,5</div></div><div><div>BK-GY</div><div>BN-BU</div></div><div><div>1,5</div><div>2,8</div></div></div>



Ex position switches with safety function

// Series EEx 14, actuator

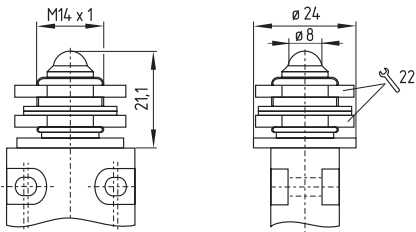
Features/Options

- 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

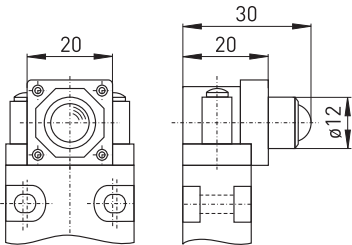
Features/Options

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

// Ball plunger for front mounting FKU



// Vertical ball plunger VKU

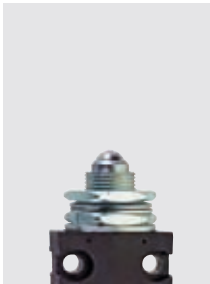


Contact variants: switch travel/contacts

Contact variants: switch travel/contacts

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

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



Features/Options

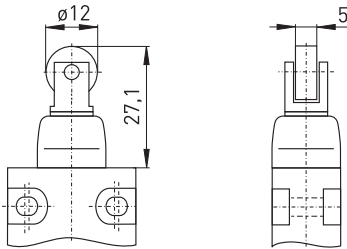
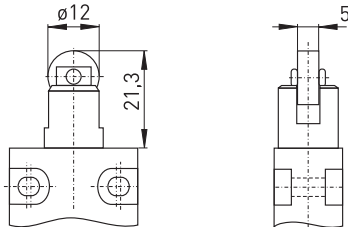
- Actuating speed 0.5 m/s with an actuating angle of 30°
- Metal roller
- Available with actuator repositioned by 90°

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	<div>EEEx 14 R 1Ö/1S</div> <div><div><div>0</div><div>3</div><div>5.5</div></div><div><div>1.5</div><div>2.8</div></div><div>BK-GY</div><div>BN-BU</div></div>
2 NC contacts	<div>EEEx 14 R 2Ö</div> <div><div><div>0</div><div>5.5</div></div><div><div>1.5</div><div>2.8</div></div><div>BK-GY</div><div>BN-BU</div></div>

	Slow action
1 NC/1 NO contact	<div>EEEx 14 WR 1Ö/1S</div> <div><div><div>0</div><div>3</div><div>5.5</div></div><div><div>1.5</div><div>2.8</div></div><div>BK-GY</div><div>BN-BU</div></div>
2 NC contacts	<div>EEEx 14 WR 2Ö</div> <div><div><div>0</div><div>5.5</div></div><div><div>1.5</div><div>2.8</div></div><div>BK-GY</div><div>BN-BU</div></div>



Ex position switches with safety function

// Series EEx 14, actuator

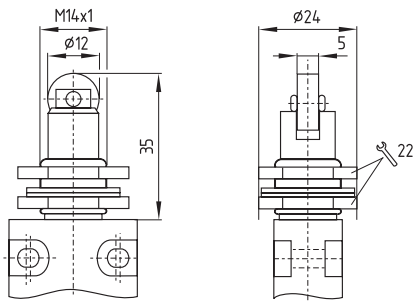
Features/Options

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

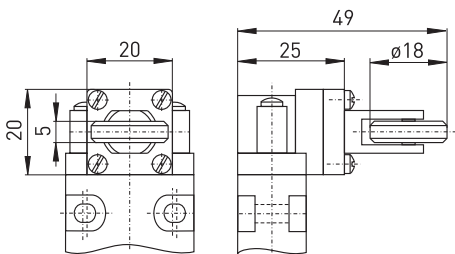
Features/Options

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

// Roller plunger for front mounting FR



// Vertical roller plunger VR



Contact variants: switch travel/contacts

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

Contact variants: switch travel/contacts

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



Features/Options

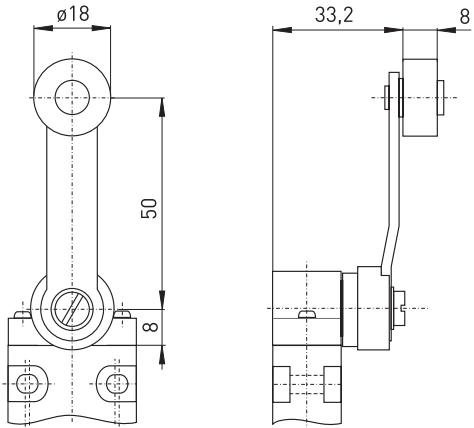
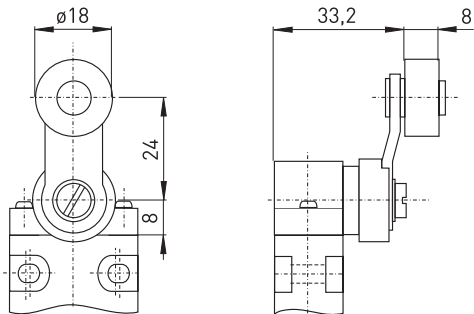
- Actuating speed 0.5 m/s with an actuating angle of 45°
- Wear-resistant thermoplastic roller
- Lever can be repositioned in 10° steps clockwise or counter-clockwise
- Actuator can be repositioned by 180°
- With metal roller available on request

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	<div>EEEx 14 D 10/1S</div> <div><div><div>70°</div><div>22°</div><div>0°</div><div>22°</div><div>70°</div></div><div><div></div><div></div><div></div><div></div><div></div></div><div>BK-GY</div><div>BN-BU</div></div>
2 NC contacts	<div>EEEx 14 D 20</div> <div><div><div>70°</div><div>0°</div><div>70°</div></div><div><div></div><div></div><div></div></div><div>BK-GY</div><div>BN-BU</div></div>


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



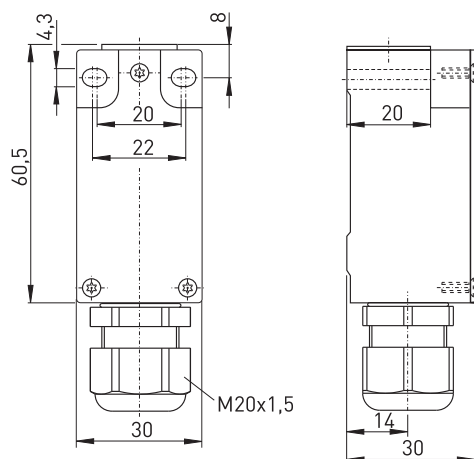
Ex position switches with safety function

// 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

Standards	IEC/EN 60947-5-1; EN 1088; EN 50014; EN 50018; EN 50019; EN 50281-1-1
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 according to EN 60529
Contact material	silver
Switching system	slow action, positive break NC contact \ominus
Switching elements	change-over contact with double break Zb or 2 NC contacts, galvanically separated contact bridges
Termination	M3 screw clamps
Cable section	max. 1.5 mm ² (incl. conductor ferrules)
Cable length	–
U _{imp}	4 kV
U _i	250 V
I _{the}	6 A
I _e /U _e	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	3600/h
Repeat accuracy	± 0.1 mm
Contact gap	max. 2 x 3.5 mm
Ex certification	⊕ II 2G EEx de IIC T6, II 2D IP67 T80°C
Approvals	DMT 01 ATEX E 118

Ordering details

EEx 95 WH 10/1S-3D

Equipment Categ. 3D, dust
Ex zone 22
Contact type 10/1S, (2Ö, UE)
Actuator H (R, D, DS, etc. ...)
Collar
Series
Ex certified component

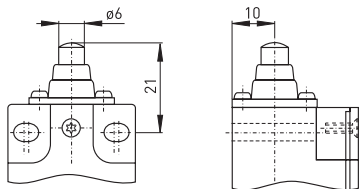
Ex position switches with safety function

// Series EEx 95, actuator

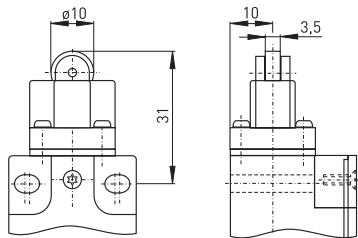
- Features/Options
- Actuator type B to DIN EN 50 047
 - Actuator with collar

- 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

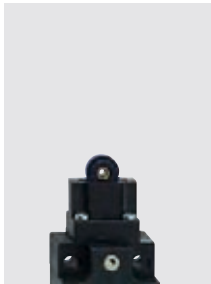


Contact variants: switch travel/contacts

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

Contact variants: switch travel/contacts

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



Ex position switches with safety function

// Series EEx 95, actuator

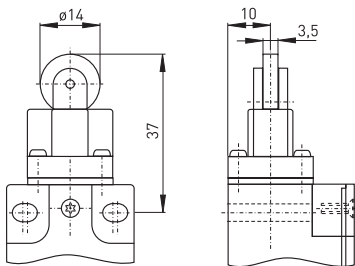
Features/Options

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

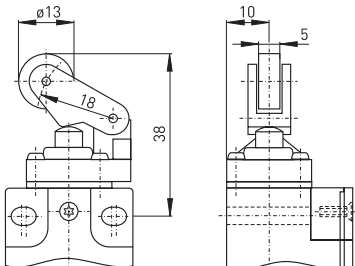
Features/Options

- 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

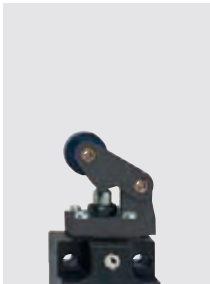


Contact variants: switch travel/contacts

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

Contact variants: switch travel/contacts

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



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.

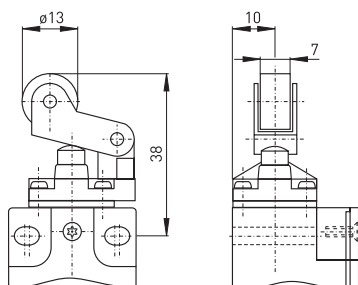
Features/Options

- 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.

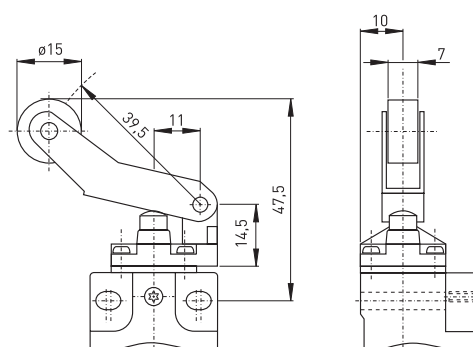
// Metal roller lever WHM



Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	EEx 95 WHM 10/1S
1 NC/1 NO contact with overlapping	EEx 95 WHM UE
2 NC contacts	EEx 95 WHM 20

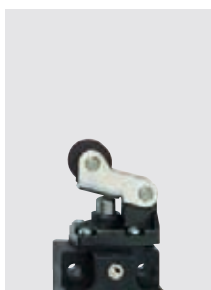
// Long metal roller lever WHLM



Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	EEx 95 WHLM 10/1S
1 NC/1 NO contact with overlapping	EEx 95 WHLM UE
2 NC contacts	EEx 95 WHLM 20

77



Ex position switches with safety function

// Series EEx 95, actuator

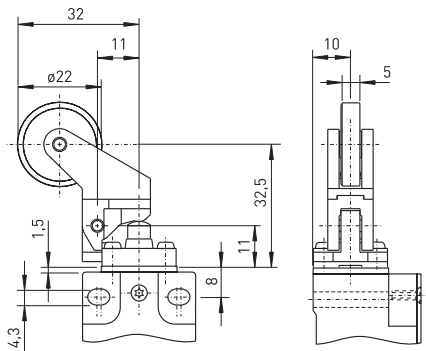
Features/Options

- 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

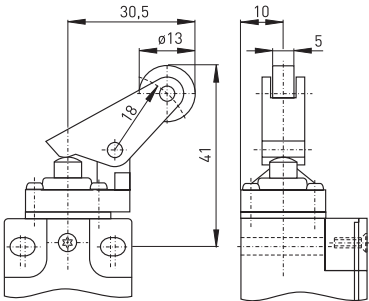
Features/Options

- 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



Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	EEx 95 4K 10/1S
1 NC/1 NO contact with overlapping	EEx 95 4K UE
2 NC contacts	EEx 95 4K 2Ö

Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	EEx 95 WPH 10/1S
1 NC/1 NO contact with overlapping	EEx 95 WPH UE
2 NC contacts	EEx 95 WPH 2Ö



Features/Options

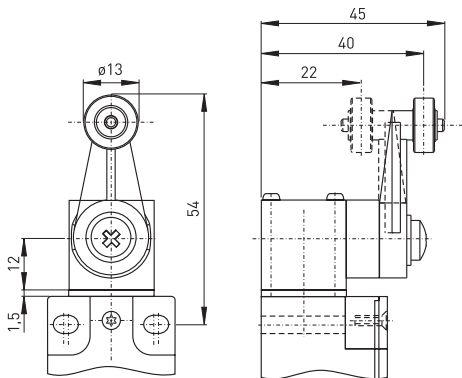
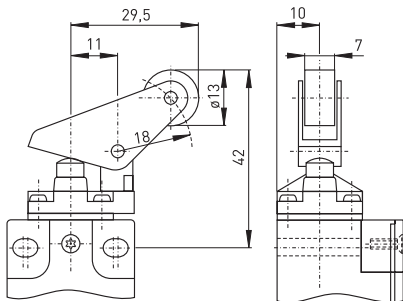
- Actuating speed 0.5 m/s with an actuating angle of $\alpha = 30^\circ$
- Actuation parallel to switch from below
- Actuator with collar
- Wear-resistant thermoplastic roller
- Actuator heads can be repositioned in 4 x 90° steps
- Metal roller available on request

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	EEx 95 WPHM 10/1S
1 NC/1 NO contact with overlapping	EEx 95 WPHM UE
2 NC contacts	EEx 95 WPHM 20

	Slow action
1 NC/1 NO contact	EEx 95 D 10/1S
1 NC/1 NO contact with overlapping	EEx 95 D UE
2 NC contacts	EEx 95 D 20



Ex position switches with safety function

// Series EEx T 356

Features/Options

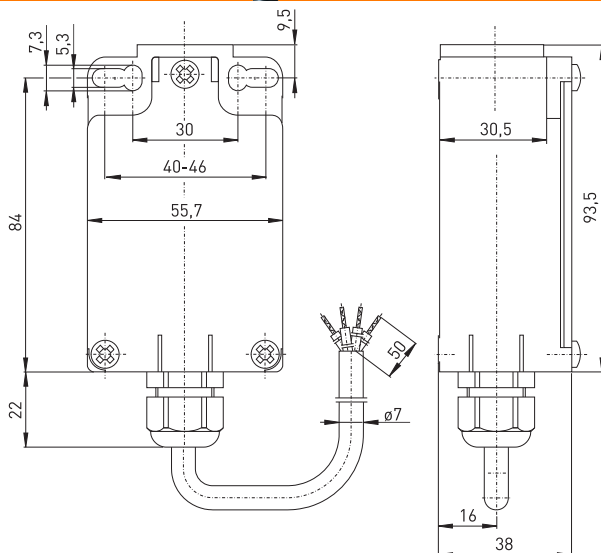
- Ex zone 1 and 2, as well as 21 and 22
- Thermoplastic enclosure with metal cover
- Mounting dimensions and switching points to EN 50041
- Pre-wired cable available in various lengths
- Actuator heads can be repositioned in 4 x 90° steps
- Angle of offset roller lever can be adjusted in 10° steps
-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

// EEX T 356



Technical data

Standards	IEC/EN 60947-5-1; EN 1088; EN 50014; EN 50018; EN 50019; EN 50281-1-1
Enclosure	glass-fibre reinforced, shock-proof thermoplastic, self-extinguishing
Cover	steel enamelled
Switch insert	EEx 13
Protection class	IP 65 according to IEC/EN 60529
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	cabie H05VV-F
Cable section	4 x 0.75 mm ²
Cable length	2 oder 5 m
U _{imp}	4 kV
U _i	250 V
I _{the}	6 A
I _e /U _e	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 PTB 03 ATEX 1068 X*
Approvals	*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

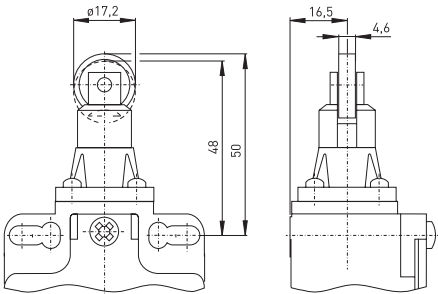
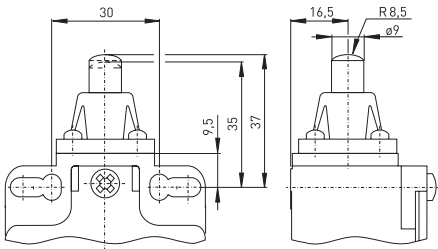
- Actuator type B to DIN EN 50 041
- Actuating speed 0.5 m/s with an actuating angle of $\alpha = 0^\circ$

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

// Roller plunger R



Contact variants: switch travel/contacts

Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	EEx T 356 S 10/1S
	<div> <div>03.56</div> <div>23.3</div> <div>BK-GY</div> <div>BN-BU</div> </div>

	Slow action
1 NC/1 NO contact	EEx T 356 R 10/1S
	<div> <div>03.56</div> <div>23.3</div> <div>BK-GY</div> <div>BN-BU</div> </div>



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

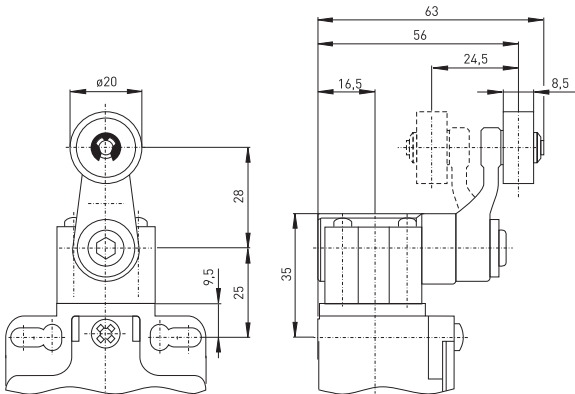
Features/Options

- 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

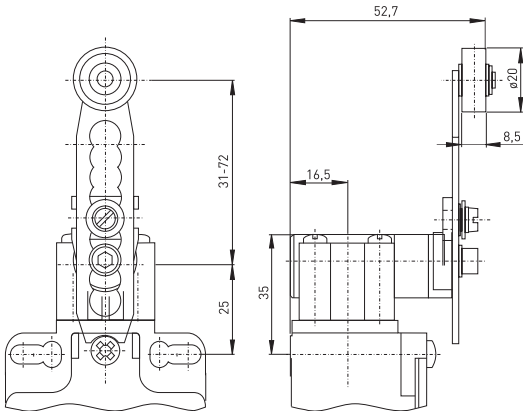
Note

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

// Rocking roller lever 4VH



// Adjustable rocking lever 4V7H-2138

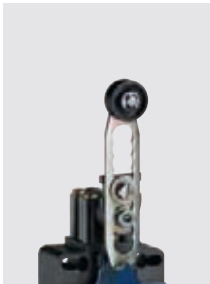


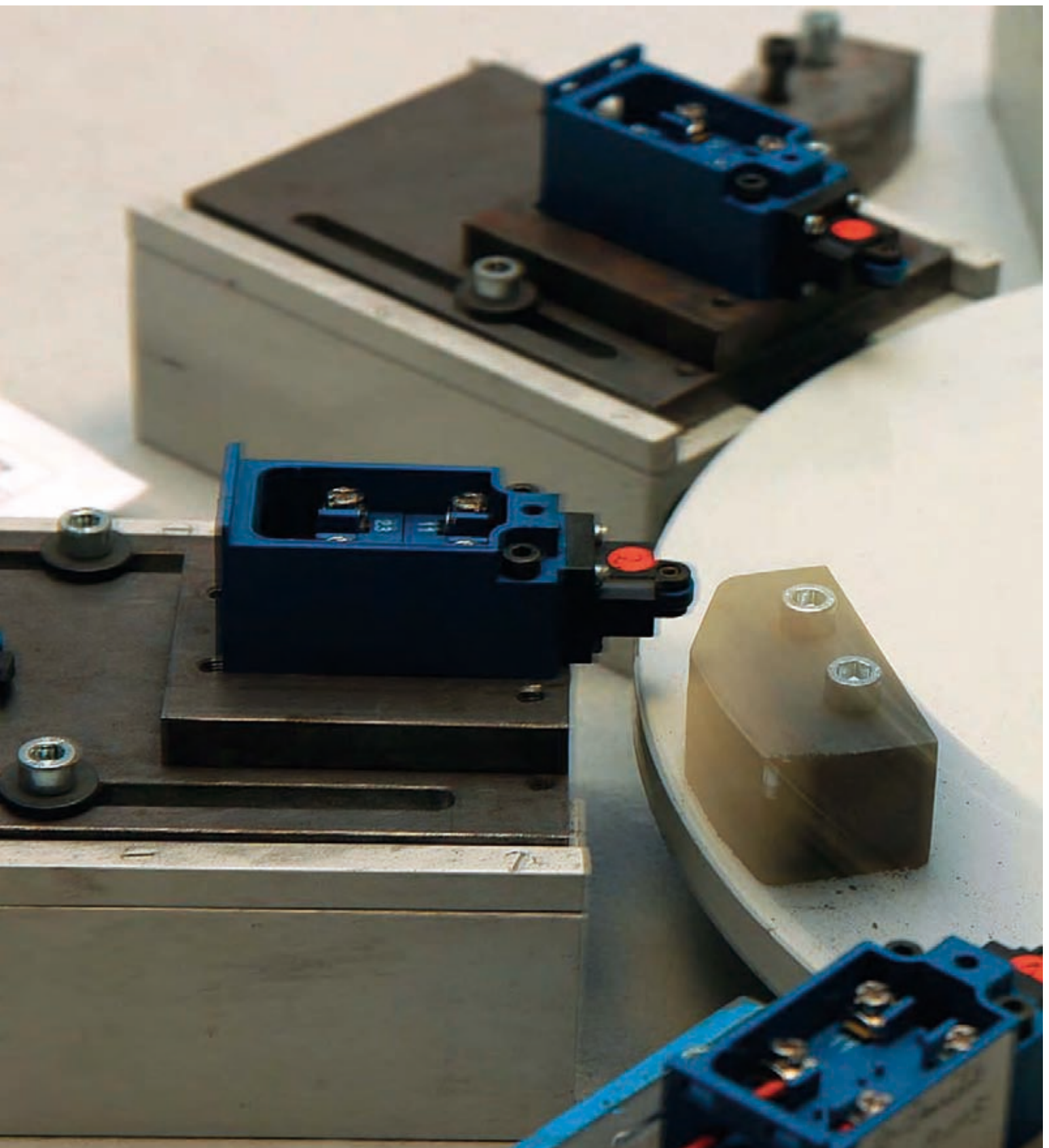
Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	EEx T 356 4VH 10/1S <div> 80°42° 0° 42°80° BK-GY BN-BU 39° 24° 24° 39° </div>

Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	EEx T 356 4V7H 10/1S-2138 <div> 80°42° 0° 42°80° BK-GY BN-BU 39° 24° 24° 39° </div>





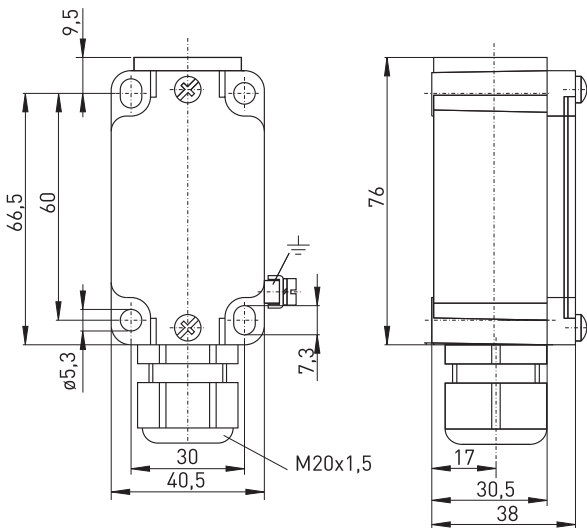
Ex position switches with safety function

// Series 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

// EEX 335



Technical data

Standards	IEC/EN 60947-5-1; EN 1088; EN 50014; EN 50018; EN 50019; EN 50281-1-1
Design	DIN EN 50 041
Enclosure	zinc die casting, enamelled
Switch insert	Ex 95
Protection class	IP 65 according to EN 60529
Contact material	silver
Switching system	slow action, positive break NC contact \ominus
Switching elements	change-over contact with double break Zb or 2 NC contacts, galvanically separated contact bridges
Termination	M3 screw clamps
Cable section	max. 1.5 mm ² (incl. conductor ferrules)
Cable length	-
U _{imp}	4 kV
U _i	250 V
I _{the}	6 A
I _e /U _e	6 A/400 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 ... +60 °C
Mechanical life	> 1 million operations
Switching frequency	1800/h
Repeat accuracy	± 0.1 mm
Contact gap	max. 2 x 3.5 mm
Ex certification	⊕ II 2G EEx de IIC T6, II 2D IP65 T80°C
Approvals	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 with safety function

// Series EEx 335, actuator

Features/Options

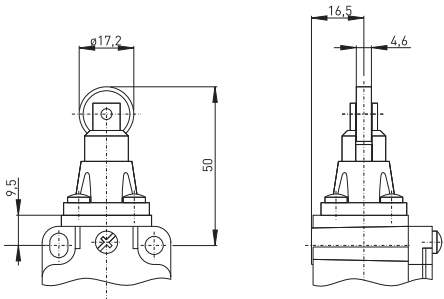
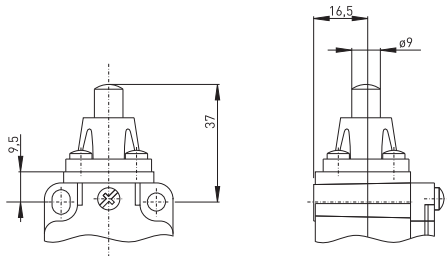
- Actuator type B to DIN EN 50 041
- Actuating speed 0.5 m/s with an actuating angle of $\alpha = 0^\circ$

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

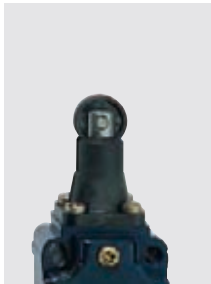


Contact variants: switch travel/contacts

Contact variants: switch travel/contacts

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

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



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

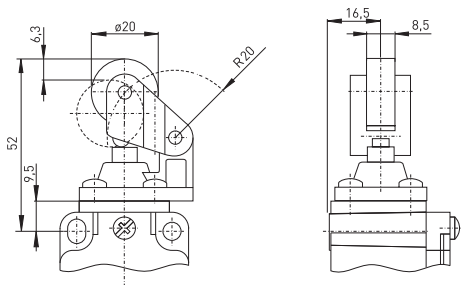
Note

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

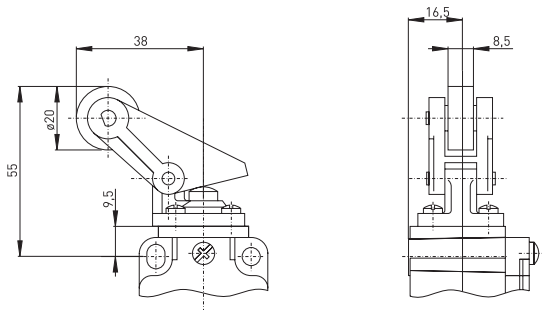
Features/Options

- 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



Contact variants: switch travel/contacts

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

Contact variants: switch travel/contacts

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



Features/Options

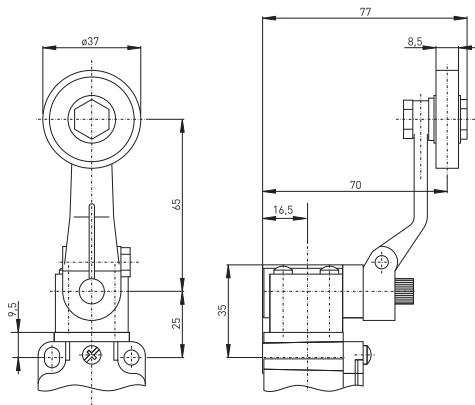
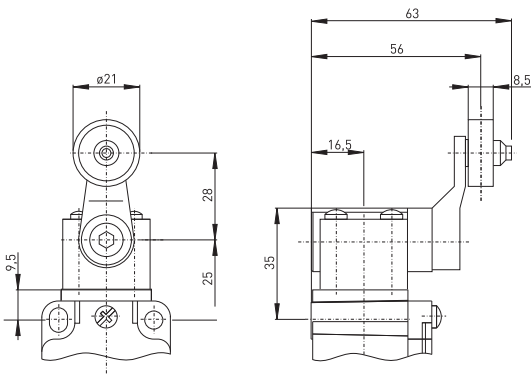
- Actuator type A to DIN EN 50 041
- Actuating speed 2.5 m/s with an actuating angle of $\alpha = 30^\circ$
- Wear-resistant thermoplastic roller
- Actuator heads can be repositioned in 4 x 90° steps

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

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

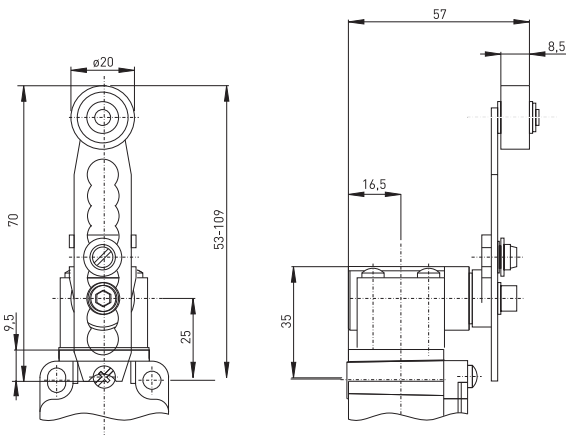
Note

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

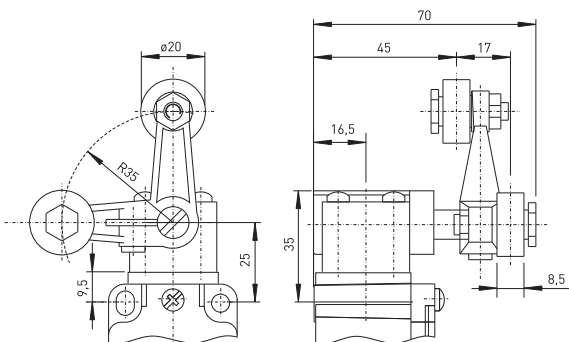
Features/Options

- 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



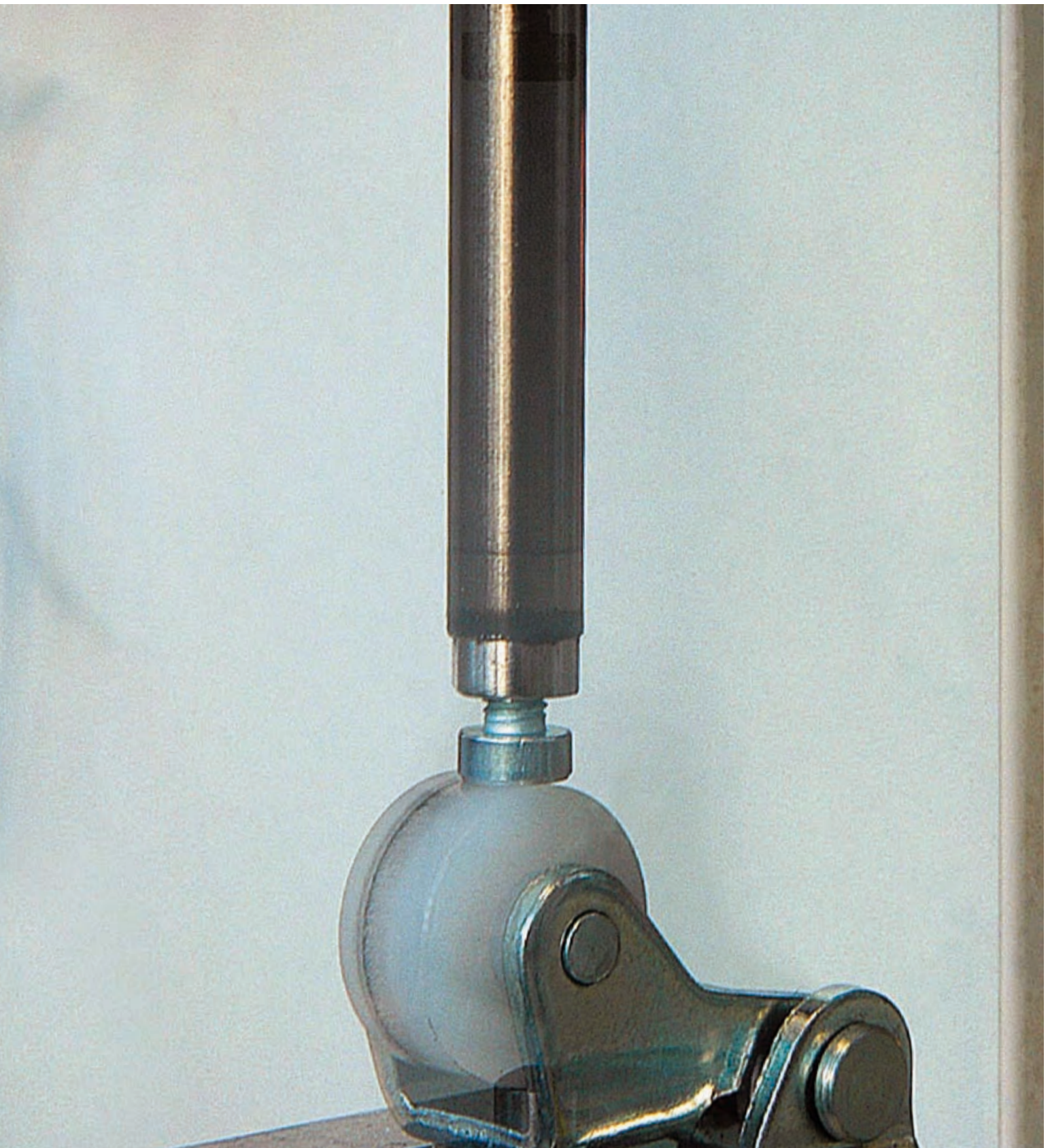
Contact variants: switch travel/contacts

	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

Contact variants: switch travel/contacts

	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





Ex position switches with safety function

// Series EEx 355

Features/Options

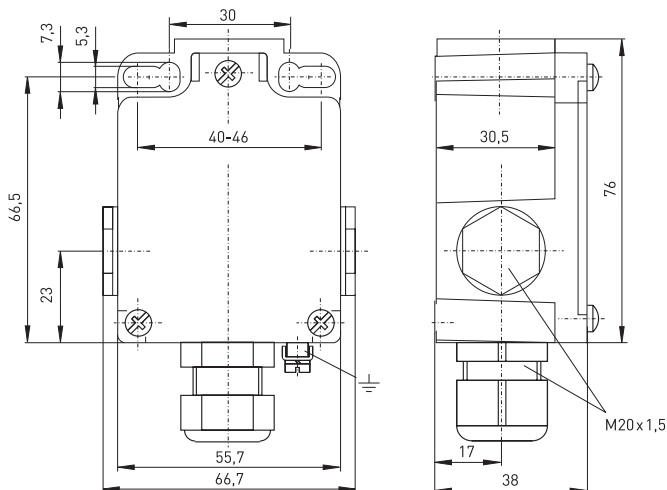
- Ex zone 1 and 2, as well as 21 and 22
- Available with contact overlapping
- 3 cable entries
- Actuating elements can be repositioned by $4 \times 90^\circ$
- Rocking lever can be positioned in 10° steps
- Special version only for equipment category 3D, available for dust Ex zone 22
- With gold-plated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

// EEX 355



Technical data

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

// Series EEx 355, actuator

Features/Options

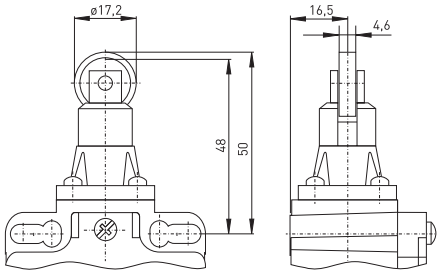
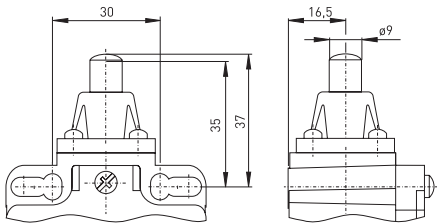
- Actuator type B to DIN EN 50 041
- Actuating speed 0.5 m/s with an actuating angle of $\alpha = 0^\circ$

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

// Roller plunger R



Contact variants: switch travel/contacts

Contact variants: switch travel/contacts

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

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



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

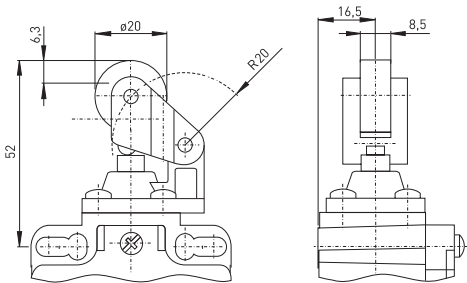
Note

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

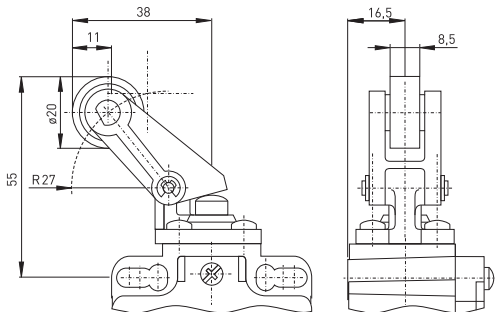
Features/Options

- 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



Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	EEx 355 1K 10/1S
1 NC/1 NO contact with overlapping	EEx 355 1K UE
2 NC contacts	EEx 355 1K 2Ö

Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	EEx 355 3K 10/1S
1 NC/1 NO contact with overlapping	EEx 355 3K UE
2 NC contacts	EEx 355 3K 2Ö



Features/Options

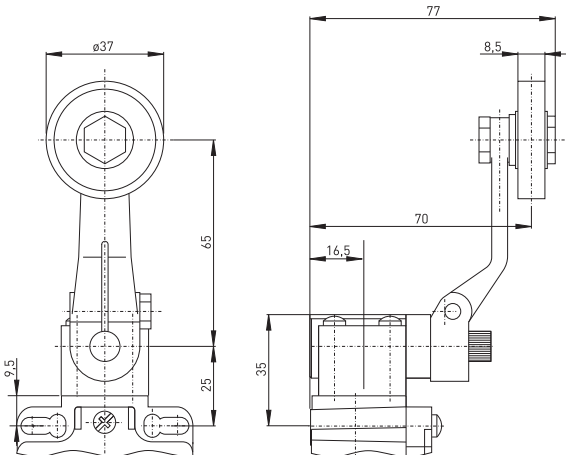
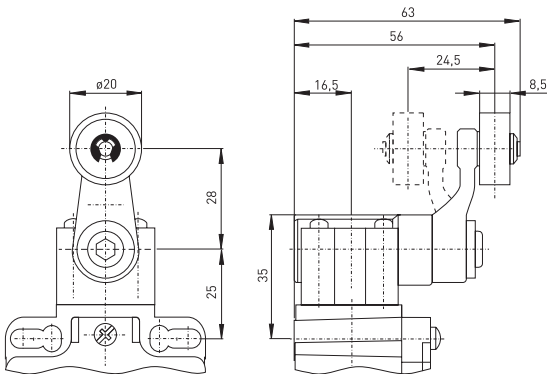
- Actuator type A to DIN EN 50 041
- Actuating speed 2.5 m/s with an actuating angle of $\alpha = 30^\circ$
- Wear-resistant thermoplastic roller
- Actuator heads can be repositioned in 4 x 90° steps

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

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



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

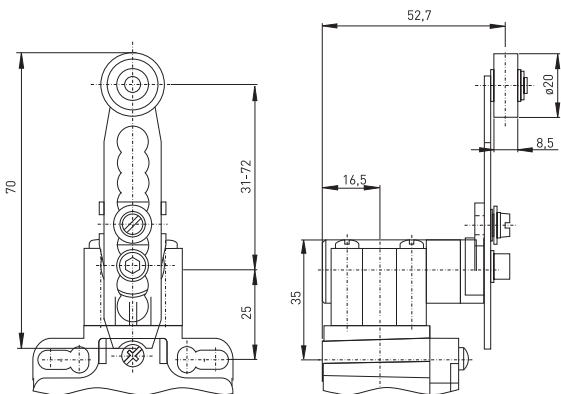
Note

Positive break angle \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

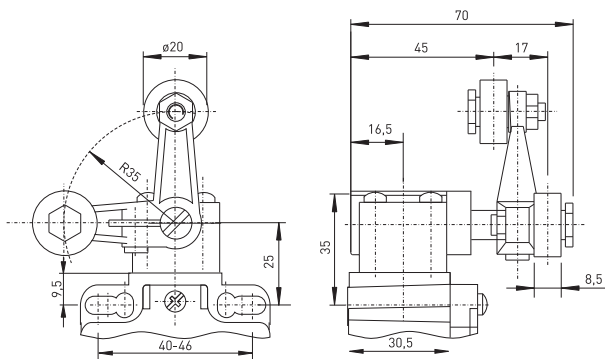
// Adjustable rocking lever 4V7H-2138



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

// Forked lever latching 3V4D



Contact variants: switch travel/contacts

	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





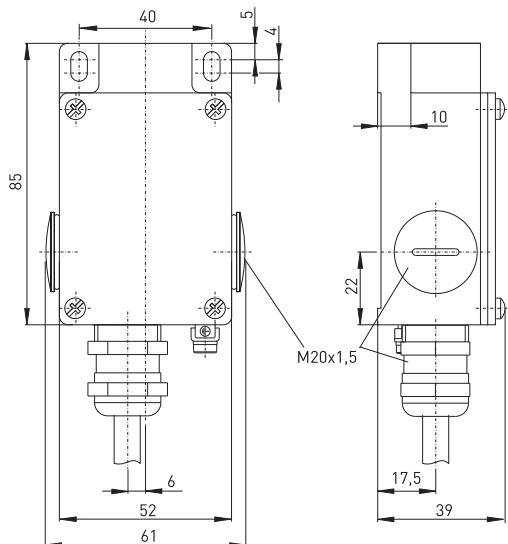
Ex position switches with safety function

// 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

Standards	IEC/EN 60947-5-1; EN 1088; EN 50014; EN 50018; EN 50019; EN 50281-1-1
Design	-
Enclosure	aluminium die casting, enamelled
Cover	steel, enamelled
Switch insert	EEx 14
Protection class	IP 65 according to IEC/EN 60529
Contact material	silver
Switching system	slow action, positive break NC contact \ominus
Switching elements	change-over contact with double break Zb or 2 NC contacts, galvanically separated contact bridges
Termination	cabl H05VV-F
Cable section	4 x 0.75 mm ²
Cable length	3 m
U _{imp}	4 kV
U _i	250 V
I _{the}	6 A
I _e /U _e	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 PTB 03 ATEX 1070 X*
Approvals	

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

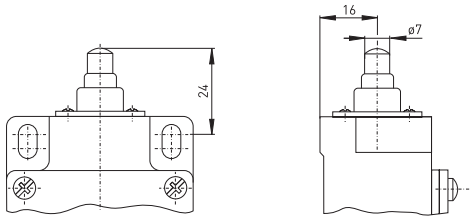
Features/Options

- 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 x 90°
- 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.

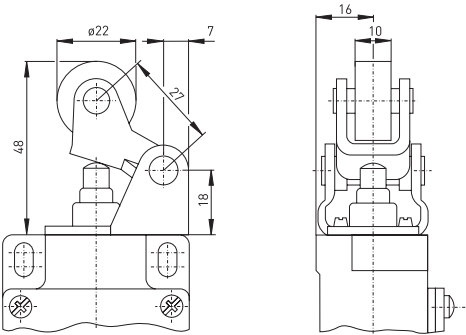
// Plunger W



Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	EEx 61 W 1Ö/1S

// Roller lever with collar WH



Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	EEx 61 WH 1Ö/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

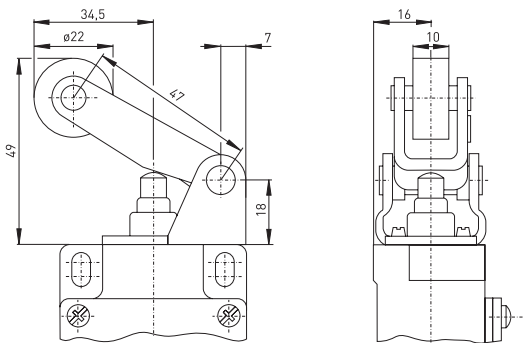
Note

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

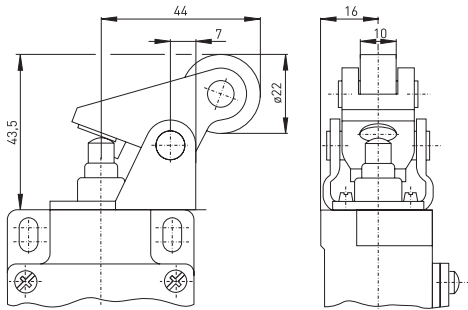
Features/Options

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

// Long roller lever with collar WHL



// Parallel roller lever with collar WPH



Contact variants: switch travel/contacts

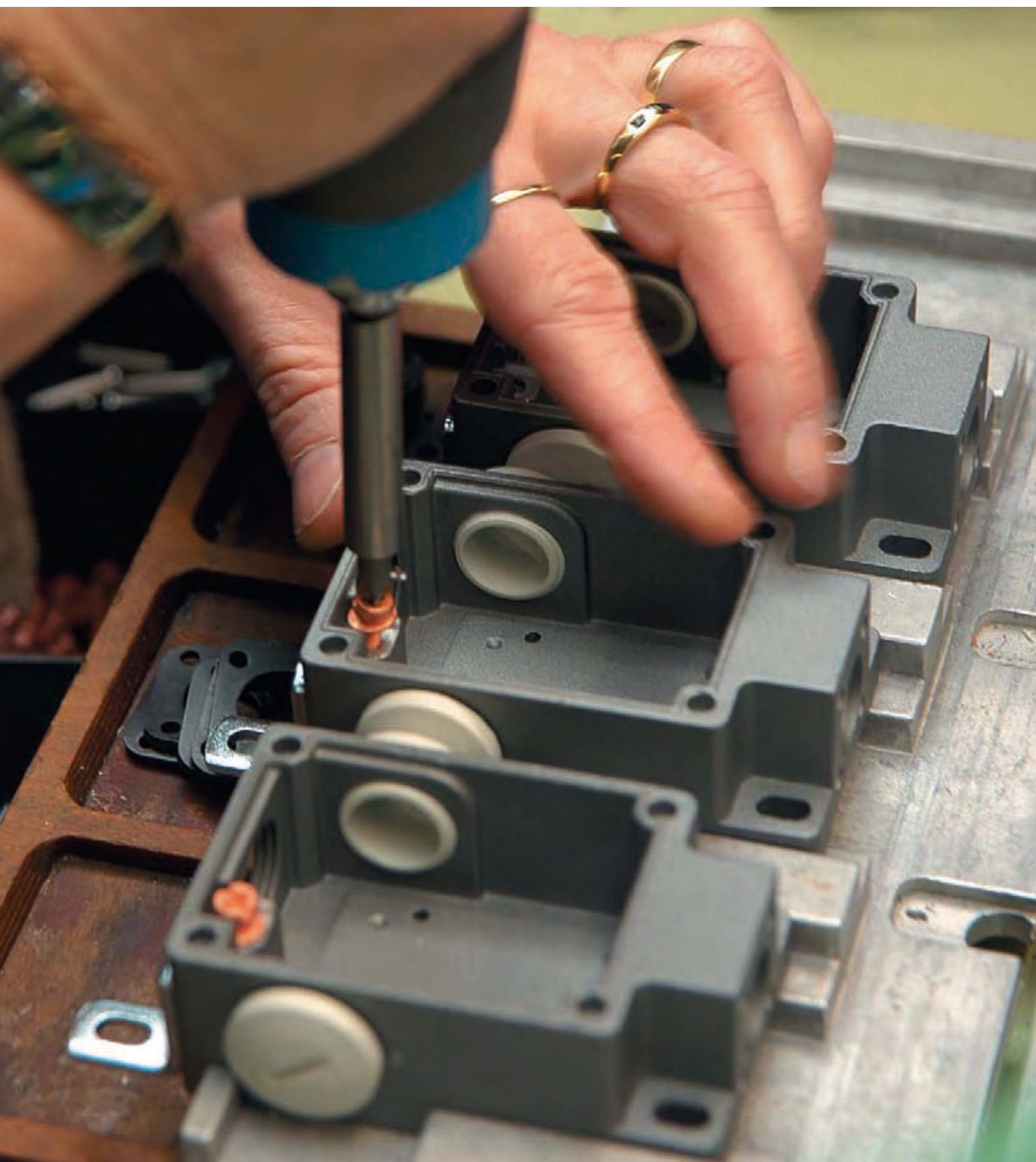
	Slow action
1 NC/1 NO contact	EEx 61 WHL 10/1S
	<div> <div>0711.5</div> <div>3.5BKNB</div> <div>GYBU</div> </div>

Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	EEx 61 WPH 10/1S
	<div> <div>035</div> <div>1.5BKNB</div> <div>GYBU</div> </div>



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

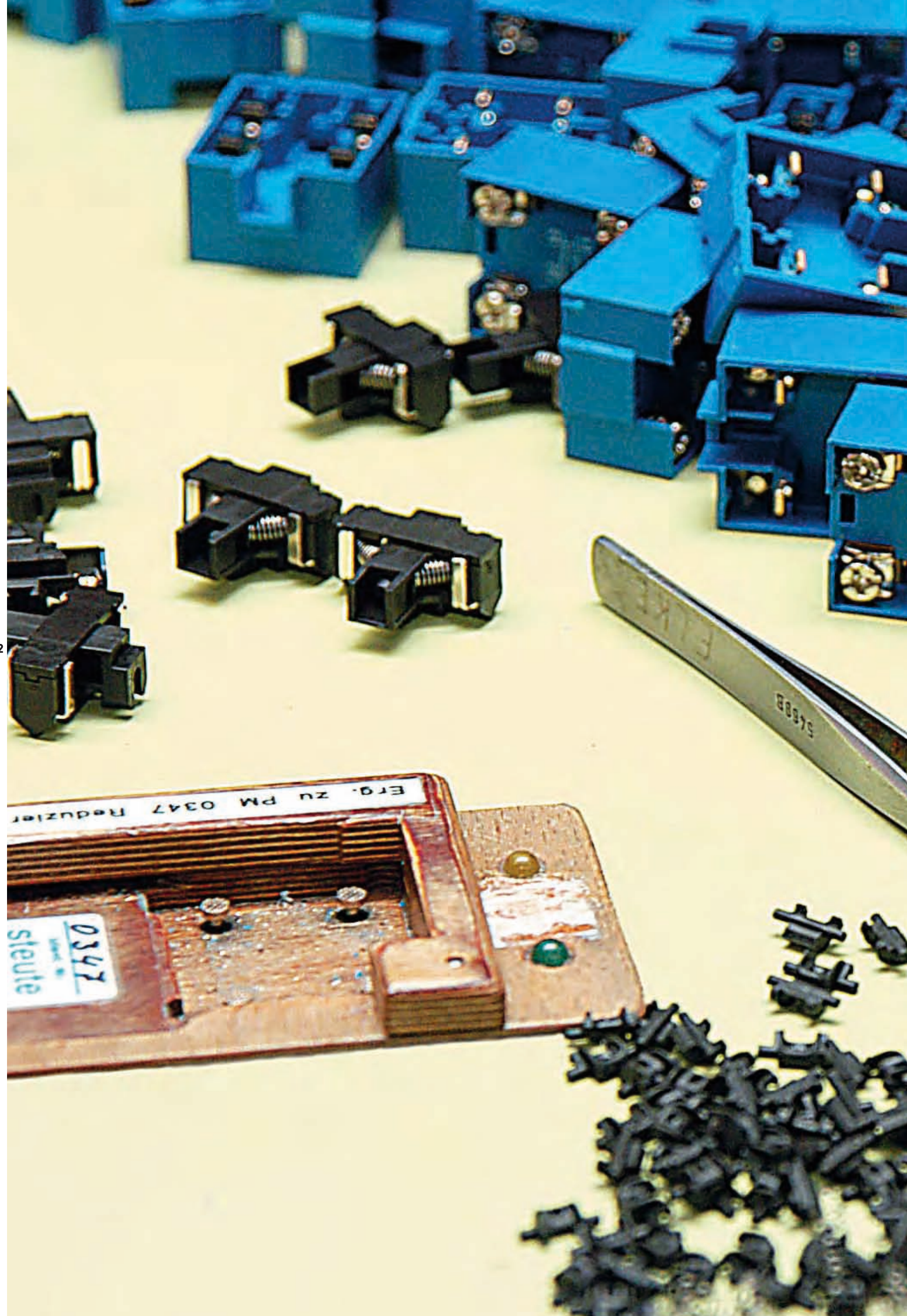
Metal enclosure

// Series EEx 335 V.S

from page 108

// Series EEx 355 V.S

from page 109



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

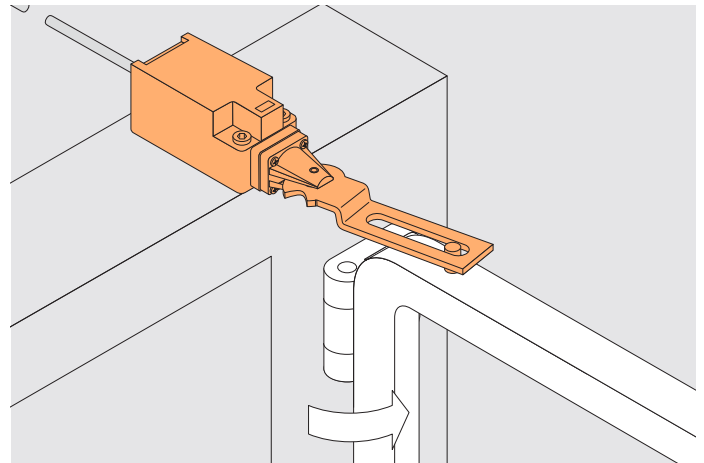
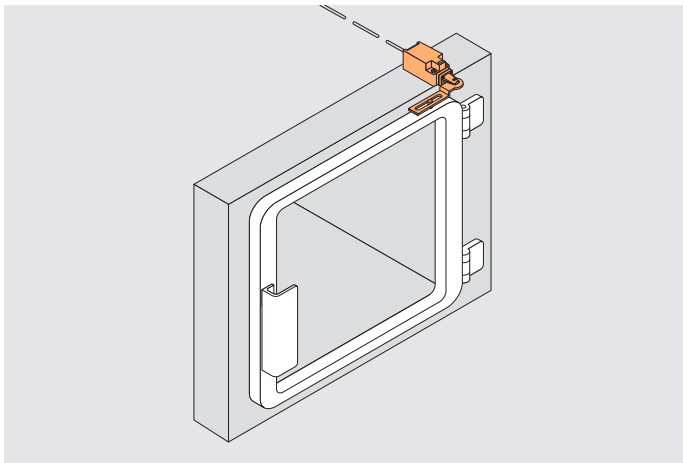
A general advantage of the Ex safety switches shown here is the integral cam within the safety switch. The requirements of EN 1088, such as positive linkage between cam and actuator, as well as protection against tampering, are thus fulfilled.

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.

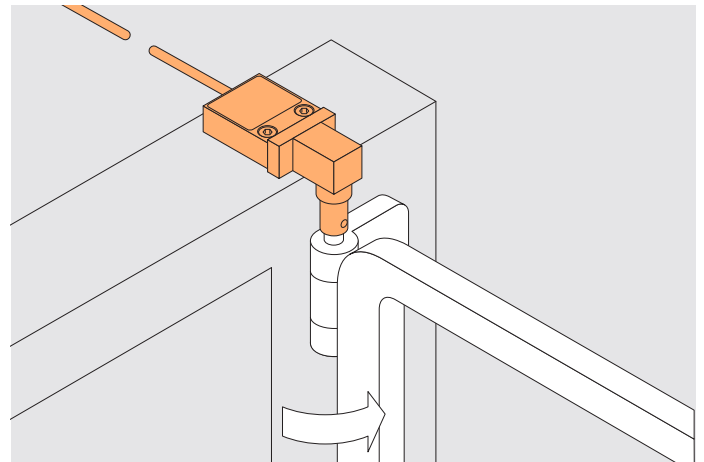
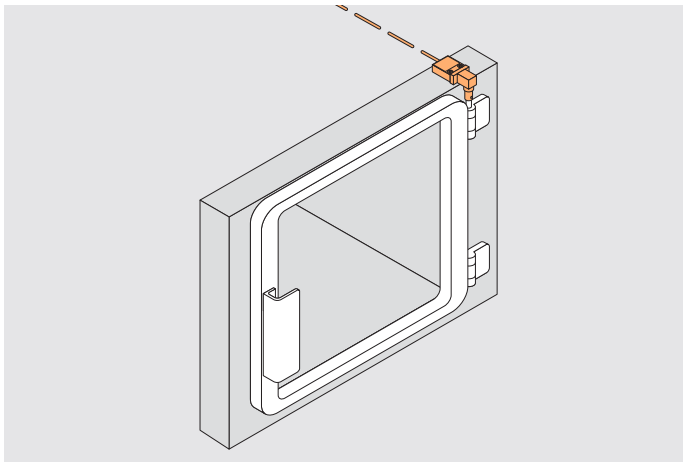
All Ex safety switches for hinged guards shown in this chapter bear the CE mark according to the Machinery Directive 98/37/EC and according to ATEX 94/9/EC. The Ex safety switches for hinged guards per equipment category 3D bear the CE mark without the number of the notified body and have received a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

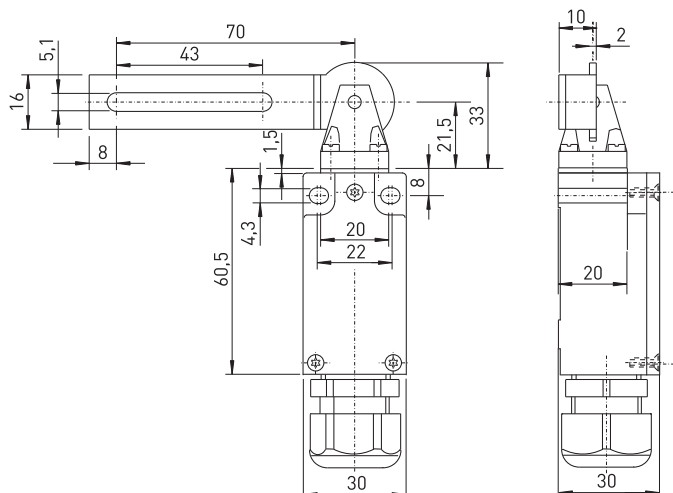
- Ex zone 1 and 2, as well as 21 and 22
- Double insulated 
- Slow action , change-over contact with double break
- Cable entry M20 x 1.5
- Wiring compartment
- With gold-plated contacts available on request
- Mounting details to EN 50 047
- Actuator head can be repositioned in factory in 4 x 90° steps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

// EEX 95 T.C

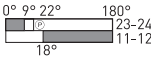
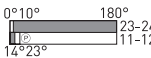
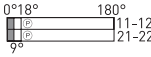


Technical data

Standards	IEC/EN 60947-5-1; EN 1088; BG-GS-ET-15; EN 50 014; EN 50 018; EN 50 019; EN 50281-1-1
Design	mounting details to DIN EN 50 047
Enclosure	glass-fibre reinforced, shock-proof thermoplastic, self-extinguishing UL 94-V0
Switch insert	Ex 95
Protection class	IP 67 according to IEC/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	M3 screw clamps
Cable section	max. 1.5 mm ² (incl. conductor ferrules)
Cable length	-
Cable entry	M20 x 1.5
U _{imp}	4 kV
U _i	250 V
I _{the}	6 A
I _e /U _e	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 ... +60 °C
Mechanical life	> 1 million operations
Ex certification	 II 2G EEx de IIC T6, II 2D IP67 T80°C
Approvals	DMT 01 ATEX E 118



Contact variants: switch travel/contacts

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

Ordering details

EEx 95 T5C 10/1S-3D
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

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

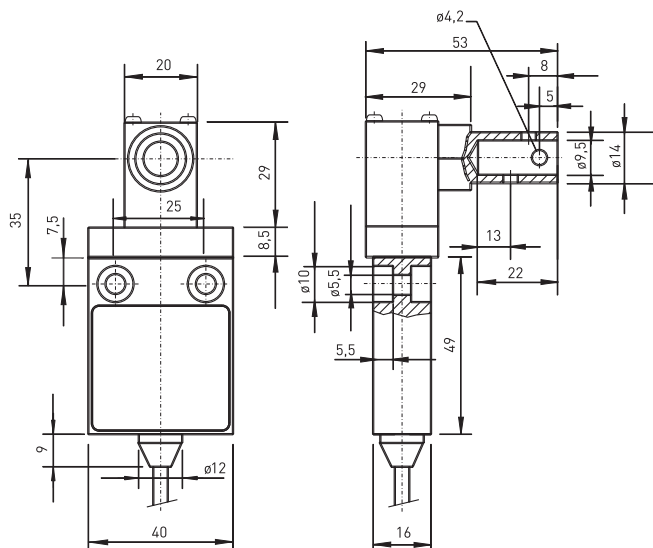
// EEX 13 SB




Technical data

Standards	IEC/EN 60947-5-1; EN 1088; BG-GS-ET-15; EN 50 014; EN 50 018; EN 50 019; EN 50281-1-1
Enclosure	glass-fibre reinforced, shock-proof thermoplastic, self-extinguishing UL 94-V0
Switch insert	-
Protection class	IP 65 according to IEC/EN 60529
Contact material	silver
Switching system	slow action, positive break NC contact \ominus
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 0.75 mm ²
Cable length	1 m
Cable entry	-
U _{imp}	4 kV
U _i	250 V
I _{the}	6 A
I _e /U _e	6 A/250 VAC; 4 A/24 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
Ex certification	Ⓢ II 2G EEx d IIC T6, II 2D IP65 T80°C
Approvals	PTB 03 ATEX 1068 X

105



Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	EEx 13 SB 1Ö/1S 180° 15° 0° 15° 180°  BK-GY BN-BU



Ordering details

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

Ex safety switches for hinged guards

// Series EEx 95 SB



Features/Options

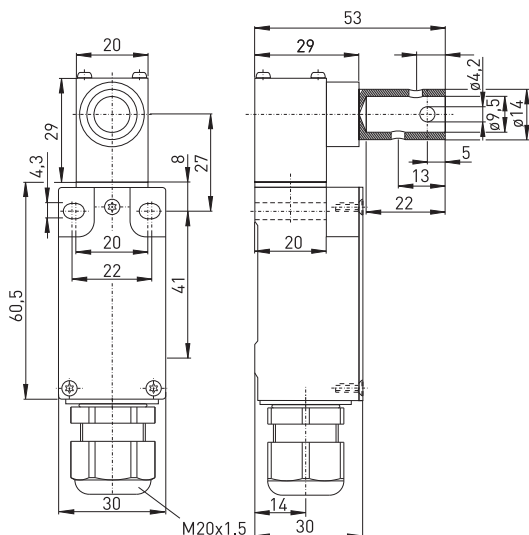
- Ex zone 1 and 2, as well as 21 and 22
- Double insulated 
- Slow action , change-over contact with double break
- With gold-plated contacts available on request
- Mounting details to EN 50 047
- Actuator head can be repositioned in factory in 4 x 90° steps
- Shaft bore \varnothing 10 mm available
-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

// EEX 95 SB

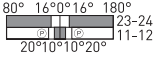
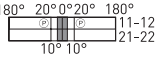
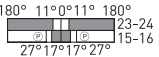


Technical data

Standards	IEC/EN 60947-5-1; EN 1088; BG-GS-ET-15; EN 50 014; EN 50 018; EN 50 019; EN 50281-1-1
Design	mounting details to DIN EN 50 047
Enclosure	glass-fibre reinforced, shock-proof thermoplastic, self-extinguishing UL 94-V0
Switch insert	Ex 95
Protection class	IP 67 according to IEC/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	M3 screw clamps
Cable section	max. 1.5 mm ² (incl. conductor ferrules)
Cable length	-
Cable entry	M20 x 1.5
U _{imp}	4 kV
U _i	250 V
I _{the}	6 A
I _e /U _e	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 ... +60 °C
Mechanical life	> 1 million operations
Ex certification	 II 2G EEx de IIC T6, II 2D IP67 T80°C
Approvals	DMT 01 ATEX E 118



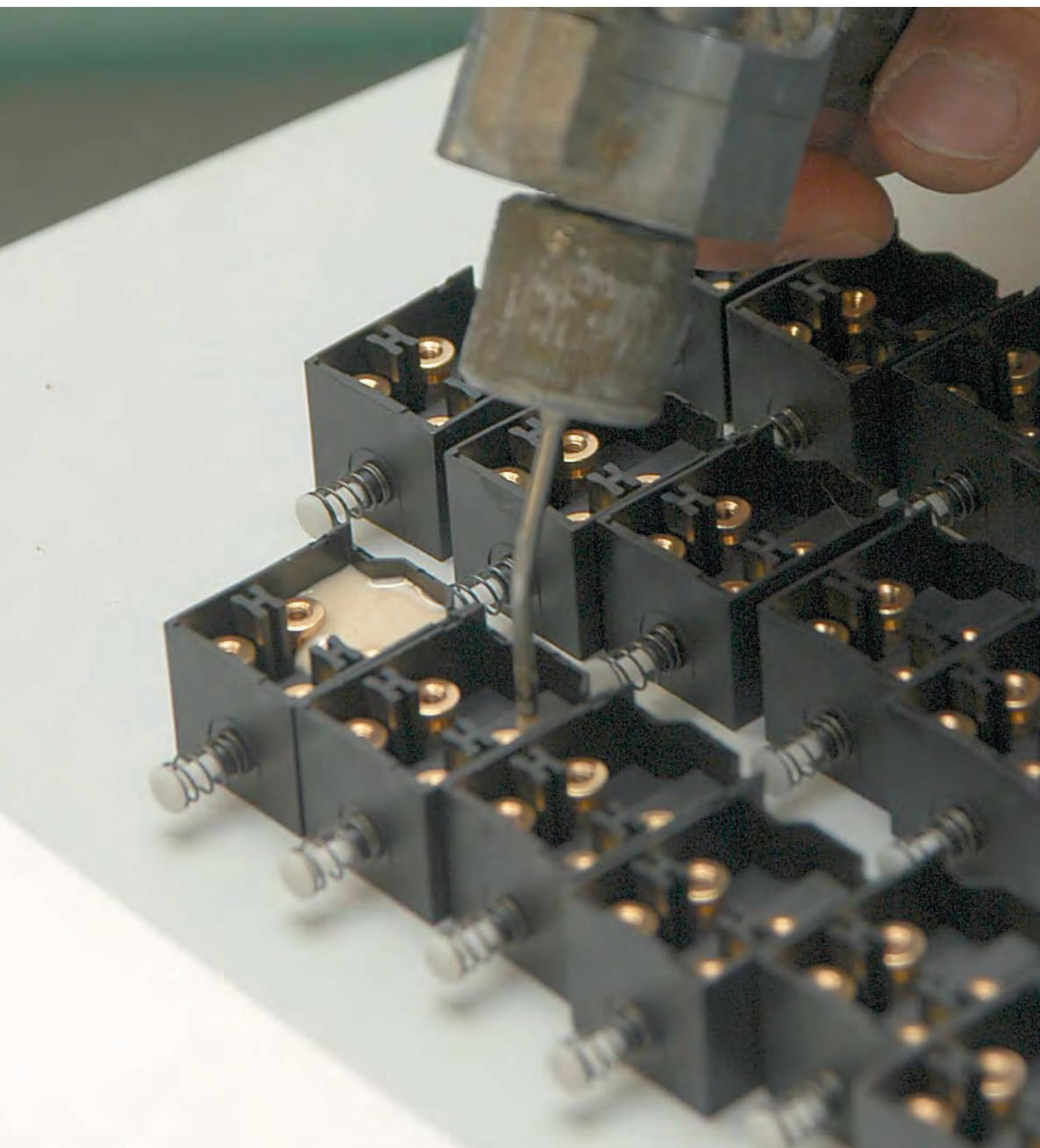
Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	EEx 95 SB 1Ö/1S 
2 NC contacts	EEx 95 SB 2Ö 
1 NC/1 NO contact with overlapping	EEx 95 SB UE 

Ordering details

EEx 95 SB 1Ö/1S-3D
Equipment Categ. 3D, dust Ex zone 22
Contact type 1Ö/1S, (2Ö, 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

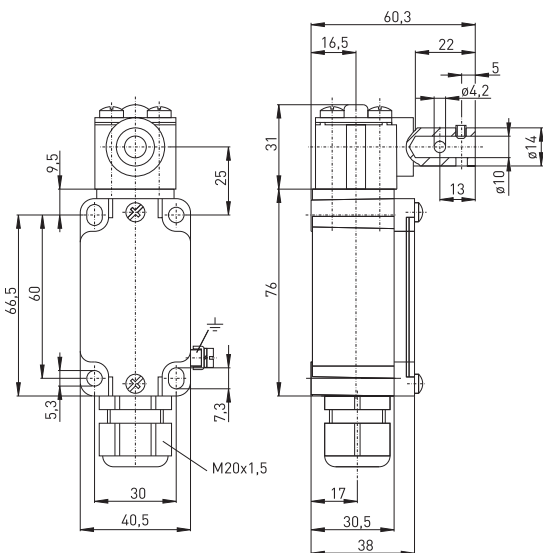
- Ex zone 1 and 2, as well as 21 and 22
- Wiring compartment
- With gold-plated contacts available on request
- Mounting details to DIN EN 50 041
- Actuator head can be repositioned in 4 x 90° steps
- Actuating shaft can be turned 360°
- Shaft bore \varnothing 10 mm
- Special version only for equipment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

// EEX 335 V.S



Technical data

Standards	IEC/EN 60947-5-1; EN 1088; BG-GS-ET-15; EN 50 014; EN 50 018; EN 50 019; EN 50281-1-1
Design	mounting details to DIN EN 50 041
Enclosure	zinc die casting, enamelled
Switch insert	Ex 95
Protection class	IP 65 according to IEC/EN 60529
Contact material	silver
Switching system	slow action, positive break NC contact \ominus
Switching elements	change-over contact with double break Zb or 2 NC contacts, galvanically separated contact bridges
Termination	M3 screw clamps
Cable section	max. 1.5 mm ² (incl. conductor ferrules)
Cable length	–
Cable entry	M20 x 1.5
U _{imp}	4 kV
U _i	250 V
I _{the}	6 A
I _e /U _e	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 ... +60 °C
Mechanical life	> 1 million operations
Ex certification	Ⓔ II 2G EEx de IIC T6, II 2D IP65 T80°C
Approvals	DMT 01 ATEX E 178



Contact variants: switch travel/contacts

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

Ordering details

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

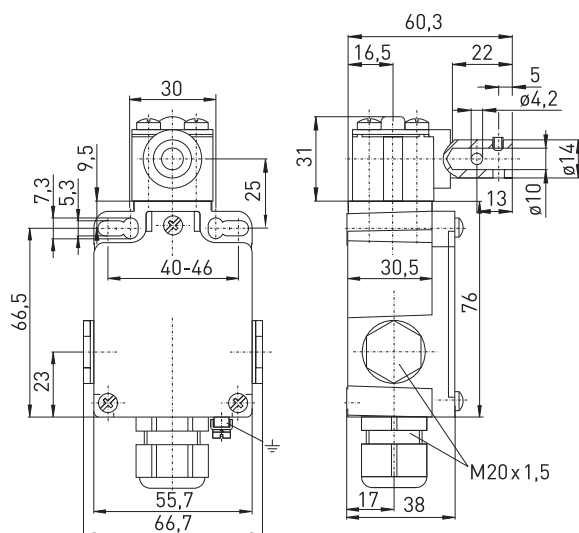
Ex safety switches for hinged guards

// 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 ø 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

Standards	IEC/EN 60947-5-1; EN 1088; BG-GS-ET-15; EN 50 014; EN 50 018; EN 50 019; EN 50281-1-1
Design	mounting details to DIN EN 50 041
Enclosure	zinc die casting, enamelled
Switch insert	Ex 95
Protection class	IP 67 according to IEC/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	M3 screw clamps
Cable section	max. 1.5 mm ² (incl. conductor ferrules)
Cable length	-
Cable entry	M20 x 1.5
U _{imp}	4 kV
U _i	250 V
I _{the}	6 A
I _e /U _e	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 ... +60 °C
Mechanical life	> 1 million operations
Ex certification	⊕ II 2G EEx de IIC T6, II 2D IP65 T80°C
Approvals	BVS 04 ATEX E 126



Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	EEx 355 V.S 1Ö/1S
2 NC contacts	EEx 355 V.S 2Ö

Ordering details

EEx 355 V10S 1Ö/1S-3D	
	Equipment Categ. 3D, dust Ex zone 22
	Contact type 1Ö/1S, (2Ö)
	Actuator V10S shaft bore Ø 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.

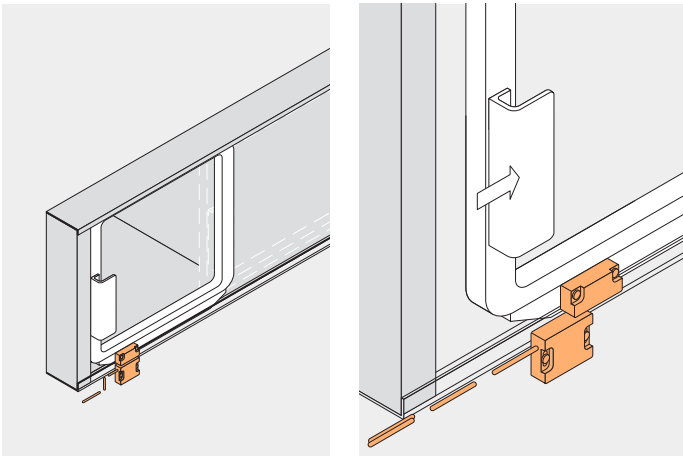
The magnetic safety sensors of the RC Si series are protected to protection class IP 67.

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

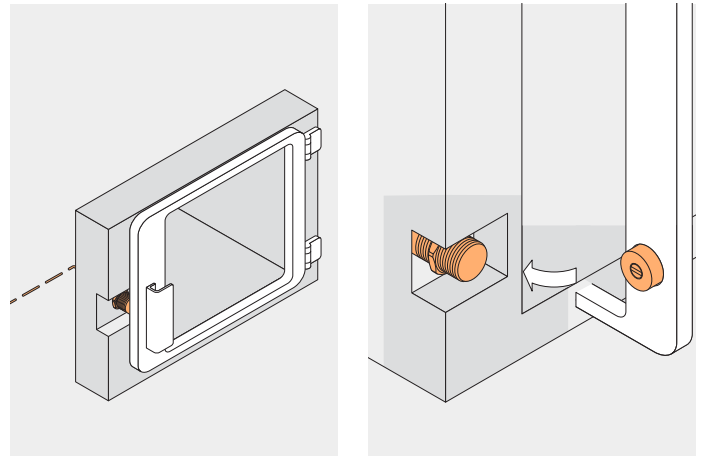
All Ex magnetic safety sensors shown in this chapter bear the CE mark according to the Machinery Directive 98/37/EC and according to ATEX 94/9/EC. The Ex safety switches for hinged guards per equipment category 3G/D bear the CE mark without the number of the notified body and have received a CE declaration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

Application

On sliding doors



On hinged doors



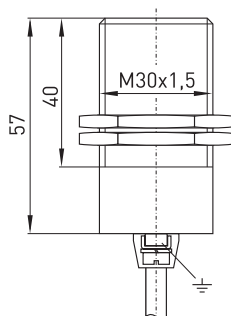
Ex magnetic safety sensors, cylindrical form

// Series EEx RC Si M30

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

// EEX RC SI M30



Technical data

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

// Series EEx RC Si M30, Actuator

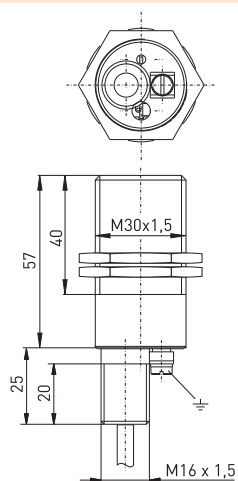
Features/Options

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

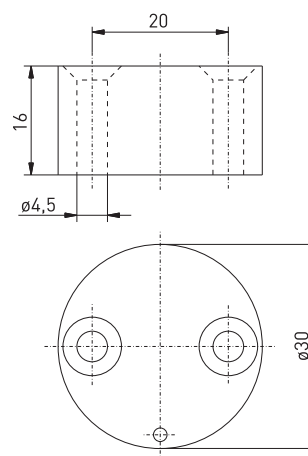
Note

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

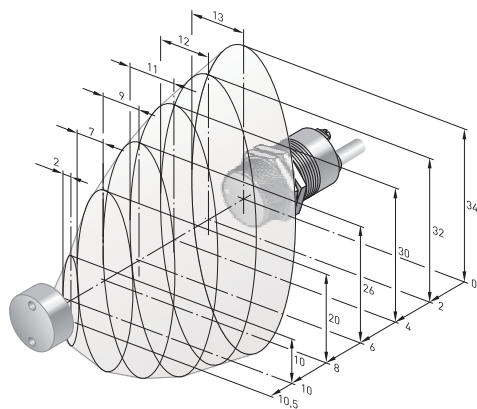
```
// Mounting thread B
```



```
// Actuating magnet EEx MC 30
```



// Switching capacity



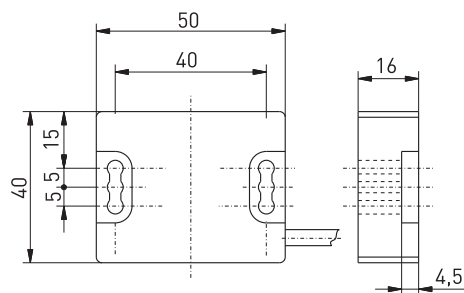
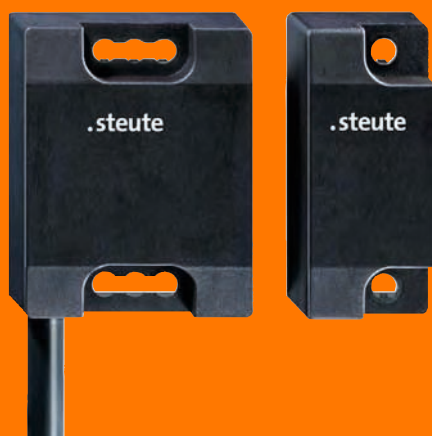
Ex magnetic safety sensors, rectangular form

// 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

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

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

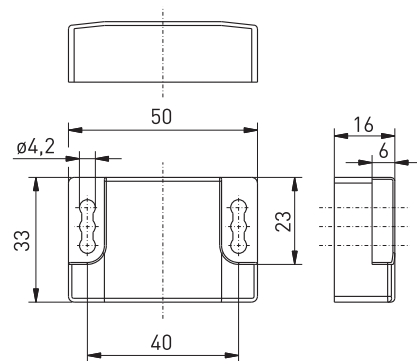
Ordering details

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


```
// Series EEx RC Si 56, Actuator
```

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

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



Technical drawing of a mechanical part, likely a bracket or support, showing dimensions in millimeters. The drawing includes a perspective view and a top-down view. Key dimensions are labeled:

- Overall width: 4.8
- Overall height: 21
- Top flange width: 4.8
- Top flange height: 4
- Top flange thickness: 3.7
- Top flange radius: 3
- Top flange hole diameter: 1
- Top flange hole offset: 2
- Top flange hole center-to-center distance: 4
- Top flange hole radius: 6
- Top flange hole offset: 10
- Top flange hole center-to-center distance: 14
- Top flange hole radius: 17
- Top flange hole offset: 19
- Top flange hole center-to-center distance: 20.5
- Top flange hole radius: 21

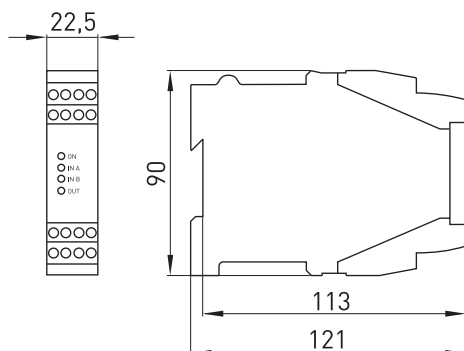
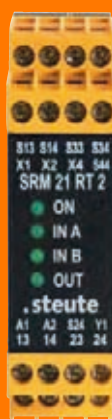
Safety relay module

// 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

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

Ordering details

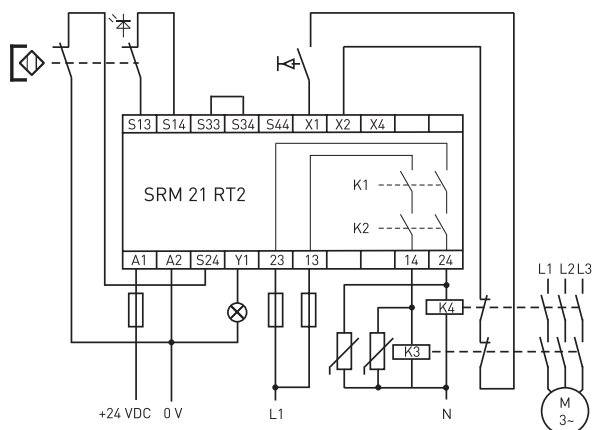
SRM 21 RT2

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

Safety relay module

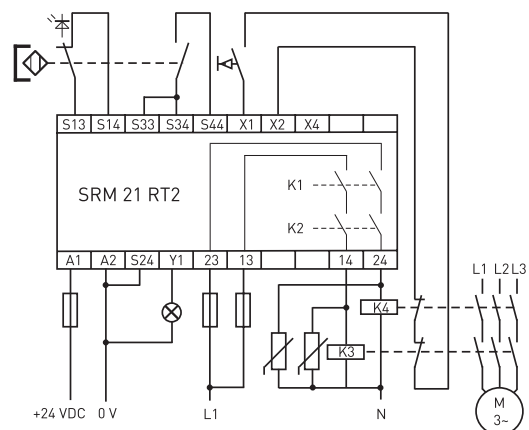
// Series SRM 21 RT2, wiring examples

// 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

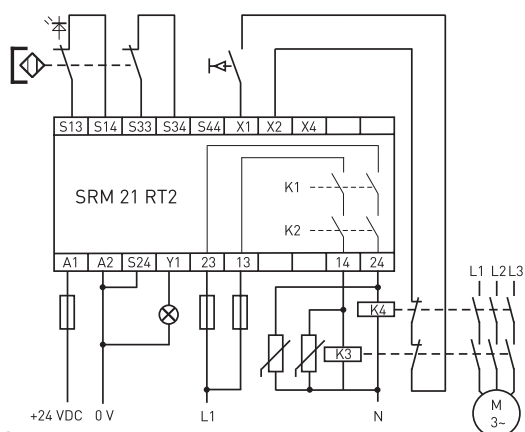
// Wiring example



- 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.

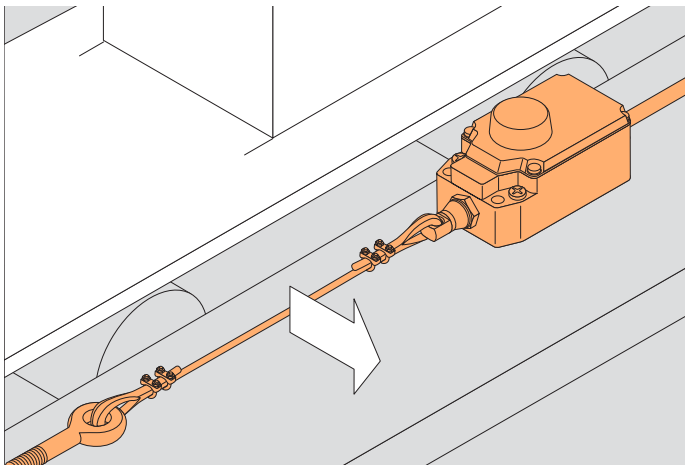
Ex emergency pull-wire switches without mechanical latching VD or VS do not conform to the IEC 609745-5-5. It is possible to meet the requirements of these two standards by suitable measurement of the circuitry and control technology.

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.

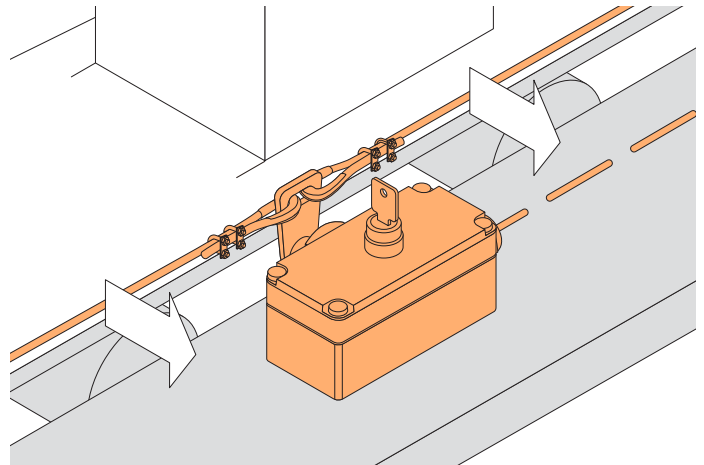
All Ex emergency pull-wire switches shown in this chapter bear the CE mark according to the Machinery Directive 98/37/EC and according to ATEX 94/9/EC. The Ex safety switches for hinged guards per equipment category 3D bear the CE mark without number of the notified body and have received a CE declaration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

Application

one-side actuation





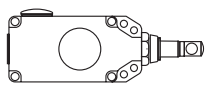


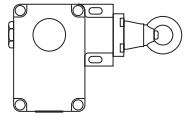
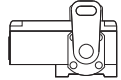


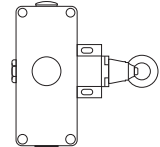
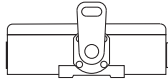


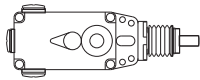


two-side actuation



Selection table

Ex emergency pull-wire switches

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



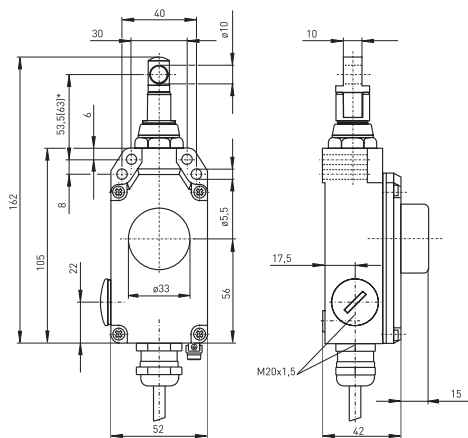
Ex emergency pull-wire switches, one-side actuation

// 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



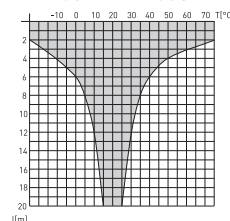
* 63 mm for version with 200 N pre-stress force

Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	EEx ZS 71 10/1S
2 NC contacts	EEx ZS 71 20

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	silver
Cable section	slow action, positive break NC contacts ⊕
Cable length	change-over contact with double break or 2 NC contacts
U _{imp}	slow action, positive break NC contacts ⊕
U _i	change-over contact with double break or 2 NC contacts
I _{the}	change-over contact with double break or 2 NC contacts
Utilisation category	change-over contact with double break or 2 NC contacts
I _e /U _e	change-over contact with double break or 2 NC contacts
Max. fuse rating	change-over contact with double break or 2 NC contacts
Ambient temperature	change-over contact with double break or 2 NC contacts
Mechanical life	change-over contact with double break or 2 NC contacts
Max. wire length	change-over contact with double break or 2 NC contacts
Features	change-over contact with double break or 2 NC contacts
Ex certification	change-over contact with double break or 2 NC contacts
Approvals	change-over contact with double break or 2 NC contacts
Recommended wire length	change-over contact with double break or 2 NC contacts



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

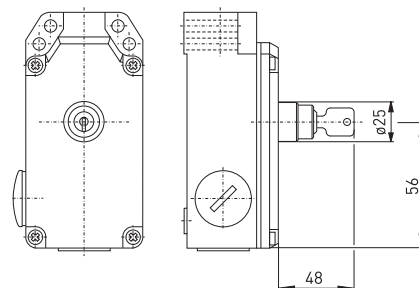
// Watertight collar W



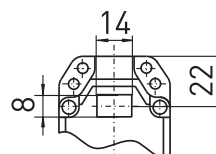
// Position indicator A



// Key release VS



// Position indicator A



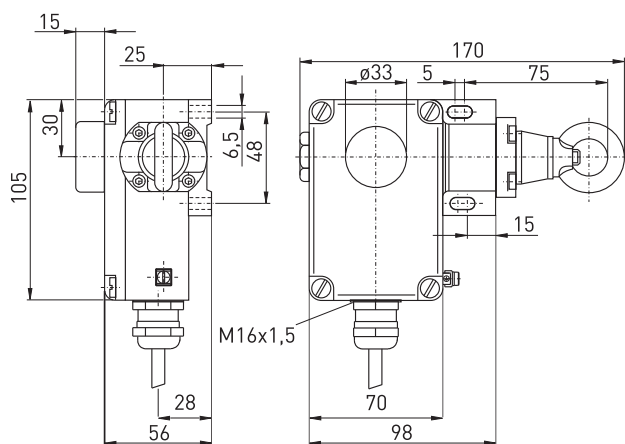
Ex emergency pull-wire switches, one-side actuation

// Series EEx ZS 73

Features/Options

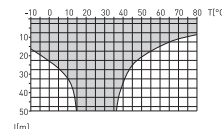
- Ex zone 1 and 2, as well as 21 and 22
- 2 contacts
- Wire length up to 50 m
- 4 various spring force variants (actuating forces), adjustable
actuating force: 295-390 N for 30-50 m, 195-275 N for 20-30 m, 120-180 N for 10-20 m, 80-100 N for max. 10 m
- Wire pull and breakage detection
- Special version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

// EEX ZS 73



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; 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 WVD: IP 65; EEx ZS 73 VD, EEx ZS 73 VS and EEx ZS 73 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	silver
Cable section	4 x 0.75mm ² (incl. conductor ferrules)
Cable length	3 m
U _{imp}	4 kV
U _i	250 V
I _{the}	6 A
Utilisation category	AC-15, DC-13
I _e /U _e	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	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
Recommended wire length	



Contact variants: switch travel/contacts

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

Ordering details

EEx ZS 73 10/1S WVD-NIRO/80-100 N-3D
Zone 22
Pre-stress force (120-180 N, 195-275 N, 295-390 N)
NIRO Pull-wire unit
VD Push button release (VS key release, blank without mechanical latching)
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.


```
// Series EEx ZS 73, variants
```

- 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

[illegible]

- 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

Technical drawing of the M16x1,5 cable gland, showing front and side views with dimensions in mm.

Front View Dimensions:

- Overall height: 105
- Top flange width: 15
- Top flange thickness: 25
- Top flange outer diameter: 30
- Top flange inner diameter: 6,5
- Top flange outer diameter (bottom): 48
- Bottom flange width: 56
- Bottom flange thickness: 28
- Bottom flange outer diameter: 28

Side View Dimensions:

- Overall width: 166
- Top flange width: 5
- Top flange thickness: 73
- Top flange outer diameter: $\varnothing 33$
- Top flange inner diameter: 15
- Bottom flange width: 15
- Bottom flange thickness: 70
- Bottom flange outer diameter: 98
- Bottom flange inner diameter: $\varnothing 12$

Material and Thread: M16x1,5

[illegible]

Ex emergency pull-wire switches, one-side actuation

// Series EEx ZS 75

Features/Options

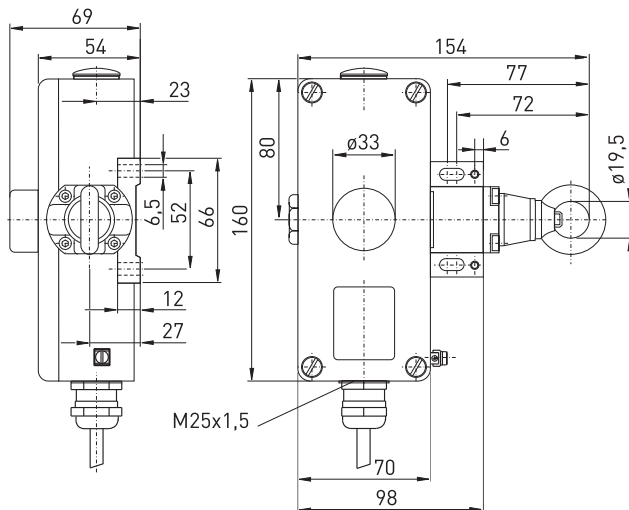
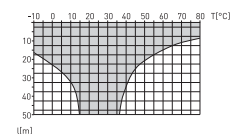
- Ex zone 1 and 2, as well as 21 and 22
- 2 or 4 contacts
- Wire length up to 50 m
- 4 various spring force variants (actuating forces), adjustable
actuating force: 295-390 N for 30-50 m, 195-275 N for 20-30 m, 120-180 N for 10-20 m, 80-100 N for max. 10 m
- Wire pull and breakage detection
- Special 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

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	aluminium die casting, enamel finish
Switch insert	EEx 14
Protection class	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
Contact material	silver
Switching system	slow action, positive break NC contacts ⊖
Switching elements	change-over contact with double break or 2 NO/2 NC or 4 NC contacts
Termination	4 x 0.75mm ² (incl. conductor ferrules)
Cable section	per switch insert
Cable length	3 m
U _{imp}	4 kV
U _i	250 V
I _{the}	6 A
Utilisation category	AC-15, DC-13
I _e /U _e	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	50 m
Features	wire pull and breakage detection
Ex certification	⊕ II 2G EEx d IIC T6, II 2D IP65 T80°C PTB 06 ATEX 1067 X
Approvals	IECEX
Recommended wire length	



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

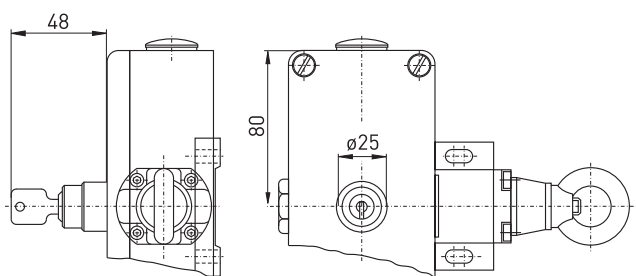
Features/Options

- 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

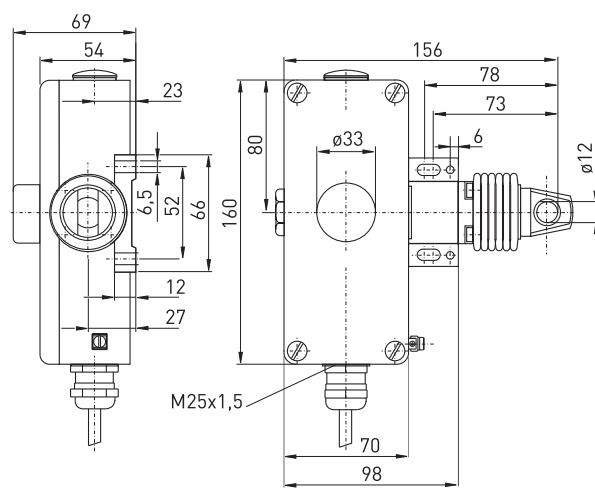
// Watertight collar W



// Key release VS



// Watertight collar W



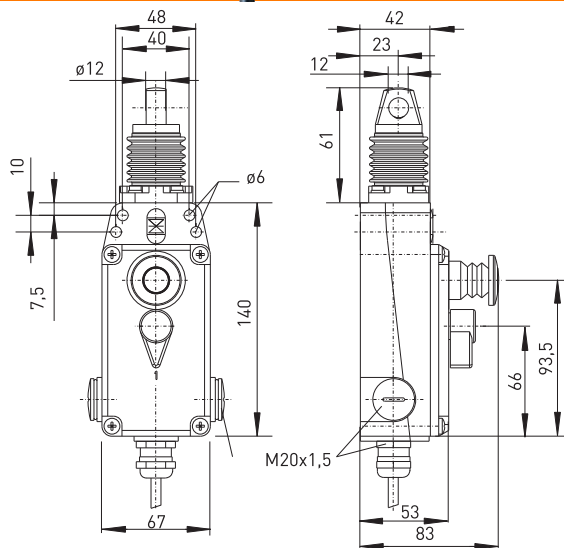
Ex emergency pull-wire switches, one-side actuation

// Series EEx ZS 80

Features/Options

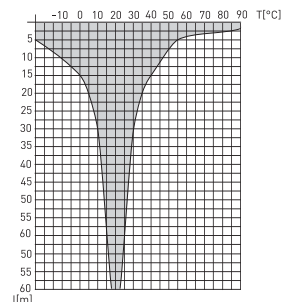
- Ex zone 1 and 2, as well as 21 and 22
- 2 contacts
- Position indicator and integrated emergency-stop push button
- Wire length up to 75 m
- Pretensioning force 100 N
- Lever for release and position indication
- Wire pull and breakage detection
- Special version only for equipment category 3D, available 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 ² (incl. conductor ferrules)
Cable length	3 m
U _{imp}	4 kV
U _i	250 V
I _{the}	6 A
Utilisation category	AC-15, DC-13
I _e /U _e	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.



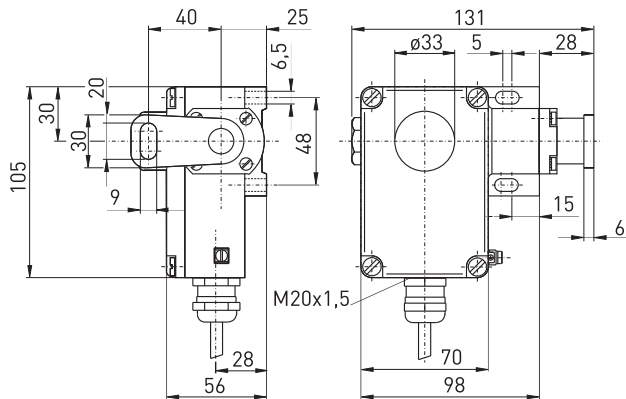
Ex emergency pull-wire switches, two-side actuation

// 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	silver
Cable section	4 x 0.75mm ² (incl. conductor ferrules)
Cable length	3 m
U _{imp}	4 kV
U _i	250 V
I _{the}	6 A
Utilisation category	AC-15, DC-13
I _e /U _e	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 PTB 06 ATEX 1066 X
Approvals	IECEX N

Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	EEx ZS 73 S 10/1S <div> <div>45°30° 0° 30°45°</div> <div>⊕ ⊖ ⊕ ⊖</div> <div>⊕ ⊖ ⊕ ⊖</div> <div>⊕ ⊖ ⊕ ⊖</div> </div> BK-GY BN-BU
2 NC contacts	EEx ZS 73 S 20 <div> <div>45°35° 0° 35°45°</div> <div>⊕ ⊖ ⊕ ⊖</div> <div>⊕ ⊖ ⊕ ⊖</div> <div>⊕ ⊖ ⊕ ⊖</div> </div> BK-GY BN-BU

Ordering details

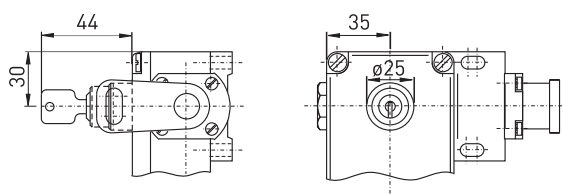
EEx ZS 73 S 10/1S VD-NIRO-3D	
	Dust Ex zone 22
	NIRO Pull-wire unit
	VD Push button release [VS key release, blank without mechanical latching]
	1 NC/1 NO contact (20)
	S Two-side actuation
	Series
	Emergency pull-wire switch
	Ex certified component

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.


```
// Series EEx ZS 73 S, variants
```

- 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

- 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

[illegible]

Ex emergency pull-wire switches, two-side actuation

// Series EEx ZS 75 S

Features/Options

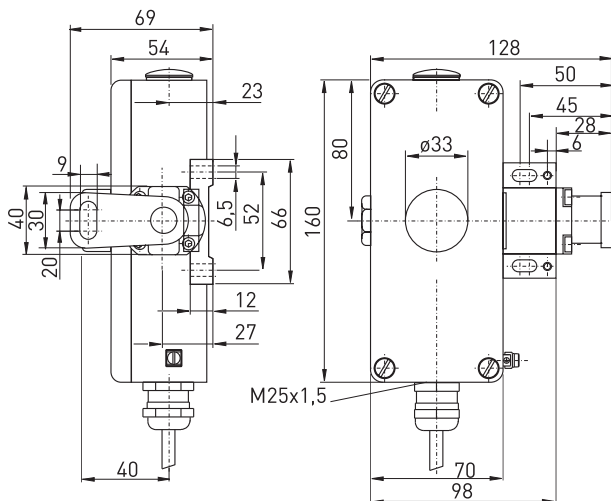
- Ex zone 1 and 2, as well as 21 and 22
- Metal enclosure
- 2 or 4 contacts
- Wire length up to 2 x 50 m
- Push button or key release possible
- Wire pull and breakage detection
- Special version only for equipment category 3D, available for dust Ex zone 22
- Inmetro approval for Brazil to be ordered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

// EEX ZS 75 S



Technical data

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	aluminium die casting, enamel finish
Switch insert	EEx 14
Protection class	EEx ZS 75 S VD: IP 65; EEx ZS 75 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 NO/2 NC or 4 NC contacts
Termination	cable H05VV-F
Cable section	4 x 0.75mm ² (incl. conductor ferrules)
Cable length	3 m
U _{imp}	4 kV
U _i	250 V
I _{the}	6 A
Utilisation category	AC-15, DC-13
I _e /U _e	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 1067 X



Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	EEx ZS 75 S 10/15
2 NC/2 NO contact	EEx ZS 75 S 20/25
4 NC contacts	EEx ZS 75 S 40

Ordering details

EEx ZS 75 S 20/25 VD-3D
<div></div> Dust Ex zone 22 <div></div> VD Push button release (VS key release, blank without mechanical latching) <div></div> 2 NC/2 NO contacts (10/15, 40) <div></div> S Two-side actuation <div></div> Series <div></div> Emergency pull-wire switch <div></div> 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.

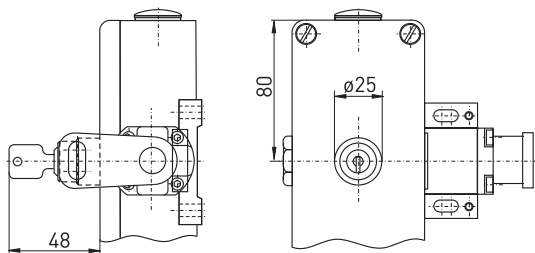
Ex emergency pull-wire switches, two-side actuation

// 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



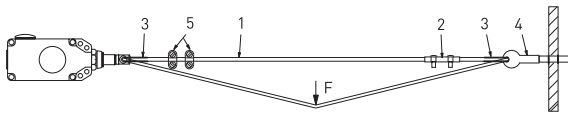
Ex emergency pull-wire switches

// Mounting notes

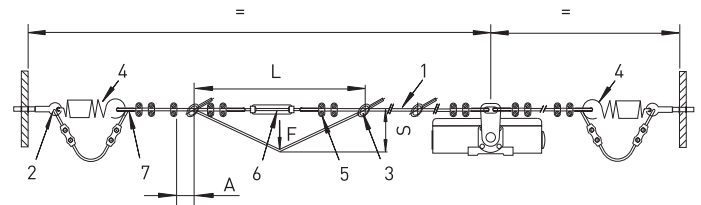
Notes

- 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



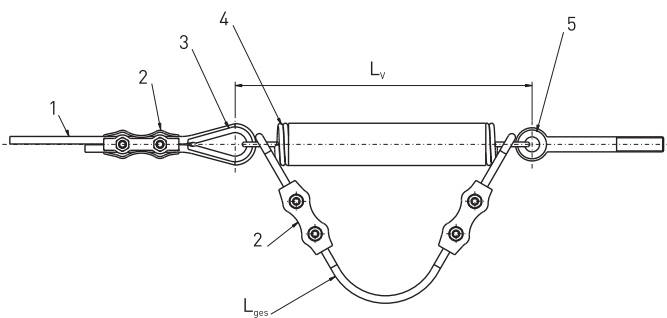
- 1 = Pull-wire
2 = DUPLEX wire clamp
3 = Wire thimble
4 = Eye bolt
5 = Wire clamp

- 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.

// Spring pre-tension / Travel limitation



- 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

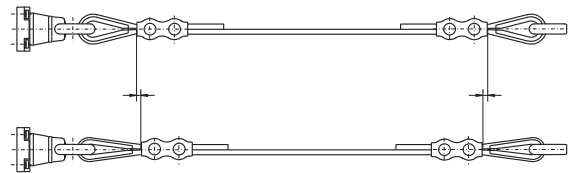
L_v = Pre-stress 200 mm

Both values refer to tension spring RZ156I

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.

// Wire thimble deformation



Ex emergency pull-wire switches

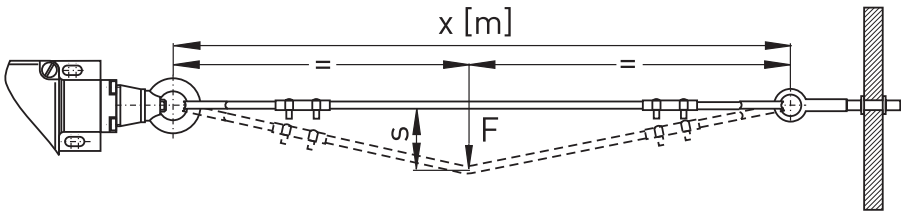
// Pre-stress and actuating forces

- 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	-

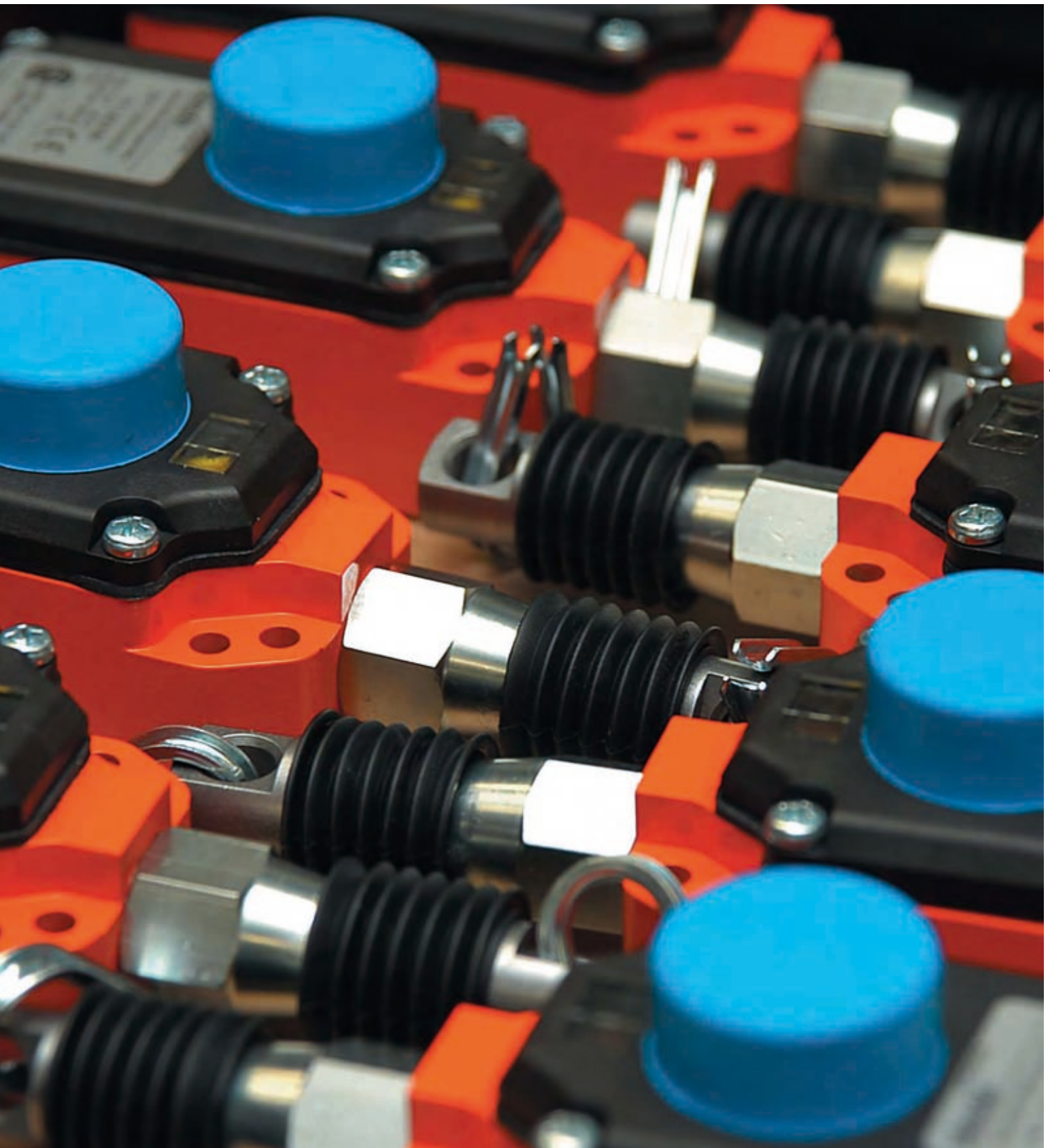
140

Actuating forces and travel between supports



PRODUCTION PROCESS ASSEMBLY

EMERGENCY PULL-WIRE SWITCH AFTER FINAL QUALITY CHECK



Appendix
// Accessories

Features/Options

- To guide the pull-wire where the path is not a straight line
- For pull-wire with red PVC sheath Ø 5 mm (steel core Ø 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.

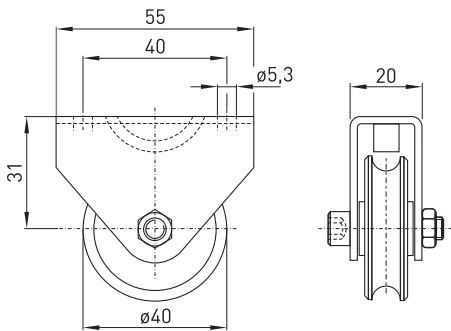
Features/Options

- Steel core Ø 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 Ø 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 Ø 5 mm per metre
Pull-wire stainless steel Ø 5 mm per metre
Complete pull-wire set, 5 m
(other lengths on request)

01.09.0011
01.10.0059
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 Ø 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 Ø 3 mm
 - Ordering unit: 1 piece

- Features/Options
- Per DIN 6899
 - For pull-wire with steel core Ø 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 01.10.0001
Wire thimble stainless steel 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

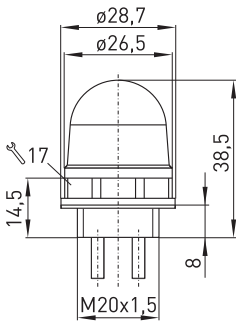
// Tension spring RZ-156I



// 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
 Ex indicator lamp Multi-LED GN 24 VDC
 Ex indicator lamp Multi-LED YE 24 VDC

04.00.7122
 04.00.7123
 04.00.7124

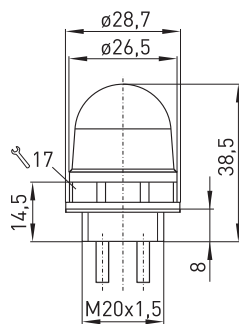
Features/Options

- 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



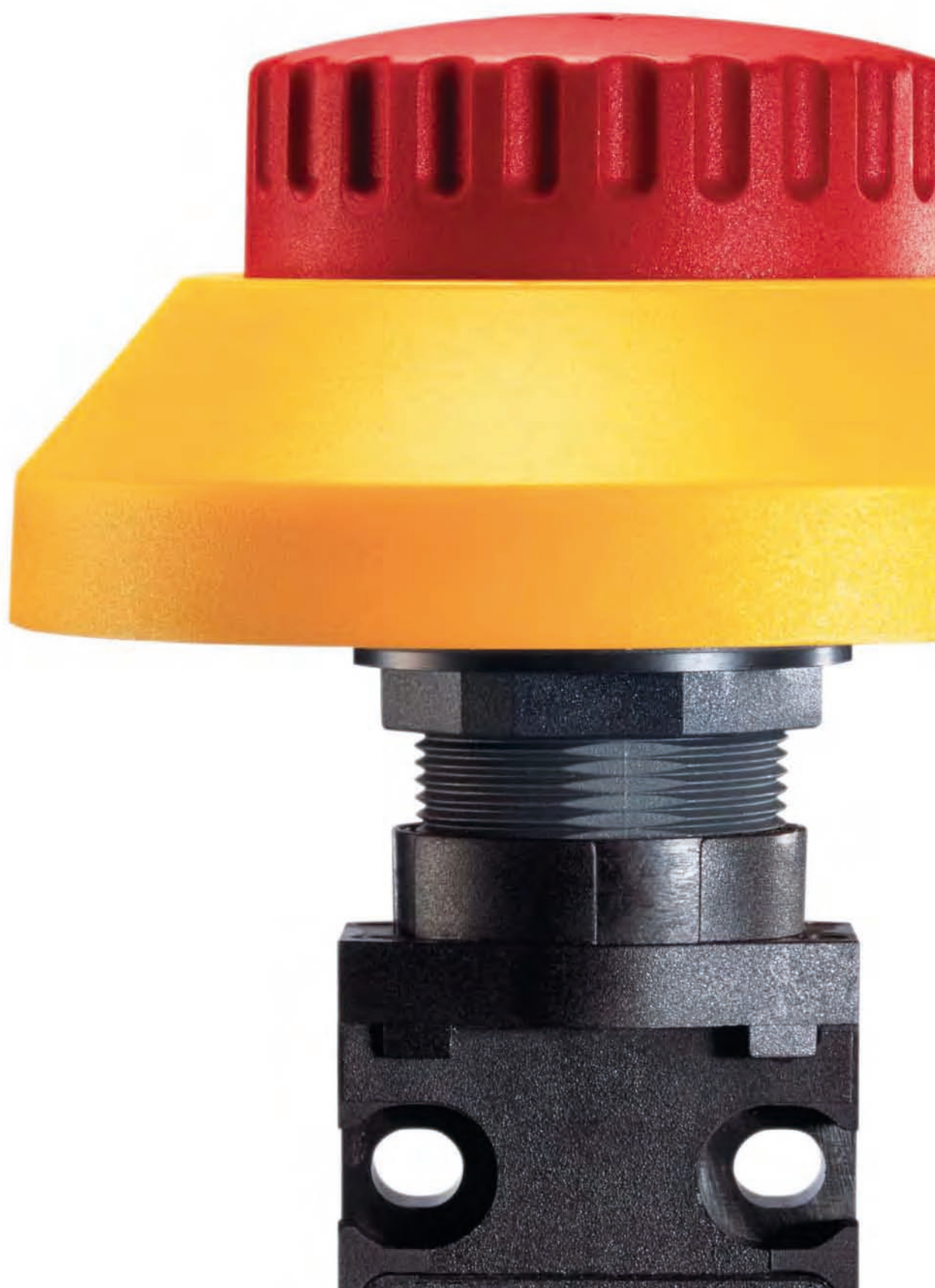
// Ex indicator lamp Multi-LED white



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.

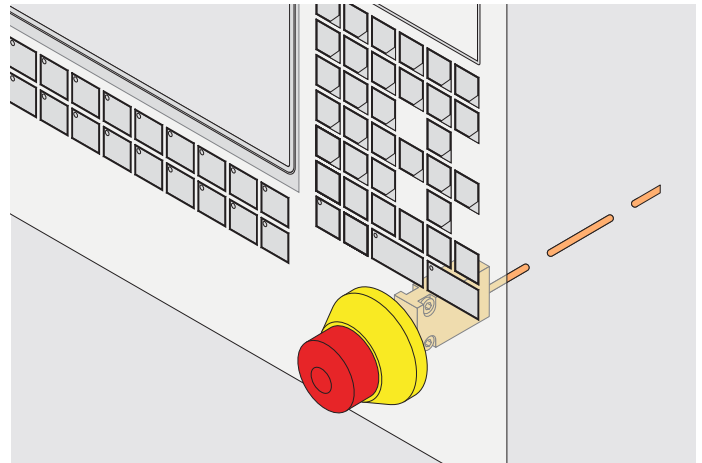
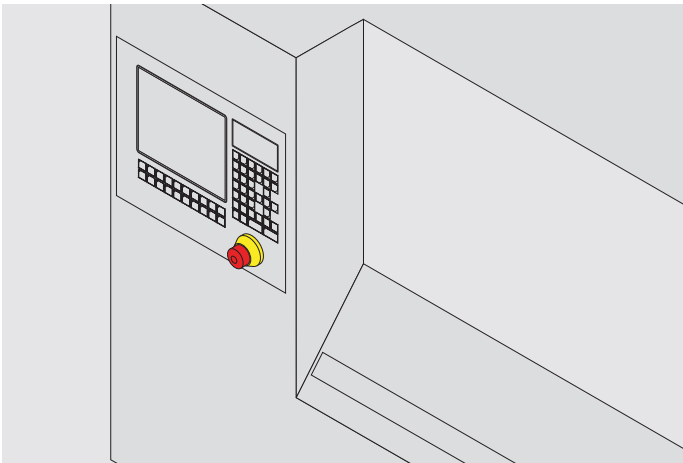
Design and operating principle

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

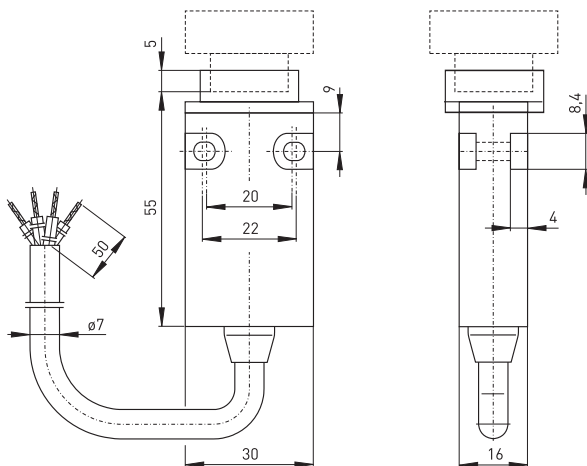
- Ex zone 1 and 2, as well as 21 and 22
- Double insulated 
- Slow action \ominus , change-over contact or 2 NC contacts with double break
- Overlapping contacts available
- Mounting hole diameter 22.5 mm
- With pre-wired cable, cable length 1 metre
- Special version only for equipment category 3D, available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

// EEX 14



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 IEC/EN 60529
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	cable H05VV-F
Cable section	4 x 0,75mm ²
Cable length	1 m
U _{imp}	4 kV
U _i	250 V
I _{the}	6 A;
I _e /U _e	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, +75 °C bei T5
Mechanical life	> 1 million operations
Switching frequency	1800/h
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

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

Ex command devices
// Series EEx 14, Actuator

Features/Options

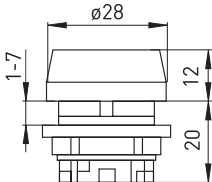
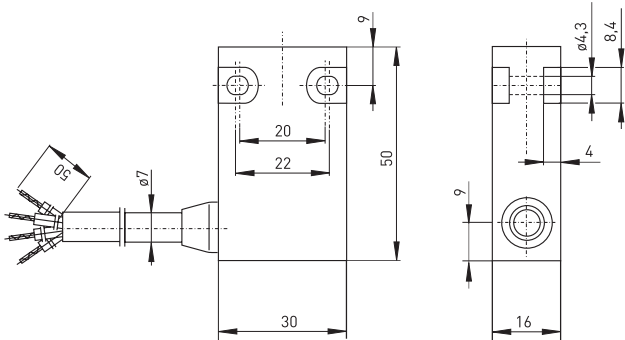
- Slow action with 2 NC contacts available
- With gold-plated contacts available on request
- With actuator made of stainless steel, ordering suffix -V2A
- Available with stainless steel actuators: push buttons, semi-rotary, key-operated or key-operated switches

Features/Options

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

// Cable on side

// Push button RT



Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	EEx 14 RT
	0 BK-GY BN-BU



Ex command devices

// Series EEx 14, Actuator

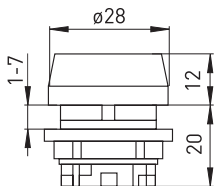
Features/Options

- 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

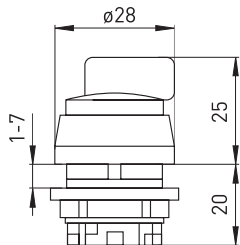
// Push button with diaphragm RTM



Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	EEx 14 RTM

// Selector RW



Contact variants: switch travel/contacts

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



Features/Options

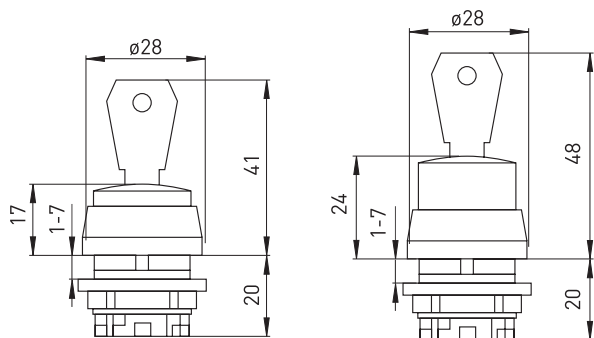
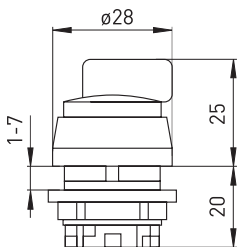
- RST with spring return
- Available in 2 different versions
- Protection class IP 65
- With pre-wired cable, cable length 1 metre
- Available with actuator made of stainless steel

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	EEEx 14 RST ... BK — GY BU — BN
Switching angle 90° with return to left position, 0 ← I	EEEx 14 RSTA 0 ← I
Switching angle -45° + 45° with return to central position I → 0 ← II	EEEx 14 RSTB I → 0 ← II

	2 Schaltstellungen	3 Schaltstellungen
1 NC/1 NO contact	EEEx 14 RSSA ... 	
Key switch	EEEx 14 RSSA 14 EEEx 14 RSSA 15 EEEx 14 RSSA 17 EEEx 14 RSSA 18 EEEx 14 RSSA 27 	EEEx 14 RSSA 12 EEEx 14 RSSA 13 EEEx 14 RSSA 23 EEEx 14 RSSA 24

Legend

- I — Switching position
- ↷ Spring return
- O — Position for key removal



Ex command devices

// Series EEx 14, Actuator

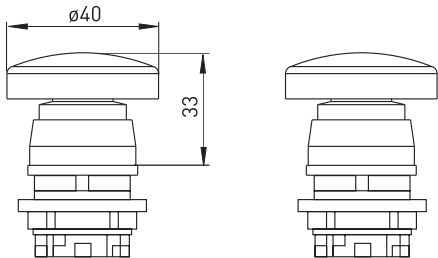
Features/Options

- 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

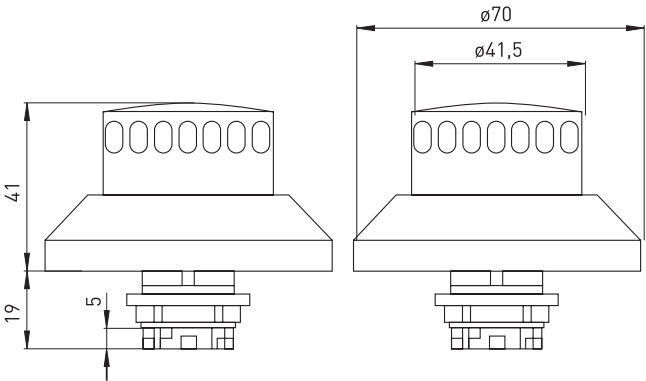
Features/Options

- 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

	Slow action
1 NC/1 NO contact	EEx 14 RS SW BK  GY BU  BN
2 NC contacts	EEx 14 RS SW 2Ö BK  GY BU  BN

Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	EEx 14 RUV BK  GY BU  BN
2 NC contacts	EEx 14 RS RUV 2Ö BK  GY BU  BN



PRODUCTION PROCESS ASSEMBLY
ASSEMBLY OF CONTACT BRIDGES







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

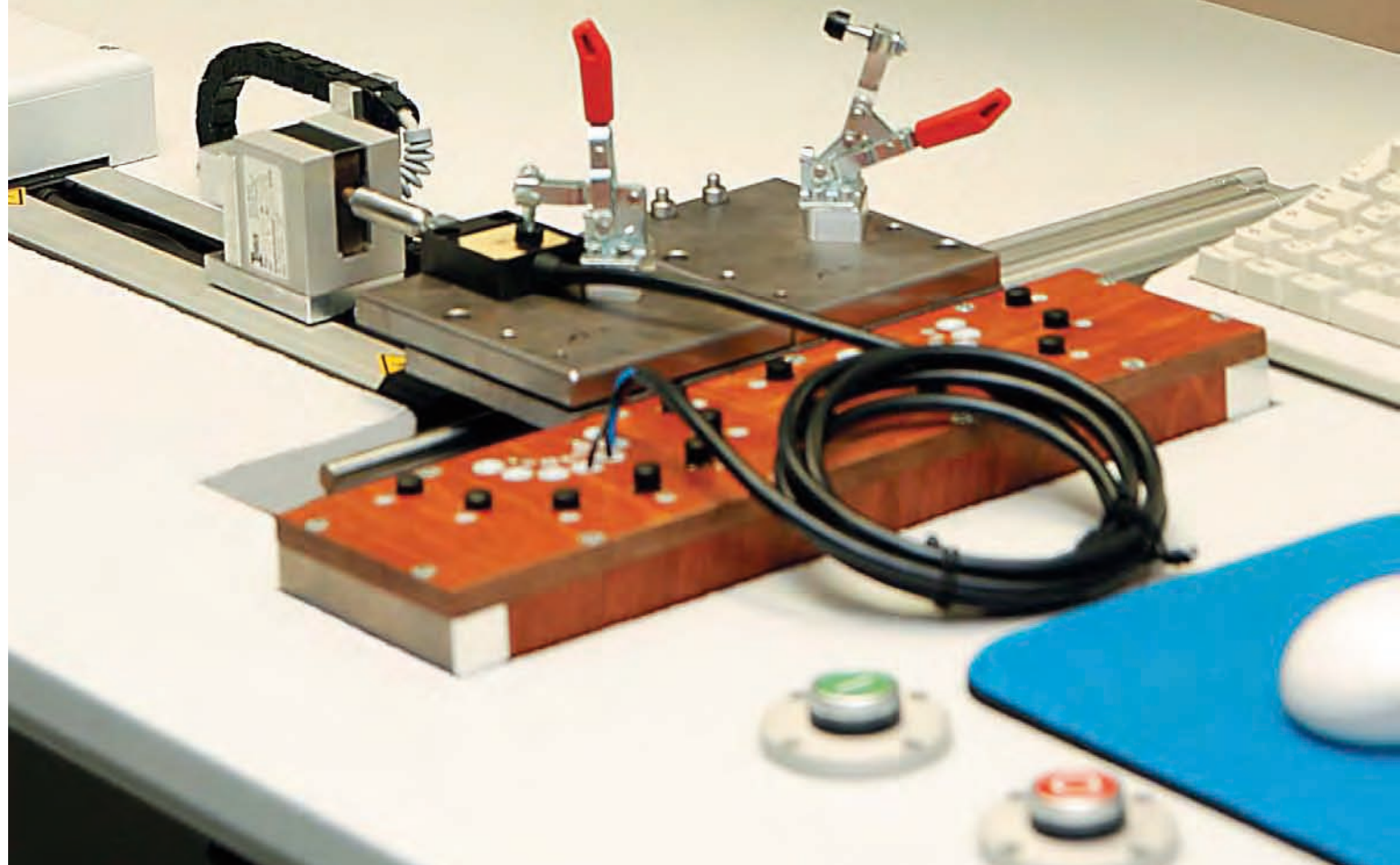
from page 212

// Series EEx 355

from page 218

// Series EEx/EExM 61

from page 224



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.

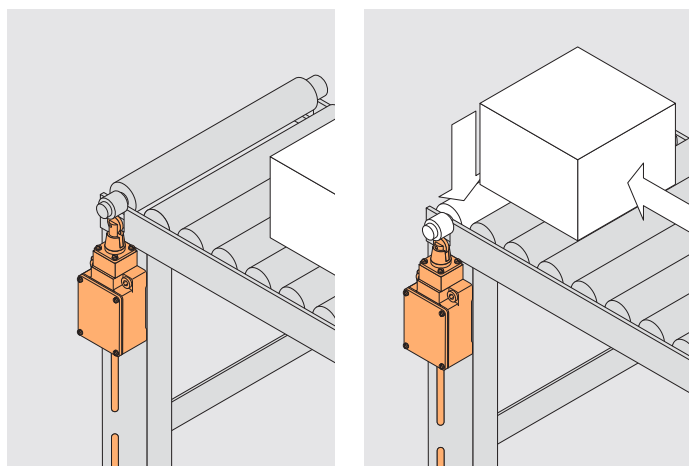
The position switches are available with snap and slow action and are available with different contact configurations. A wide range of actuators completes the program. Most of the switches can be supplied with a metal roller on request.

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

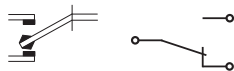
Position monitoring on a conveyor belt



Contacts per IEC 60617

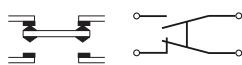
Type C

Change-over contact with single break with 3 terminals



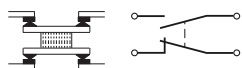
Type Za

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

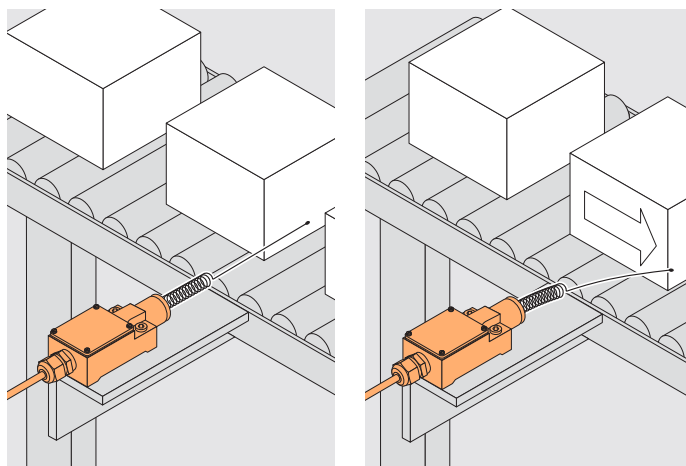


Type Zb

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

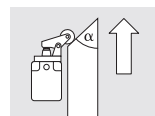


As a piece counter

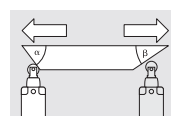


Legend

α : Actuating angle from bottom of switch axis as shown in picture



α : Actuating angle from right of switch axis



β : Actuating angle from left of switch axis as shown in picture




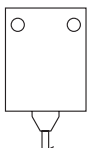



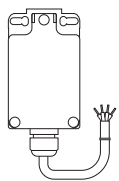

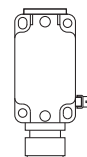

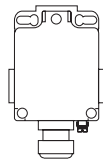



Selection table

Ex position switches

// Series









// Actuator

		↓	↓	↺	↺	↺	↔	↔	↔	
										
EEx 13, from page 164 - Thermoplastic enclosure - Cable  		+ W	F	KU WKU	FKU		R WR		FR	
EEx/EEExM 14, from page 176 - Thermoplastic enclosure - Cable  		+ W	F	KU WKU	FKU	VKU	R WR		FR	
EEx/EEExM 95, from page 186 - Thermoplastic enclosure - Wiring compartment - 1 cable entry - Design to DIN EN 50 047		W					R	RL		
EEx T 356, from page 196 - Thermoplastic enclosure with metal cover - Cable 		S					R			
EEx 12, from page 200 - Metal enclosure - Cable		+ W	F	KU WKU	FKU		R WR		FR	
EEx 335, from page 212 - Metal enclosure - Wiring compartment - 1 cable entry  		S					R			
EEx 355, from page 218 - Metal enclosure - Wiring compartment - 3 cable entries   		S					R			
EEx /EEExM 61, from page 224 - Metal enclosure - Cable		W								

+ Standard: plunger without water-tight collar

.steute

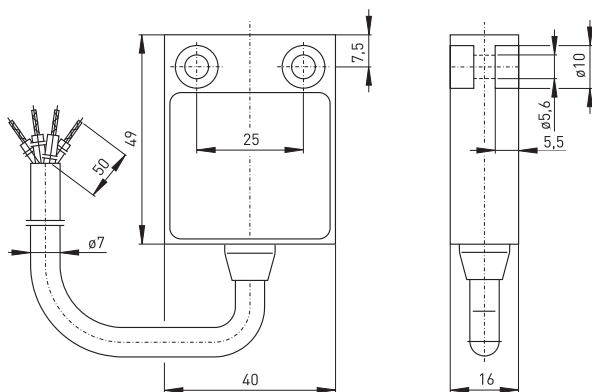
Actuating direction ↴ / Free movement of actuator ➡

	↴↴	↴↴	↴↴	↑	↴↵	↴↴	↴↴	↴↴	↴↴	↴↴	↴↴	↻	↻	↻		
																
		WH	WHL	WPH	WHK	D	DL	DS			DD	TL	TF	TK		
	VR					D	DL	DS				TL	TF	TK		
		WH WHM	WHL WHL	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 ²
Cable length	1, 2, 5 and 10 m
U _{imp}	4 kV
U _i	250 V
I _{the}	6 A
I _e /U _e	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 PTB 03 ATEX 1068 X
Approvals	



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

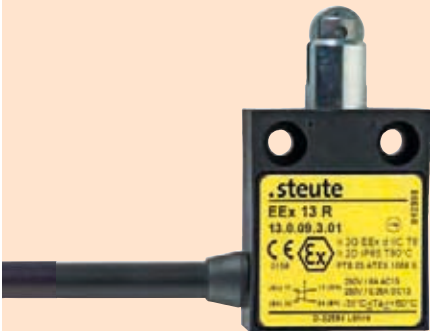
Features/Options

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

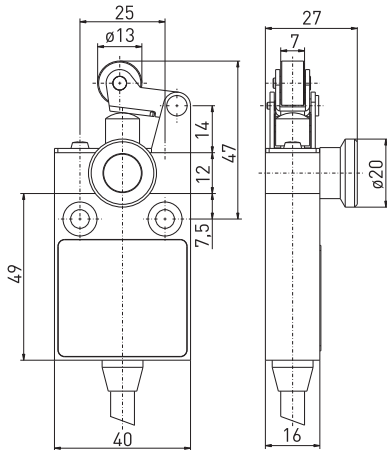
Features/Options

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

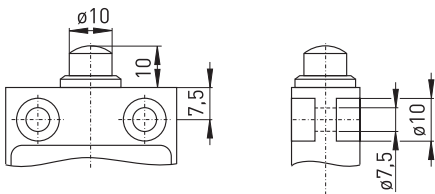
// Cable entry on side S



// Mechanical latching V



// Plunger



Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	EEx 13
	<div> <div>0</div> <div>3</div> <div>5.5</div> <div>1.5</div> <div>2.8</div> <div>BK-GY</div> <div>BN-BU</div> </div>

Ex position switches

// Series EEx 13, actuators

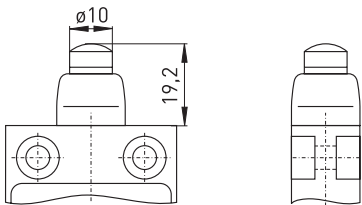
Features/Options

- 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°

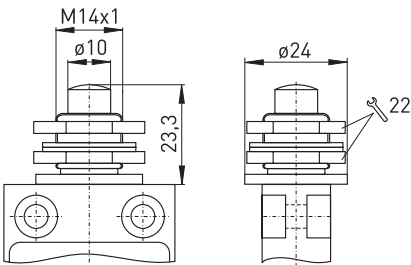
// Plunger with collar W



Contact variants: switch travel/contacts

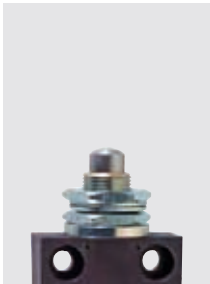
	Slow action
1 NC/1 NO contact	EEx 13 W 10/15
	<div> <div>035,5</div> <div>1,52,8</div> <div>BK-GYBN-BU</div> </div>

// Plunger for front mounting F



Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	EEx 13 F 10/15
	<div> <div>035,5</div> <div>1,52,8</div> <div>BK-GYBN-BU</div> </div>



Features/Options

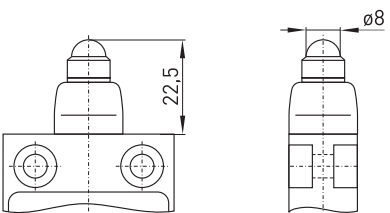
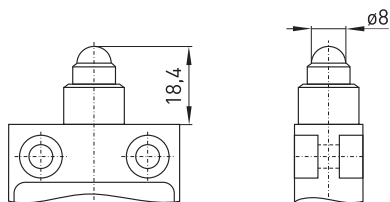
- Actuating speed 0.5 m/s with an actuating angle of 20°
- Can be actuated in line with or from side of switch axis
- Actuator head with captive stainless steel ball actuator
- Exact repeatability of switching point

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

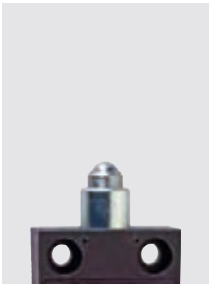


Contact variants: switch travel/contacts

Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<div>EEEx 13 KU 10/1S</div> <div><div><div>035,5</div><div>1,52,8</div></div><div>BK-GYBN-BU</div></div>

	Slow action
1 NC/1 NO contact	<div>EEEx 13 WKU 10/1S</div> <div><div><div>035,5</div><div>1,52,8</div></div><div>BK-GYBN-BU</div></div>



Ex position switches

// Series EEx 13, actuators

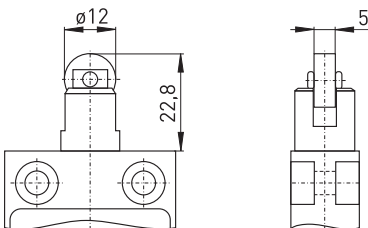
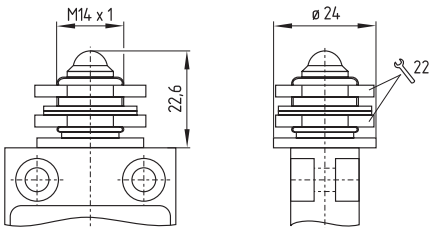
Features/Options

- 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

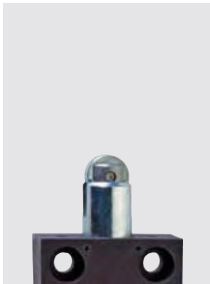
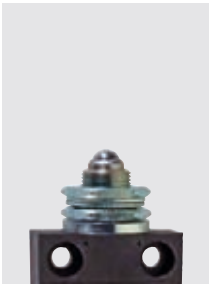


Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	EEx 13 FKU 1Ö/1S
	<div> <div>0</div> <div>3</div> <div>5,5</div> <div>1,5</div> <div>2,8</div> <div>BK-GY</div> <div>BN-BU</div> </div>

Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	EEx 13 R 1Ö/1S
	<div> <div>0</div> <div>3</div> <div>5,5</div> <div>1,5</div> <div>2,8</div> <div>BK-GY</div> <div>BN-BU</div> </div>



Features/Options

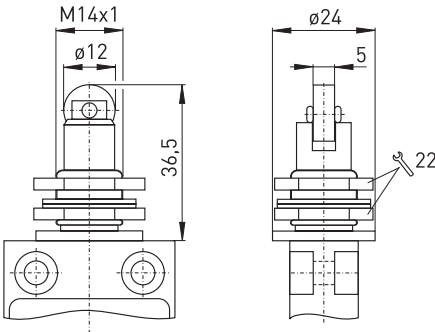
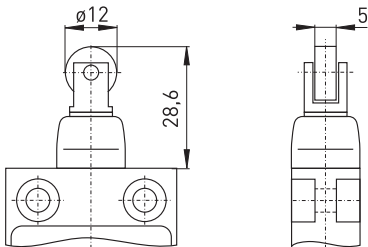
- Actuating speed 0.5 m/s with an actuating angle of 25°
- Metal roller
- Available with actuator repositioned by 90°
- Collar to protect against the entry of foreign bodies

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

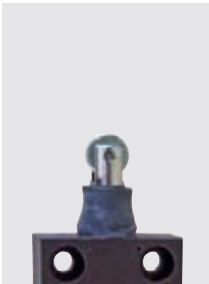


Contact variants: switch travel/contacts

Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	EEEx 13 WR 10/1S
	<div><div><div>0</div><div>3</div><div>5.5</div></div><div><div>1.5</div><div>2.8</div><div></div></div><div>BK-GY</div><div>BN-BU</div></div>

	Slow action
1 NC/1 NO contact	EEEx 13 FR 10/1S
	<div><div><div>0</div><div>3</div><div>5.5</div></div><div><div>1.5</div><div>2.8</div><div></div></div><div>BK-GY</div><div>BN-BU</div></div>



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°
- 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.

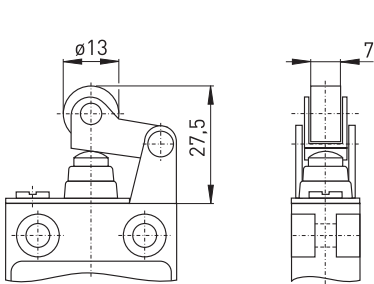
Features/Options

- 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°
- Collar to protect against the entry of foreign bodies
- With plastic roller available on request

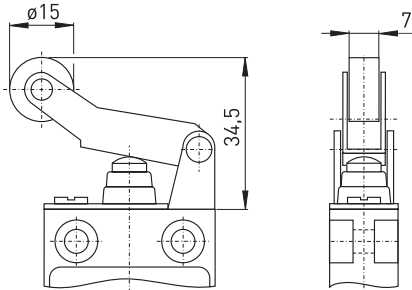
Note

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

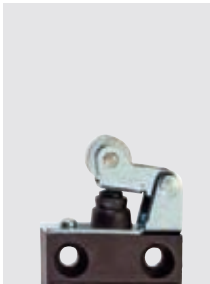


Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	EEx 13 WH 10/1S
	<div> <div>035.5</div> <div>1.52.8</div> <div>BK-GYBN-BU</div> </div>

Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	EEx 13 WHL 10/1S
	<div> <div>0712.2</div> <div>3.44.9</div> <div>BK-GYBN-BU</div> </div>



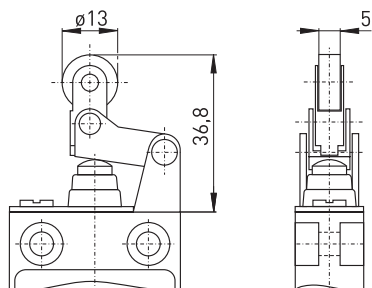
Features/Options

- 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°
- 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°
- Collar to protect against the entry of foreign bodies
- With plastic roller available on request

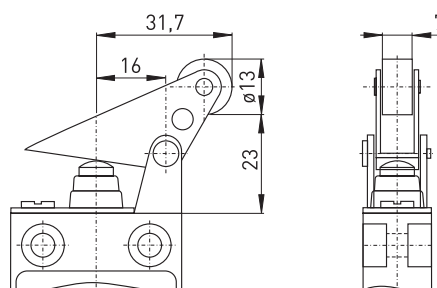
// Rocking roller lever with collar WHK



Contact variants: switch travel/contacts

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

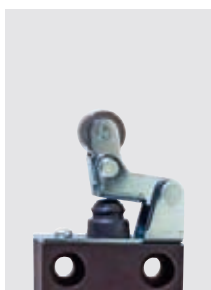
// Parallel roller lever with collar WPH



Contact variants: switch travel/contacts

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

171



Ex position switches

// Series EEx 13, actuators

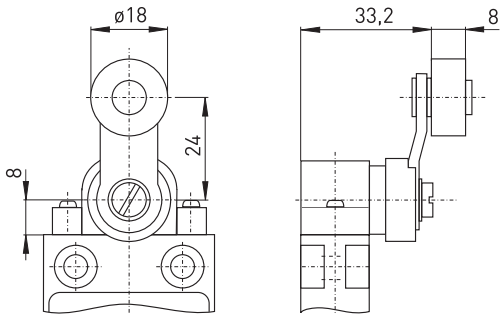
Features/Options

- 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

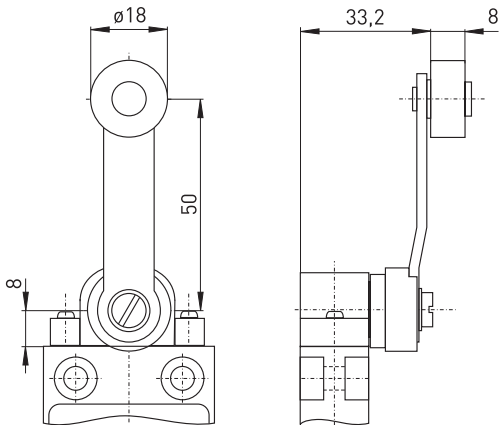
// Rocking roller lever D



Contact variants: switch travel/contacts

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

// Long rocking roller lever DL



Contact variants: switch travel/contacts

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



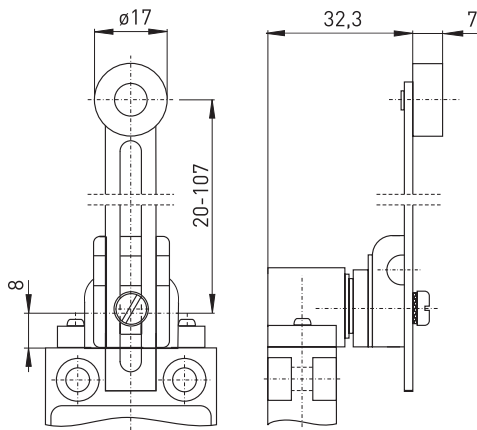
Features/Options

- 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°

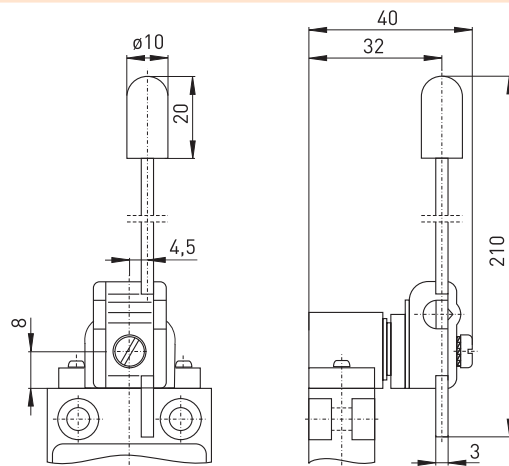
// Adjustable-length roller lever DS



Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	EEEx 13 DS 10/1S 65° 35° 0° 35° 65° 15° 15° BK-GY BN-BU

// Wire roller lever DD



Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	EEEx 13 DD 10/1S 65° 35° 0° 35° 65° 15° 15° BK-GY BN-BU



Ex position switches

// Series EEx 13, actuators

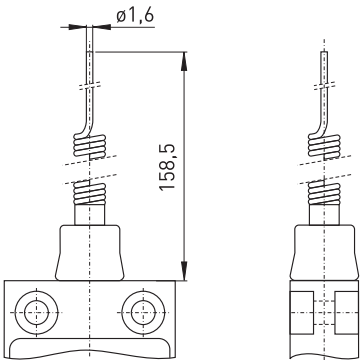
Features/Options

- 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°

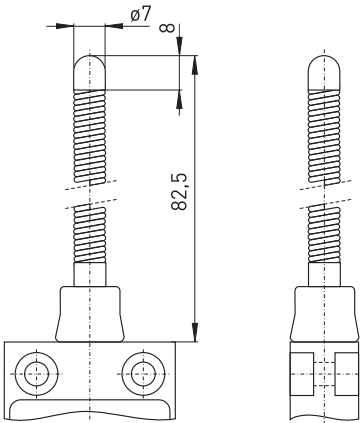
Features/Options

- 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



Contact variants: switch travel/contacts

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

Contact variants: switch travel/contacts

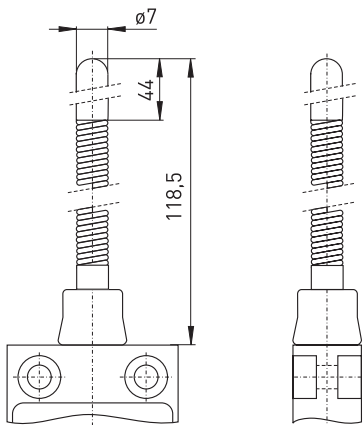
	Slow action
1 NC/1 NO contact	EEx 13 TF 10/1S



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	<div>EEEx 13 TK 10/1S</div> <div><div><div>18°</div><div>15°</div><div>0°</div><div>15°</div><div>18°</div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div>10°</div><div>10°</div><div></div><div></div><div></div></div></div> <div>BK-GY</div> <div>BN-BU</div>



Ex position switches

// Series EEx/EExM 14



Features/Options

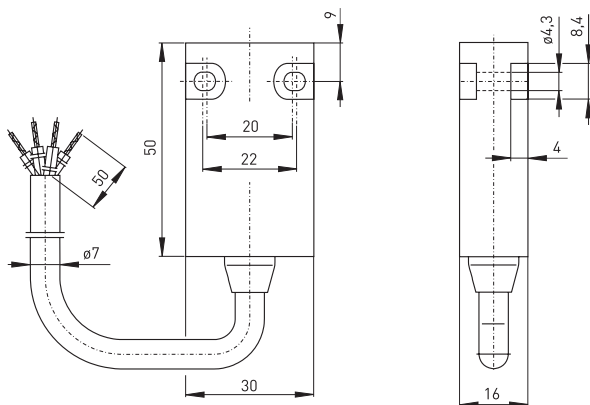
- Ex zone 1 and 2, as well as 21 and 22
- Thermoplastic enclosure
- Double insulated □
- Slow action with overlapping contacts available
- Mounting details to DIN EN 50 047
- Suitable for in-line mounting
- With pre-wired cable, cable length 1 metre
- Special version only for equipment category 3D, available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

// EEX/EEXM 14



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 or snap action
Switching elements	EEx 14: change-over contact with double break Zb or 2 NC contacts, galvanically separated contact bridges; EExM 14: change-over contact with single break C or Za
Termination	cable H05VV-F
Cable section	Za and Zb: 4 x 0.75mm ² , C: 3 x 0.75mm ²
U _{imp}	4 kV
U _i	250 V
I _{the}	Zb: 6 A; C and Za: 5 A
I _e /U _e	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
Utilisation category	AC-15, DC-13
Max. fuse rating	Zb: 6 A gL/gG D-fuse; C and Za: 5 A gL/gG D-fuse
Ambient temperature	-20 °C ... +65 °C, C: +60 °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	EExM 14: PTB 03 ATEX 1069 X EExM 14 10/1S: PTB 03 ATEX 1006 X EEx 14: PTB 03 ATEX 1070 X  
Note	Switch must be protected from mechanical damage!



Ordering details

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

Equipment
Categor. 3D, dust
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
M Snap action
Ex certified component

Ex position switches

// Series EEx/EExM 14, actuators

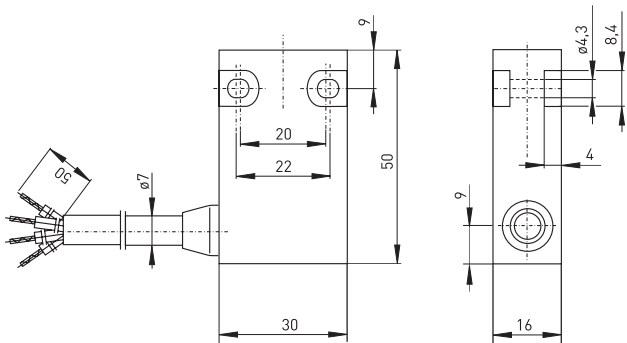
Features/Options

- Snap action, change-over contact available with double break e.g. EExM 14 R 10/1S
- Slow action available with 2 NC contacts
- With gold-plated contacts available on request
- With latching: On-/Off principle

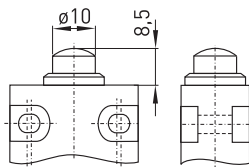
Features/Options

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

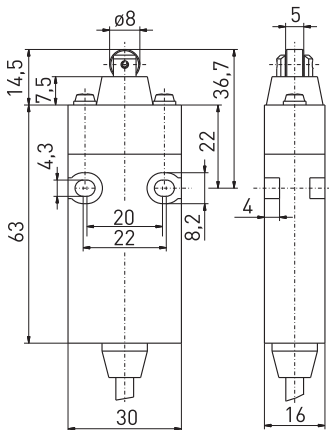
// Cable entry on side S



// Plunger



// With latching RE



Contact variants: switch travel/contacts		
	Snap action	Slow action
1 NC/1 NO contact	EExM 14 10/1S 	EEx 14 10/1S
1 change-over contact	EExM 14 	
2 NC contacts		EEx 14 20



Ex position switches

// Series EEx/EExM 14, actuators

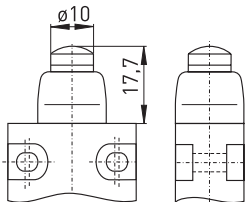
Features/Options

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

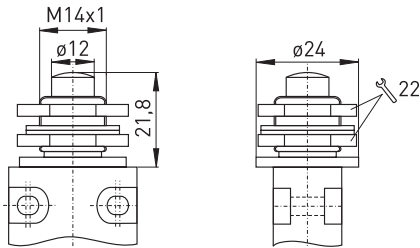
Features/Options

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

// Plunger with collar W



// Plunger for front mounting F

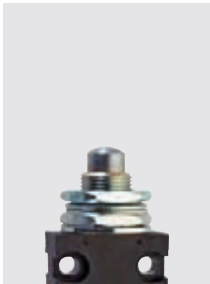


Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact	EExM 14 W 10/1S 	EEx 14 W 10/1S
1 change-over contact	EExM 14 W 	
2 NC contacts		EEx 14 W 20

Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact	EExM 14 F 10/1S 	EEx 14 F 10/1S
1 change-over contact	EExM 14 F 	
2 NC contacts		EEx 14 F 20



Features/Options

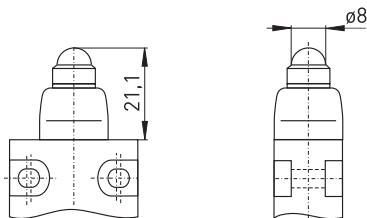
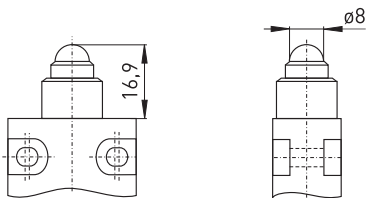
- Actuating speed 0.5 m/s with an actuating angle of 20°
- Can be actuated in line with or from side of switch axis
- Actuator head with captive stainless steel ball actuator
- Exact repeatability of switching point

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



Ex position switches

// Series EEx/ExM 14, actuators

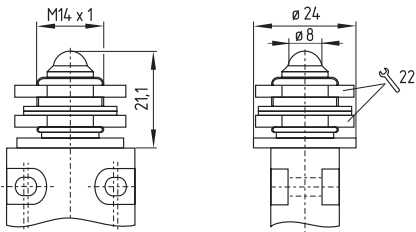
Features/Options

- 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

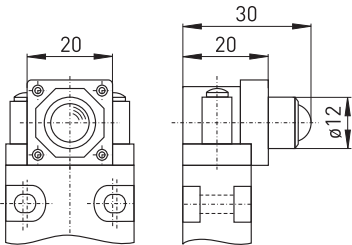
Features/Options

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

// Ball plunger for front mounting FKU



// Vertical ball plunger VKU

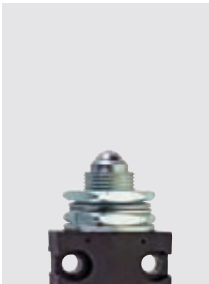


Contact variants: switch travel/contacts

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

Contact variants: switch travel/contacts

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



Features/Options

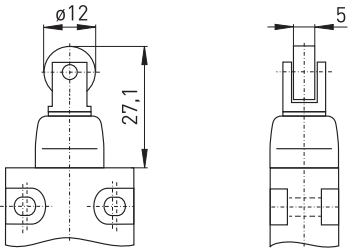
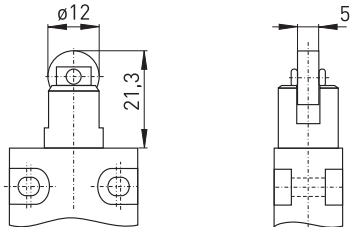
- Actuating speed 0.5 m/s with an actuating angle of 30°
- Metal roller
- Available with actuator repositioned by 90°

Features/Options

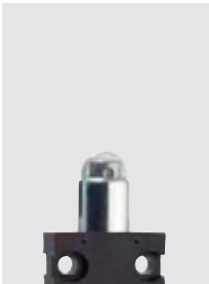
- Actuating speed 0.5 m/s with an actuating angle of 25°
- Metal roller
- Available with actuator repositioned by 90°
- Collar to protect against the entry of foreign bodies

// Roller plunger R

// Roller plunger with collar WR



Contact variants: switch travel/contacts			Contact variants: switch travel/contacts		
	Snap action	Slow action		Snap action	Slow action
1 NC/1 NO contact	EEExM 14 R 10/1S 	EEEx 14 R 10/1S 	1 NC/1 NO contact	EEExM 14 WR 10/1S 	EEEx 14 WR 10/1S
1 change-over contact	EEExM 14 R 		1 change-over contact	EEExM 14 WR 	
2 NC contacts		EEEx 14 R 20 	2 NC contacts		EEEx 14 WR 20



Ex position switches

// Series EEx/EExM 14, actuators

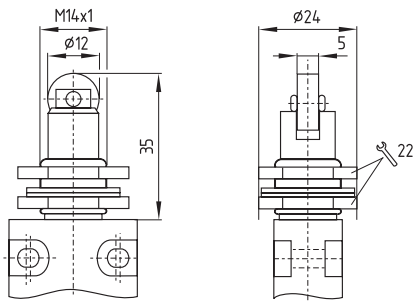
Features/Options

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

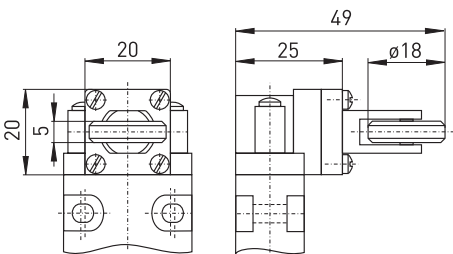
Features/Options

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

// Roller plunger for front mounting FR



// Vertical roller plunger VR



Contact variants: switch travel/contacts

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

Contact variants: switch travel/contacts

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



Features/Options

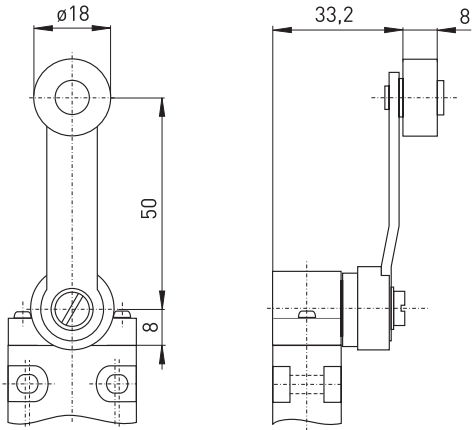
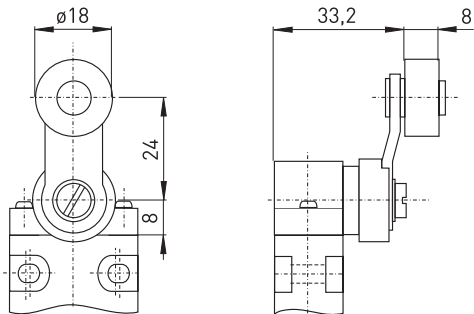
- Actuating speed 0.5 m/s with an actuating angle of 45°
- Wear-resistant thermoplastic roller
- Lever can be repositioned in 10° steps clockwise or counter-clockwise
- Actuator can be repositioned by 180°
- With metal roller available on request

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	EExM 14 D 10/1S 	EEx 14 D 10/1S
1 change-over contact	EExM 14 D 	
2 NC contacts		EEx 14 D 20

Contact variants: switch travel/contacts		
	Snap action	Slow action
1 NC/1 NO contact	EExM 14 DL 10/1S 	EEx 14 DL 10/1S
1 change-over contact	EExM 14 DL 	
2 NC contacts		EEx 14 DL 20



Ex position switches

// Series EEx/EExM 14, actuators

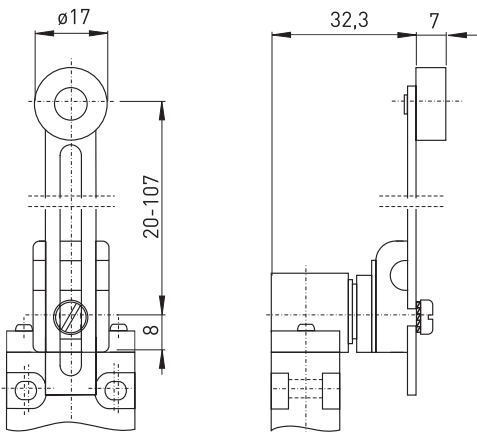
Features/Options

- 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

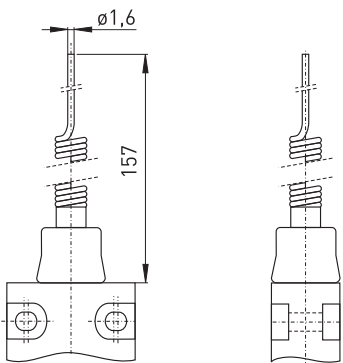
Features/Options

- 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



Contact variants: switch travel/contacts

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

Contact variants: switch travel/contacts

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



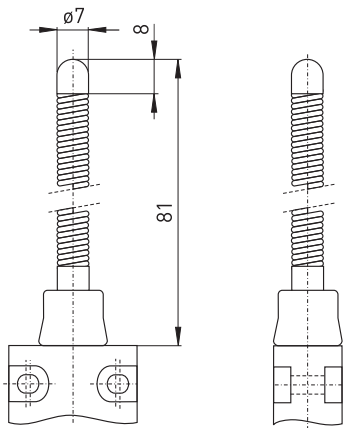
Features/Options

- 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°

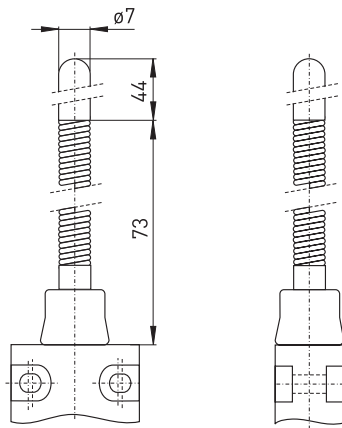
Features/Options

- 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	Slow action
1 NC/1 NO contact	EExM 14 TF 10/1S 18° 10° 0° 10° 18° BK-GY BN-BU	EEx 14 TF 10/1S 18° 15° 0° 15° 18° BK GY BN BU 10° 10°
1 change-over contact	EExM 14 TF 18° 0° 18° GY BK GY BN 10° 10°	
2 NC contacts		EEx 14 TF 20 18° 0° 18° BK-GY BN-BU 10° 10°


	Snap action	Slow action
1 NC/1 NO contact	EExM 14 TK 10/1S 18° 10° 0° 10° 18° BK-GY BN-BU	EEx 14 TK 10/1S 18° 15° 0° 15° 18° BK GY BN BU 10° 10°
1 change-over contact	EExM 14 TK 18° 0° 18° GY BK GY BN 10° 10°	
2 NC contacts		EEx 14 TK 20 18° 0° 18° BK-GY BN-BU 10° 10°



Ex position switches

// Series EEx 95

Features/Options

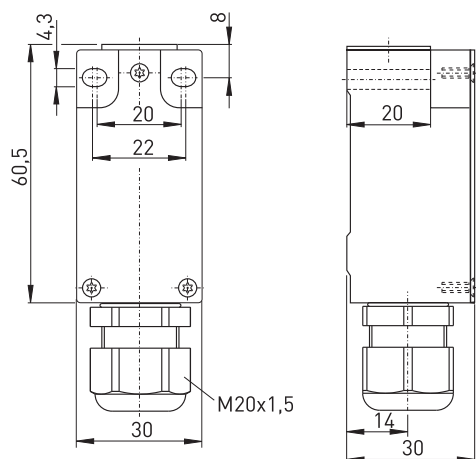
- Ex zone 1 and 2, as well as 21 and 22
- Thermoplastic enclosure
- Design according to DIN EN 50 047
- Wiring compartment
- Double insulated 
- Available with overlapping contacts
- Actuator heads can be repositioned in 4 x 90° steps
- Angle of offset roller lever can be adjusted in 10° steps
- With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

// EEX 95



Technical data

Standards	IEC/EN 60947-5-1; EN 1088; EN 50014; EN 50018; EN 50019; EN 50281-1-1
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 according to EN 60529
Contact material	silver
Switching system	slow action, positive break NC contact \ominus
Switching elements	change-over contact with double break Zb or 2 NC contacts, galvanically separated contact bridges
Termination	M3 screw clamps
Cable section	max. 1.5 mm ² (incl. conductor ferrules)
Cable length	–
U _{imp}	4 kV
U _i	250 V
I _{the}	6 A
I _e /U _e	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	3600/h
Repeat accuracy	± 0.1 mm
Contact gap	max. 2 x 3.5 mm
Ex certification	⊕ II 2G EEx de IIC T6, II 2D IP67 T80°C
Approvals	DMT 01 ATEX E 118



Ordering details

EEx 95 WH 10/1S-3D

Equipment Categ. 3D, dust
Ex zone 22
Contact type 10/1S, (2Ö, UE)
Actuator H (R, D, DS, etc. ...)
Collar
Series
Ex certified component

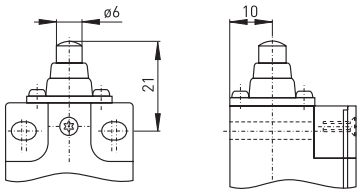
Ex position switches

// Series EEx 95, actuators

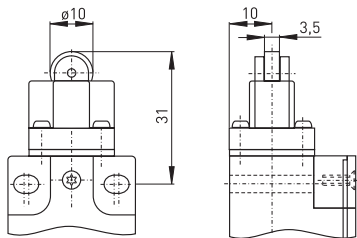
- Features/Options
- Actuator type B to DIN EN 50 047
 - Actuator with collar

- 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	EEx 95 W 10/1S
1 NC/1 NO contact with overlapping	EEx 95 W UE
2 NC contacts	EEx 95 W 20

Contact variants: switch travel/contacts

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



Ex position switches

// Series EEx 95, actuators

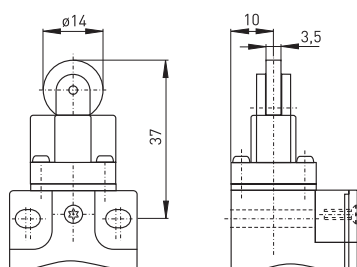
Features/Options

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

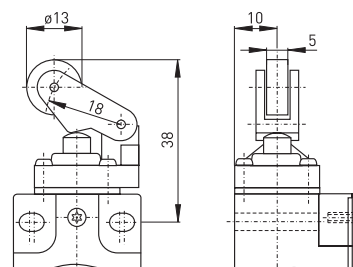
Features/Options

- 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

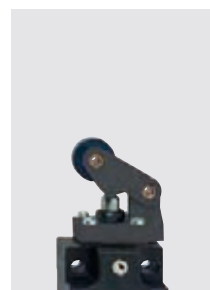


Contact variants: switch travel/contacts

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

Contact variants: switch travel/contacts

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



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.

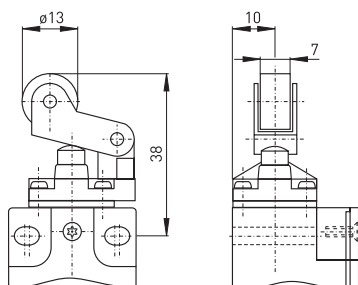
Features/Options

- 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.

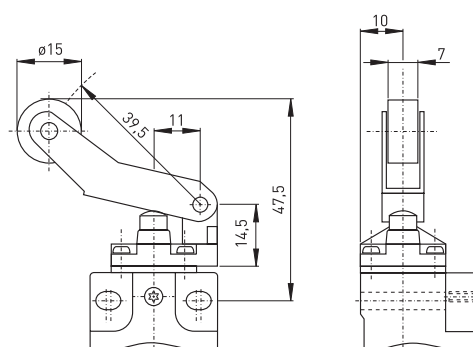
// Metal roller lever WHM



Contact variants: switch travel/contacts

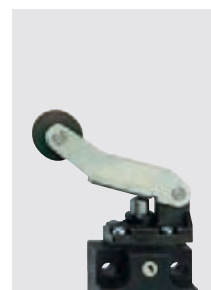
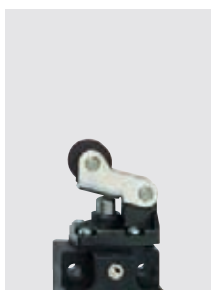
	Slow action
1 NC/1 NO contact	EEx 95 WHM 10/1S
1 NC/1 NO contact with overlapping	EEx 95 WHM UE
2 NC contacts	EEx 95 WHM 20

// Long metal roller lever WHLM



Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	EEx 95 WHLM 10/1S
1 NC/1 NO contact with overlapping	EEx 95 WHLM UE
2 NC contacts	EEx 95 WHLM 20



Ex position switches

// Series EEx 95, actuators

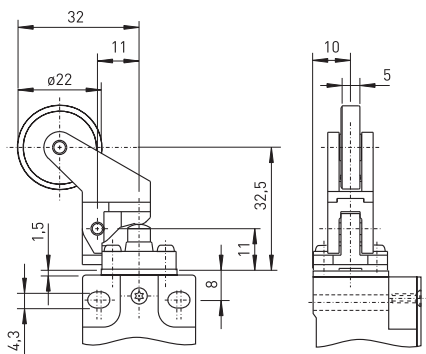
Features/Options

- 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

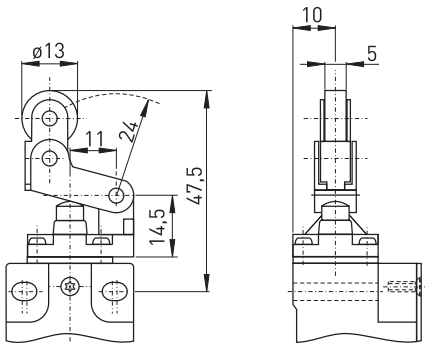
Features/Options

- 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	EEx 95 4K 1Ö/1S
1 NC/1 NO contact with overlapping	EEx 95 4K UE
2 NC contacts	EEx 95 4K 2Ö

Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	EEx 95 WHK 1Ö/1S
1 NC/1 NO contact with overlapping	EEx 95 WHK UE
2 NC contacts	EEx 95 WHK 2Ö



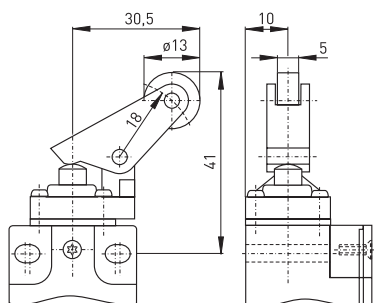
Features/Options

- 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

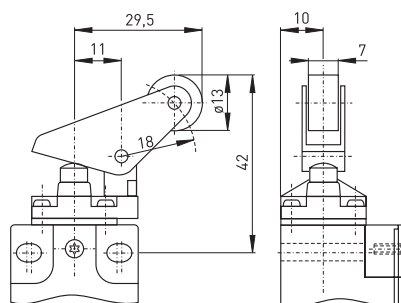
// Parallel roller lever WPH



Contact variants: switch travel/contacts

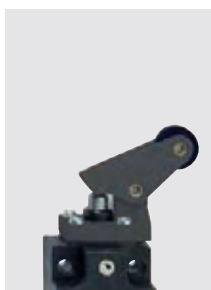
	Slow action
1 NC/1 NO contact	EEx 95 WPH 10/1S
1 NC/1 NO contact with overlapping	EEx 95 WPH UE
2 NC contacts	EEx 95 WPH 2Ö

// Metal parallel roller lever WPHM



Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	EEx 95 WPHM 10/1S
1 NC/1 NO contact with overlapping	EEx 95 WPHM UE
2 NC contacts	EEx 95 WPHM 2Ö



Ex position switches

// Series EEx 95, actuators

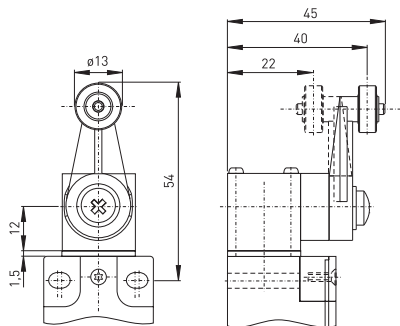
Features/Options

- 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

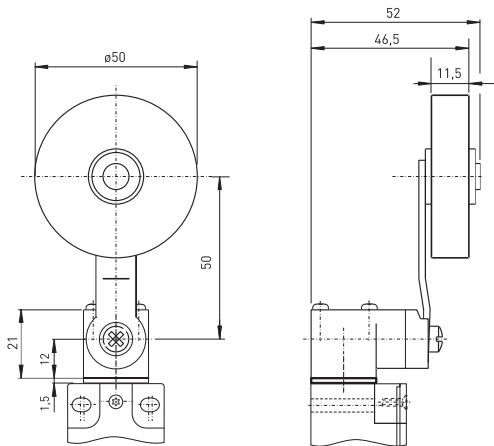
Features/Options

- 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

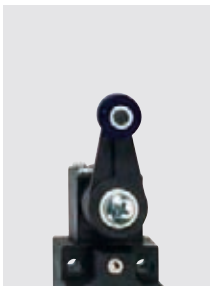


Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	EEx 95 D 10/1S <div> <div>65°35° 0° 35°65°</div> <div>23-24</div> <div>40°25° 25°40°</div> <div>11-12</div> </div>
1 NC/1 NO contact with overlapping	EEx 95 D UE <div> <div>65° 35° 0° 35° 65°</div> <div>23-24</div> <div>60° 45° 45° 60°</div> <div>15-16</div> </div>
2 NC contacts	EEx 95 D 20 <div> <div>65° 25° 0° 25° 65°</div> <div>11-12</div> <div>40° 40°</div> <div>21-22</div> </div>

Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	EEx 95 D50 10/1S <div> <div>65°35° 0° 35°65°</div> <div>23-24</div> <div>40°25° 25°40°</div> <div>11-12</div> </div>
1 NC/1 NO contact with overlapping	EEx 95 D50 UE <div> <div>65° 35° 0° 35° 65°</div> <div>23-24</div> <div>60° 45° 45° 60°</div> <div>15-16</div> </div>
2 NC contacts	EEx 95 D50 20 <div> <div>65° 25° 0° 25° 65°</div> <div>11-12</div> <div>40° 40°</div> <div>21-22</div> </div>



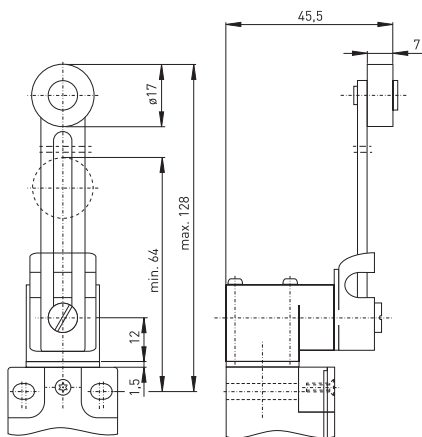
Features/Options

- 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

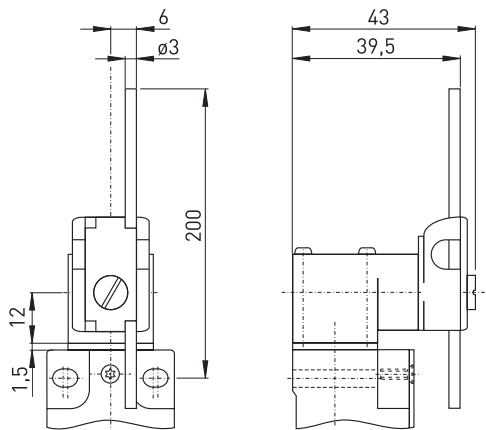
Features/Options

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

// Adjustable-length roller lever DS



// Spring lever DD

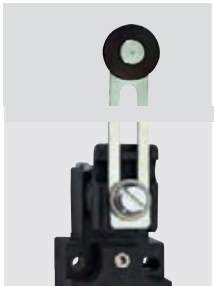


Contact variants: switch travel/contacts

Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	EEx 95 DS 10/1S 65° 35° 0° 35° 65° 23-24 25° 25° 11-12
1 NC/1 NO contact with overlapping	EEx 95 DS UE 65° 35° 0° 35° 65° 23-24 45° 45° 15-16
2 NC contacts	EEx 95 DS 2Ö 65° 25° 0° 25° 65° 11-12 21-22

	Slow action
1 NC/1 NO contact	EEx 95 DD 10/1S 65° 35° 0° 35° 65° 23-24 25° 25° 11-12
1 NC/1 NO contact with overlapping	EEx 95 DD UE 65° 35° 0° 35° 65° 23-24 45° 45° 15-16
2 NC contacts	EEx 95 DD 2Ö 65° 25° 0° 25° 65° 11-12 21-22



Ex position switches

// Series EEx 95, actuators

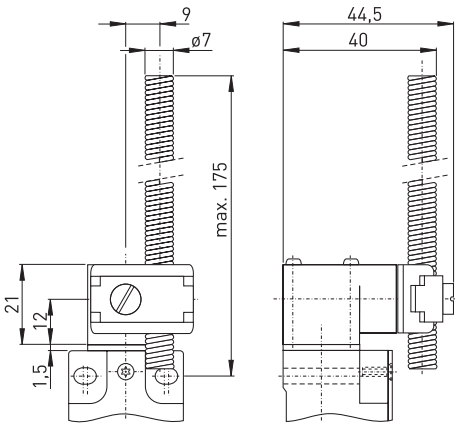
Features/Options

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

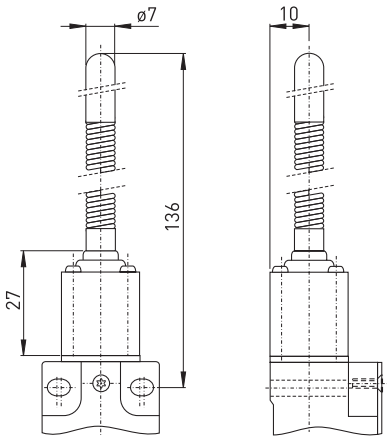
Features/Options

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

// Wire lever DF



// Spring rod with plastic tip TK

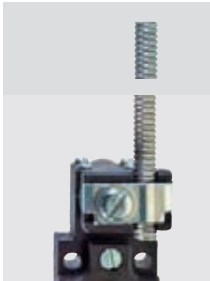


Contact variants: switch travel/contacts

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

Contact variants: switch travel/contacts

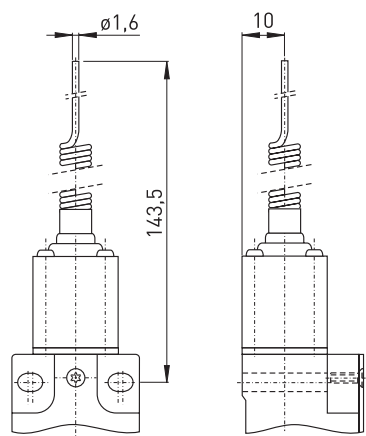
	Slow action
1 NC/1 NO contact	EEx 95 TK 10/1S
2 NC contacts	EEx 95 TK 20



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	<div><div>EEEx 95 TL 10/1S</div><div><div>0°11°</div><div>23-24</div><div>11-12</div><div>6°</div></div></div>
2 NC contacts	<div><div>EEEx 95 TL 20</div><div><div>0°6°</div><div>11-12</div><div>21-22</div></div></div>



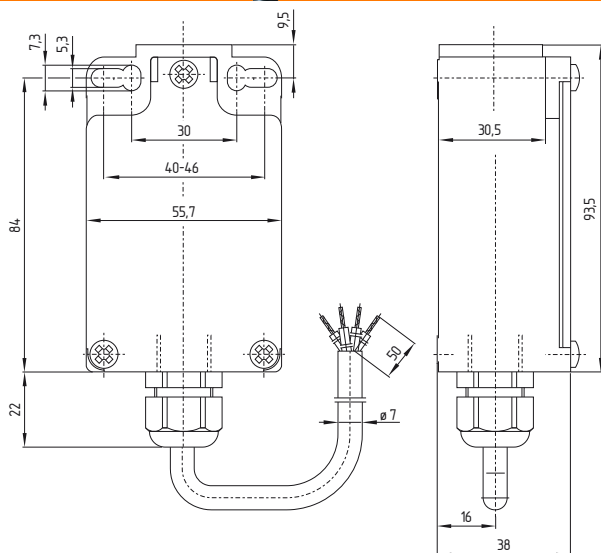
Ex position switches

// Series 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 $4 \times 90^\circ$ 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

// EEX T 356



Technical data

Standards	IEC/EN 60947-5-1; EN 1088; EN 50014; EN 50018; EN 50019; EN 50281-1-1
Enclosure	glass-fibre reinforced, shock-proof thermoplastic, self-extinguishing
Cover	steel enamelled
Switch insert	EEx 13
Protection class	IP 65 according to IEC/EN 60529
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	cable H05VV-F
Cable section	$4 \times 0.75 \text{ mm}^2$
Cable length	2 oder 5 m
U_{imp}	4 kV
U_i	250 V
I_{the}	6 A
I_e/U_e	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	$-20^\circ\text{C} \dots +65^\circ\text{C}$
Mechanical life	> 1 million operations
Switching frequency	1800/h
Repeat accuracy	$\pm 0.1 \text{ mm}$
Contact gap	max. $2 \times 4.5 \text{ mm}$
Ex certification	$\text{II 2G EEx d IIC T6, II 2D IP65 T80}^\circ\text{C}$ PTB 03 ATEX 1068 X* *referring to the switch insert
Approvals	



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

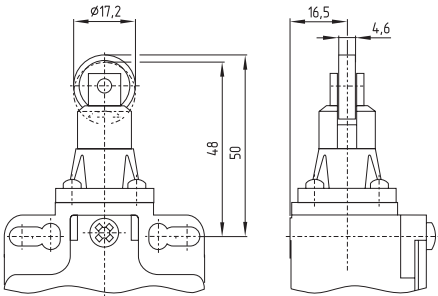
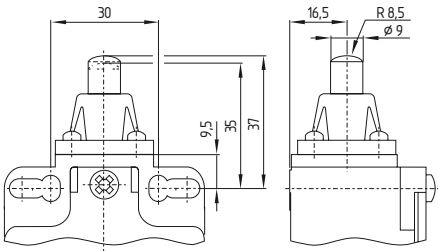
// Series EEx T 356, actuators

- 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

// Roller plunger R



Contact variants: switch travel/contacts

Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	EEx T 356 S 10/1S
	<div> <div>03.56</div> <div>23.3</div> <div>BK-GY</div> <div>BN-BU</div> </div>

	Slow action
1 NC/1 NO contact	EEx T 356 R 10/1S
	<div> <div>03.56</div> <div>23.3</div> <div>BK-GY</div> <div>BN-BU</div> </div>



Ex position switches

// Series EEx T 356, actuators

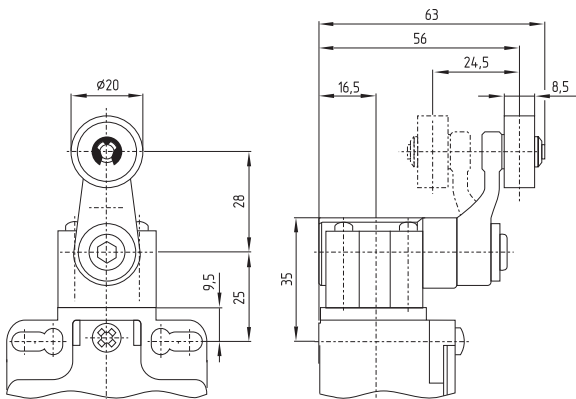
Features/Options

- 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

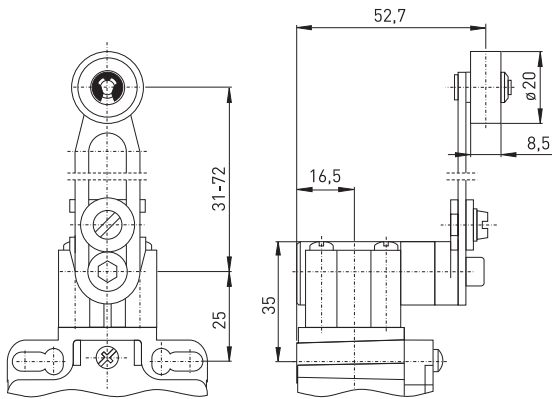
Features/Options

- 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



Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	EEx T 356 4VH 10/1S
	<div> <div>80°42°0°42°80°</div> <div> <div></div> <div></div> <div></div> <div></div> </div> <div> <div>39°24°24°39°</div> <div>BK-GY</div> <div>BN-BU</div> </div> </div>

Contact variants: switch travel/contacts

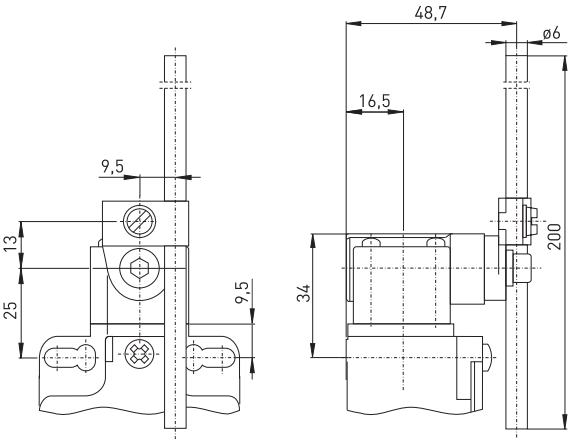
	Slow action
1 NC/1 NO contact	EEx T 356 4V7H 10/1S
	<div> <div>80°42°0°42°80°</div> <div> <div></div> <div></div> <div></div> <div></div> </div> <div> <div>39°24°24°39°</div> <div>BK-GY</div> <div>BN-BU</div> </div> </div>



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	<div>EEEx T 356 4V10H 10/1S</div> <div><div><div>80°42°</div><div>0°</div><div>42°80°</div></div><div><div>39°</div><div>24°</div><div>24°</div><div>39°</div></div><div><div>BK-GY</div><div>BN-BU</div></div></div>



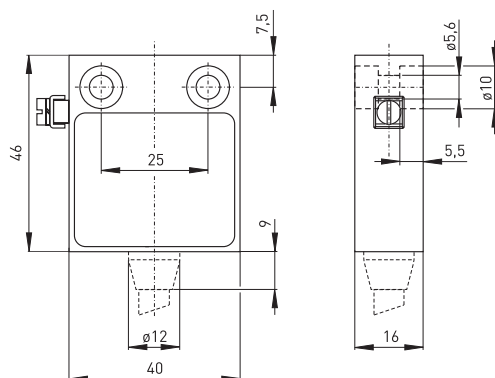
Ex position switches

// Series 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

// EEX 12



Technical data

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

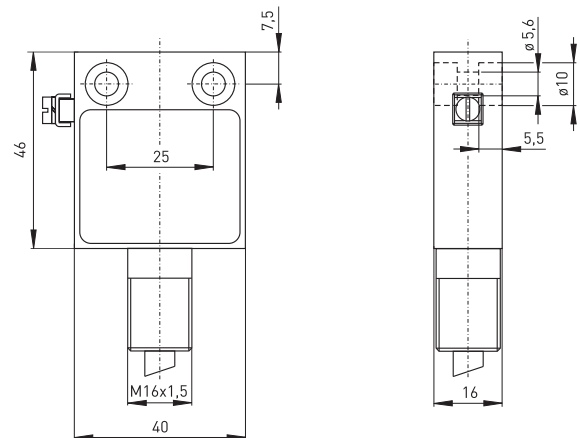
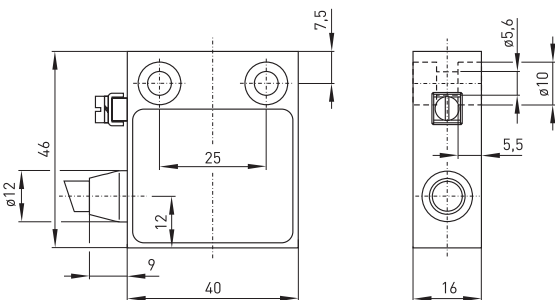


// Cable on side

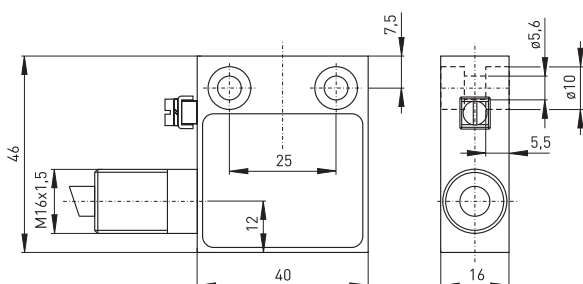
// Mounting thread M16 x 1.5



// Mounting thread M16 x 1.5



// Mounting thread on side M16 x 1.5



Ex position switches

// Series EEx 12, actuators

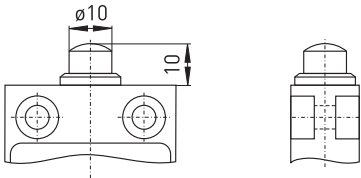
Features/Options

- 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

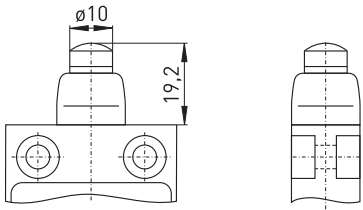
// Plunger



Contact variants: switch travel/contacts

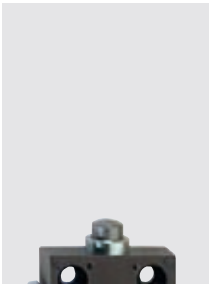
	Snap action
1 change-over contact	EEx 12

// Plunger with watertight collar W



Contact variants: switch travel/contacts

	Snap action
1 change-over contact	EEx 12 W



Features/Options

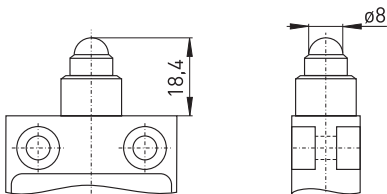
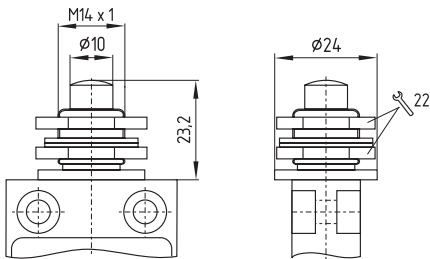
- Actuating speed 0.5 m/s with an actuating angle of 0°

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
1 change-over contact	EEx 12 F
	0 1,5 5,5 GY-BK GY-BN

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



Ex position switches

// Series EEx 12, actuators

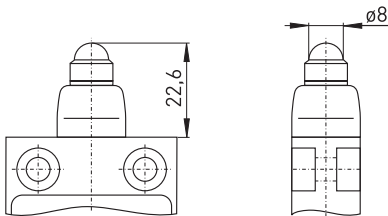
Features/Options

- 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

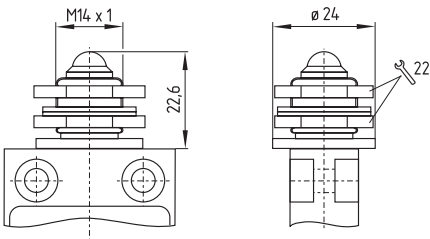
// Ball plunger with collar WKU



Contact variants: switch travel/contacts

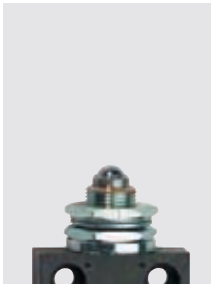
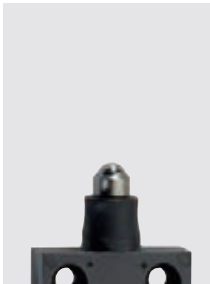
	Snap action
1 change-over contact	EEx 12 WKU

// Ball plunger front mounting FKU



Contact variants: switch travel/contacts

	Snap action
1 change-over contact	EEx 12 FKU



Features/Options

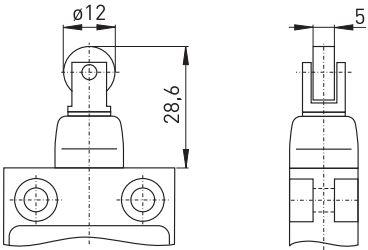
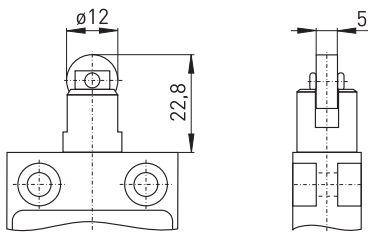
- Actuating speed 0.5 m/s with an actuating angle of 30°
- Metal roller
- Available with actuator repositioned by 90°

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
1 change-over contact	<div>EEEx 12 R</div> <div><div>01,55,5</div><div>GY-BKGY-BN</div></div>

	Snap action
1 change-over contact	<div>EEEx 12 WR</div> <div><div>01,55,5</div><div>GY-BKGY-BN</div></div>



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°

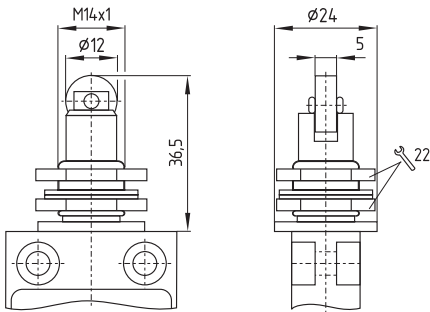
Features/Options

- 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

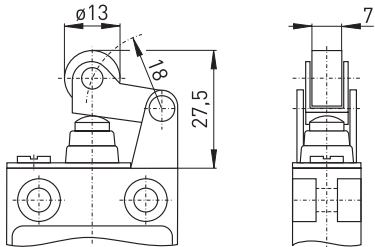
Note

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

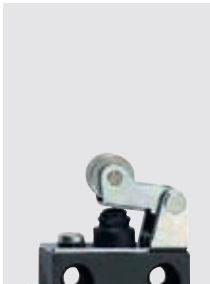


Contact variants: switch travel/contacts

	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°
- Collar to protect against the entry of foreign bodies
- With plastic roller available on request

Features/Options

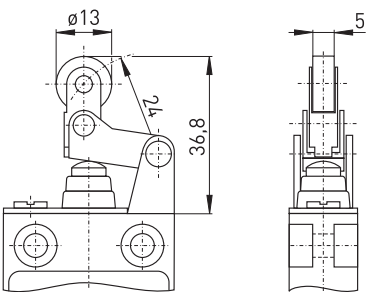
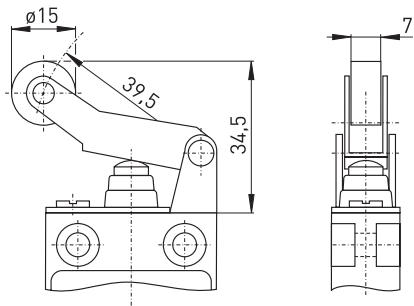
Actuation from the left should be avoided since this reduces the mechanical life of the position switch.

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°
- Collar to protect against the entry of foreign bodies
- With plastic roller available on request

// Long lever with collar WHL

// Rocking roller lever with collar WHK

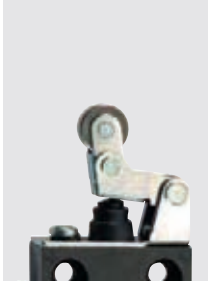


Contact variants: switch travel/contacts

Contact variants: switch travel/contacts

	Snap action
1 change-over contact	EEx 12 WHL
	0 4.1 12.8 GY-BK GY-BN

	Snap action
1 change-over contact	EEx 12 WHK
	0 2 6.8 GY-BK GY-BN



Ex position switches

// Series EEx 12, actuators

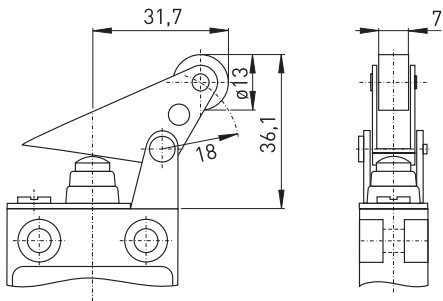
Features/Options

- 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°
- 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°
- 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

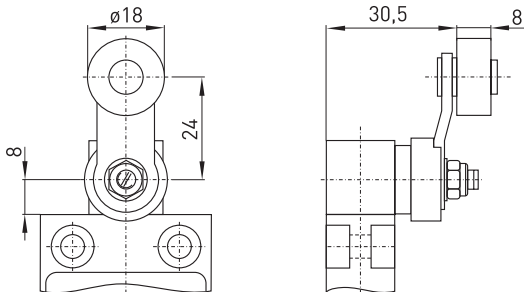
// Parallel roller lever with collar WPH



Contact variants: switch travel/contacts

	Snap action
1 change-over contact	EEx 12 WPH <div> <div>01.55.5</div> <div>GY-BKGY-BN</div> </div>

// Roller lever D



Contact variants: switch travel/contacts

	Snap action
1 change-over contact	EEx 12 D <div> <div>70°17°0°17°70°</div> <div>GY-BKGY-BN</div> </div>



Features/Options

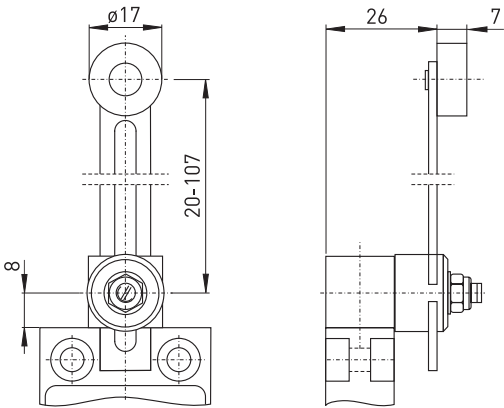
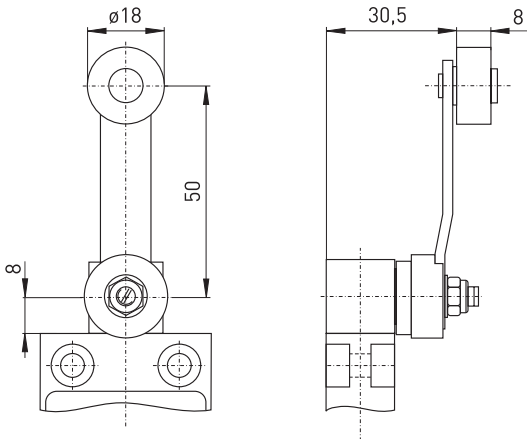
- Actuating speed 0.5 m/s with an actuating angle of 45°
- Wear-resistant thermoplastic roller
- Lever can be repositioned in 10° steps clockwise or counter-clockwise
- Actuator can be repositioned by 180°
- With metal roller available on request

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

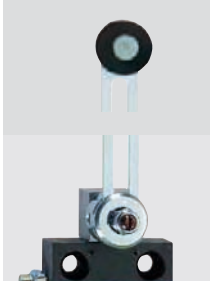


Contact variants: switch travel/contacts

Contact variants: switch travel/contacts

	Snap action
1 change-over contact	<div>EEEx 12 DL</div> <div>70° 17° 0° 17° 70°</div> <div><div></div><div></div><div></div><div></div><div></div></div> <div>GY-BK</div> <div>GY-BN</div>

	Snap action
1 change-over contact	<div>EEEx 12 DS</div> <div>70° 17° 0° 17° 70°</div> <div><div></div><div></div><div></div><div></div><div></div></div> <div>GY-BK</div> <div>GY-BN</div>



Ex position switches

// Series EEx 12, actuators

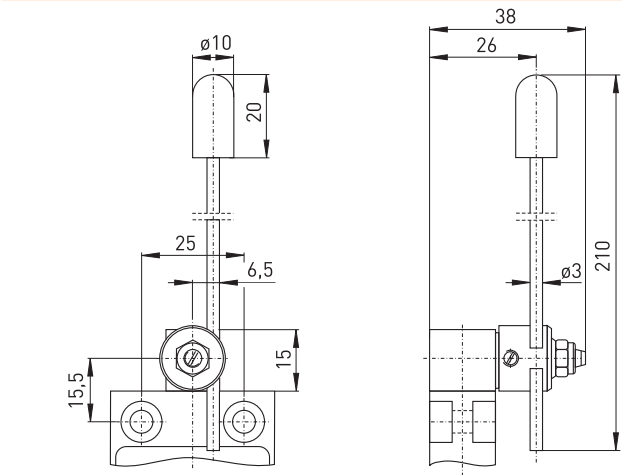
Features/Options

- 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°

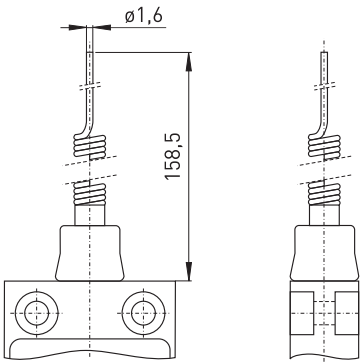
// Spring lever DD



Contact variants: switch travel/contacts

	Snap action
1 change-over contact	EEx 12 DD <div> <div>70°</div> <div>17°</div> <div>0°</div> <div>17°</div> <div>70°</div> </div> <div> <div>GY-BK</div> <div>GY-BN</div> </div>

// Long spring rod TL



Contact variants: switch travel/contacts

	Snap action
1 change-over contact	EEx 12 TL <div> <div>18°</div> <div>0°</div> <div>18°</div> </div> <div> <div>GY-BK</div> <div>GY-BN</div> </div>



Features/Options

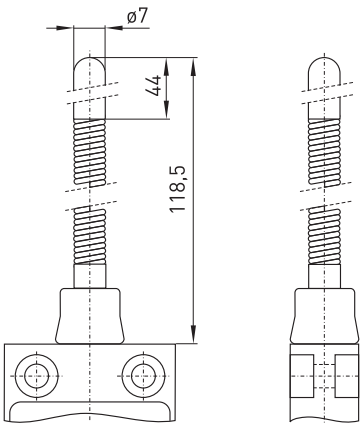
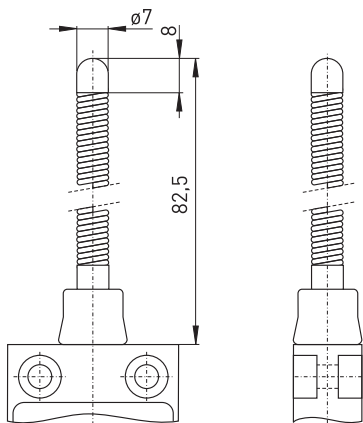
- With rounded steel tip
- Spring rod can be actuated from any direction
- Elasticity of spring allows for deflection above the max. switching angle of 18°

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	<div>EEEx 12 TF</div> <div><div><div>18°</div><div>0°</div><div>18°</div></div><div><div>GY-BK</div><div>GY-BN</div></div></div>

	Snap action
1 change-over contact	<div>EEEx 12 TK</div> <div><div><div>18°</div><div>0°</div><div>18°</div></div><div><div>GY-BK</div><div>GY-BN</div></div></div>



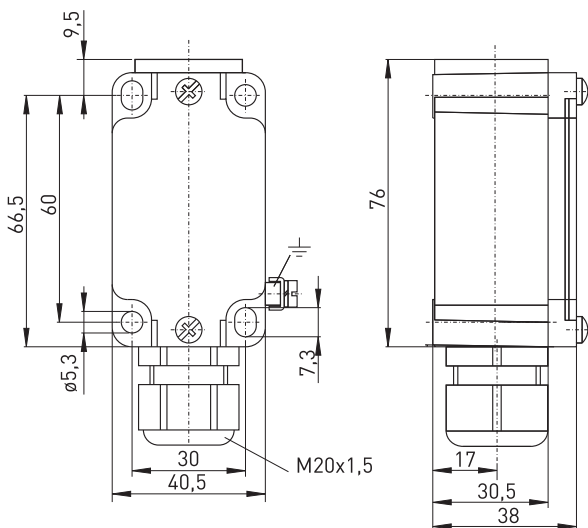
Ex position switches

// Series 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

// EEX 335



Technical data

Standards	IEC/EN 60947-5-1; EN 1088; EN 50014; EN 50018; EN 50019; EN 50281-1-1
Design	DIN EN 50 041
Enclosure	zinc die casting, enamelled
Switch insert	Ex 95
Protection class	IP 65 according to EN 60529
Contact material	silver
Switching system	slow action, positive break NC contact \ominus
Switching elements	change-over contact with double break Zb or 2 NC contacts, galvanically separated contact bridges
Termination	M3 screw clamps
Cable section	max. 1.5 mm ² (incl. conductor ferrules)
Cable length	-
U _{imp}	4 kV
U _i	250 V
I _{the}	6 A
I _e /U _e	6 A/400 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 ... +60 °C
Mechanical life	> 1 million operations
Switching frequency	1800/h
Repeat accuracy	± 0.1 mm
Contact gap	max. 2 x 3.5 mm
Ex certification	⊕ II 2G EEx de IIC T6, II 2D IP65 T80°C
Approvals	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

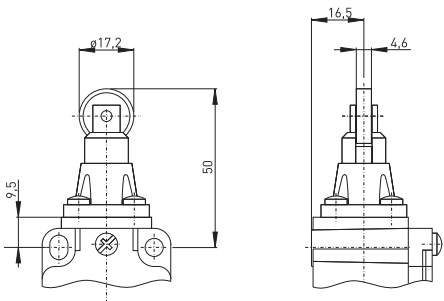
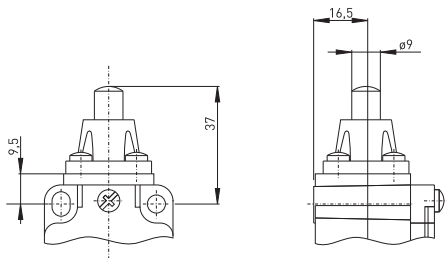
// Series EEx 335, actuators

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

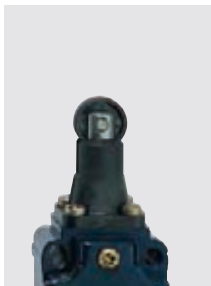
- Features/Options
- Actuator type C to DIN EN 50 041
 - Actuating speed 0.5 m/s with an actuating angle of $\alpha = 30^\circ$

// Plunger S

// Roller plunger R



Contact variants: switch travel/contacts		Contact variants: switch travel/contacts	
	Slow action		Slow action
1 NC/1 NO contact	EEx 335 S 10/1S 	1 NC/1 NO contact	EEx 335 R 10/1S
1 NC/1 NO contact with overlapping	EEx 335 S UE 	1 NC/1 NO contact with overlapping	EEx 335 R UE
2 NC contacts	EEx 335 S 20 	2 NC contacts	EEx 335 R 20



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

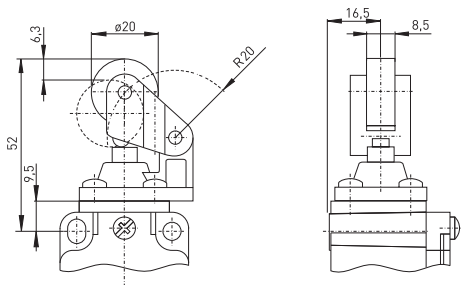
Note

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

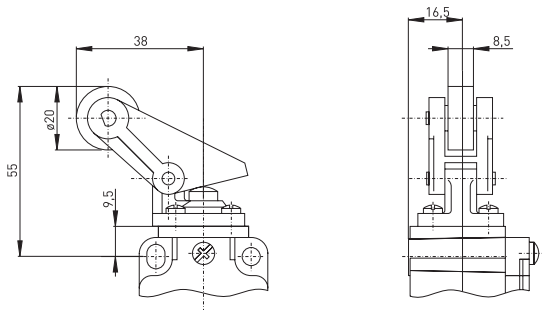
Features/Options

- 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	EEx 335 1K 10/1S
1 NC/1 NO contact with overlapping	EEx 335 1K UE
2 NC contacts	EEx 335 1K 20

Contact variants: switch travel/contacts

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



Features/Options

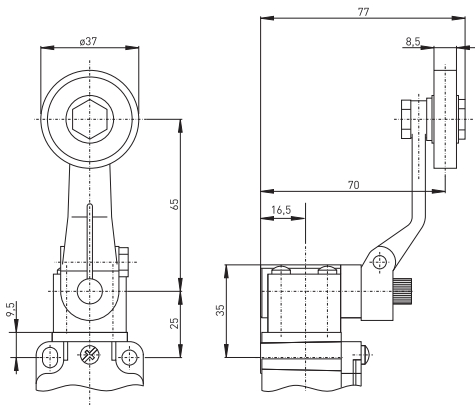
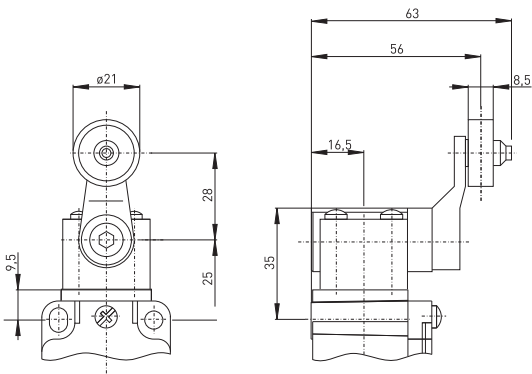
- Actuator type A to DIN EN 50 041
- Actuating speed 2.5 m/s with an actuating angle of $\alpha = 30^\circ$
- Wear-resistant thermoplastic roller
- Actuator heads can be repositioned in 4 x 90° steps

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

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



Ex position switches

// Series EEx 335, actuators

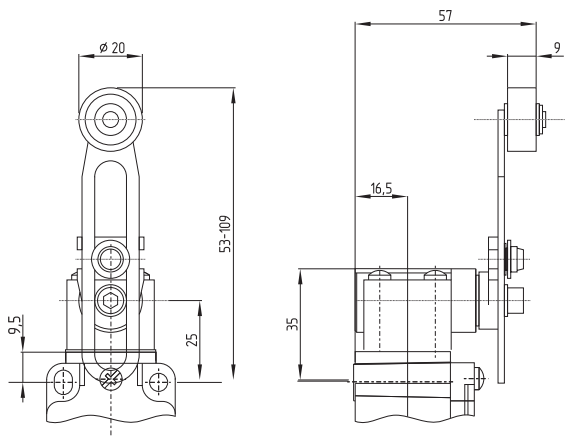
Features/Options

- 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

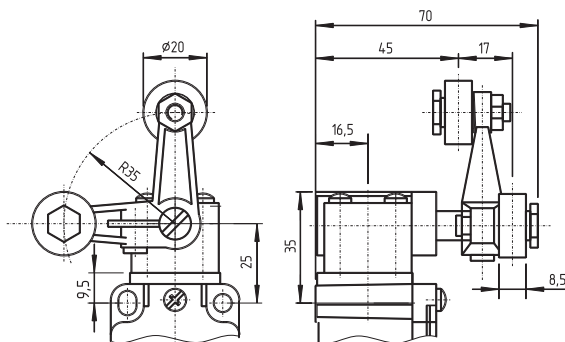
Features/Options

- 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

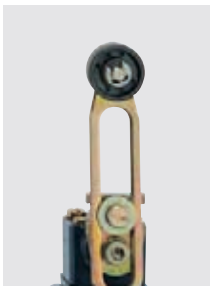


Contact variants: switch travel/contacts

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

Contact variants: switch travel/contacts

	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



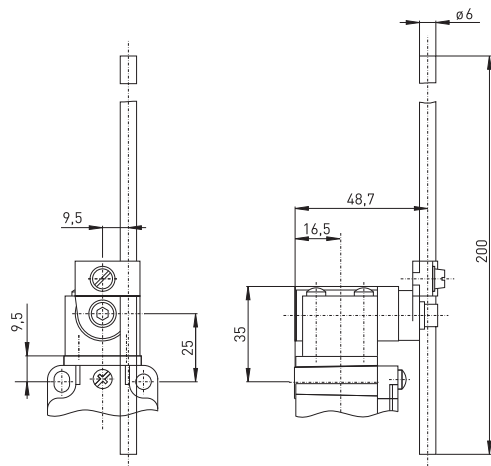
Features/Options

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

Features/Options

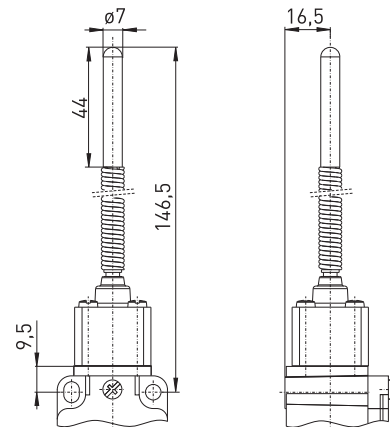
- Wear-resistant plastic tip
- Spring rod can be actuated from any direction
- Elasticity of spring allows for deflection above the max. switching angle of 12°

// 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	EEx 335 4V10H 10/1S
1 NC/1 NO contact with overlapping	EEx 335 4V10H UE
2 NC contacts	EEx 335 4V10H 2Ö

	Slow action
1 NC/1 NO contact	EEx 335 TK 10/1S
2 NC contacts	EEx 335 TK 2Ö



Ex position switches

// Series EEx 355

Features/Options

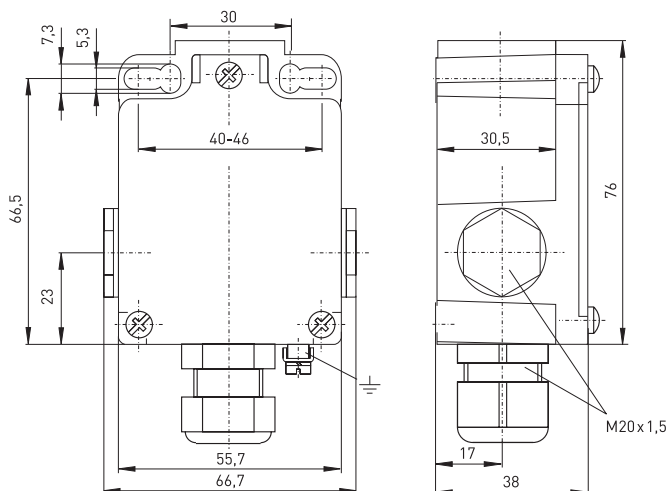
- Ex zone 1 and 2, as well as 21 and 22
- Mounting and switching details to EN 50041
- 3 cable entries
- Actuating elements can be repositioned by $4 \times 90^\circ$
- Rocking lever can be positioned in 10° steps
- Special version only for equipment category 3D, available for dust Ex zone 22
- With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

// EEX 355



Technical data

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



Ordering details

EEx 355 S 10/15-3D

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

Ex position switches

// Series EEx 355, actuators

Features/Options

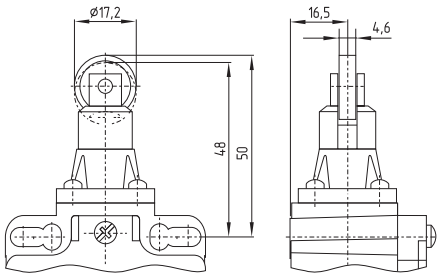
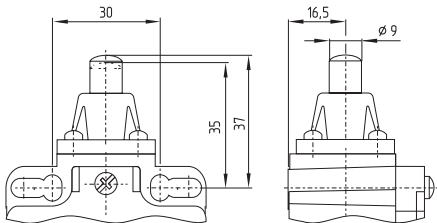
- Actuator type B to DIN EN 50 041
- Actuating speed 0.5 m/s with an actuating angle of $\alpha = 0^\circ$

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

// Roller plunger R



Contact variants: switch travel/contacts

Contact variants: switch travel/contacts

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

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



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

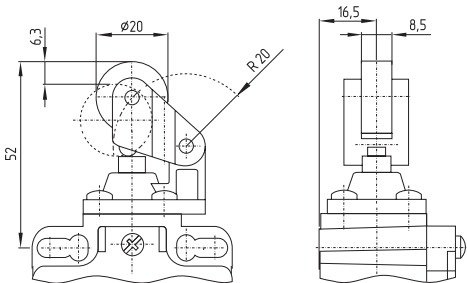
Note

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

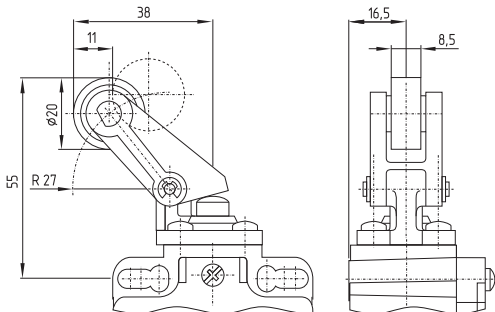
Features/Options

- 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

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

Contact variants: switch travel/contacts

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



Features/Options

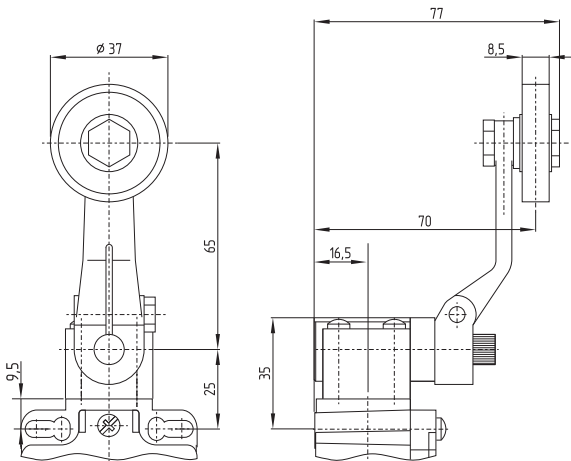
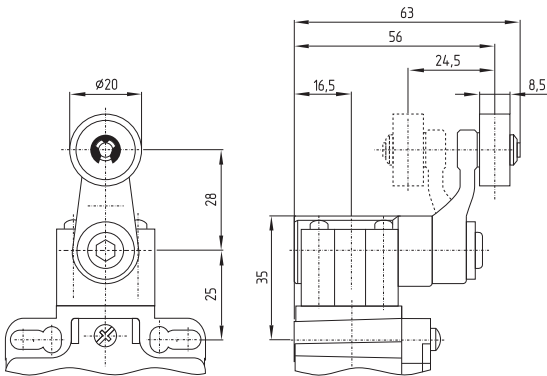
- Actuator type A to DIN EN 50 041
- Actuating speed 2.5 m/s with an actuating angle of $\alpha = 30^\circ$
- Wear-resistant thermoplastic roller
- Actuator heads can be repositioned in 4 x 90° steps

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

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



Ex position switches

// Series EEx 355, actuators

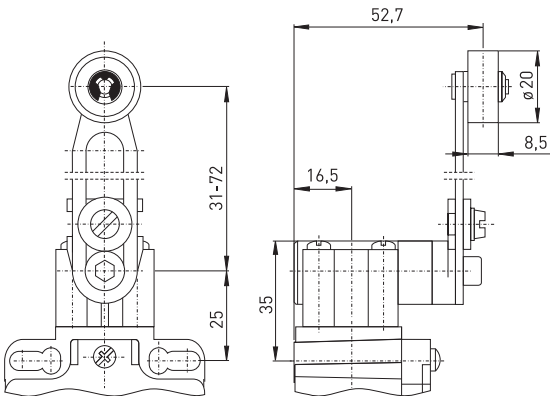
Features/Options

- 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

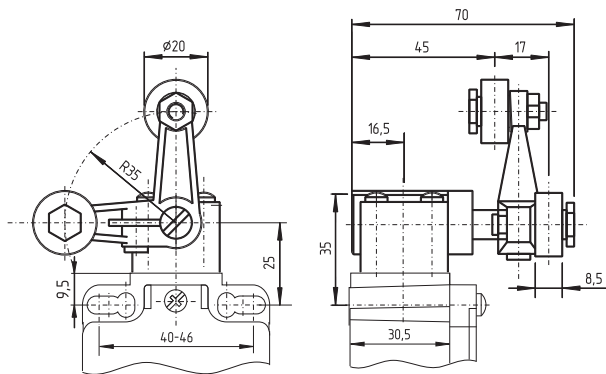
Features/Options

- 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



Contact variants: switch travel/contacts

Contact variants: switch travel/contacts

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

	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



Features/Options

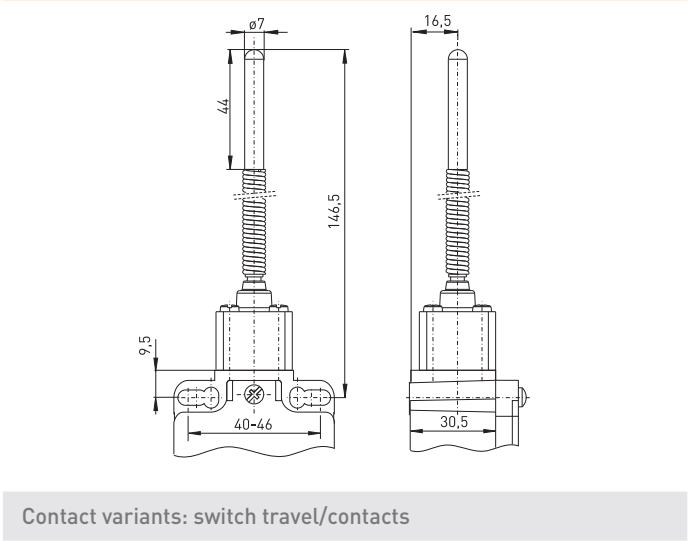
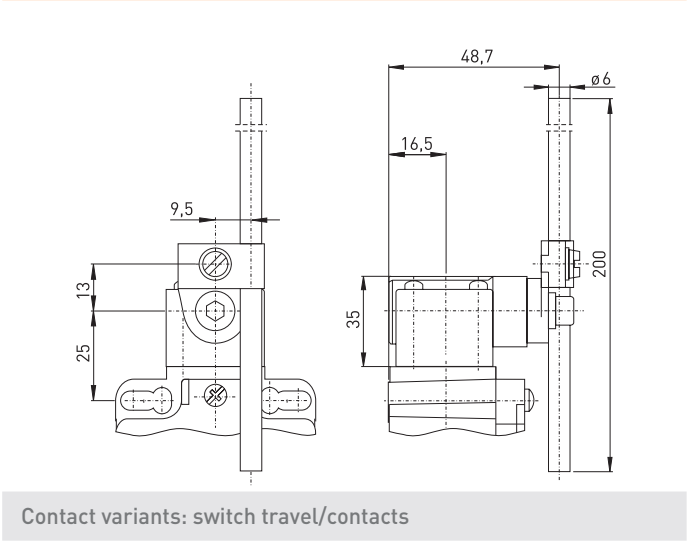
- Actuating speed 2.5 m/s with an actuating angle of $\alpha = 30^\circ$
- Actuator type D to EN 50041

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°

// Rod lever 4V10H

// Spring rod with plastic tip TK

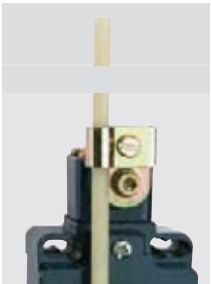


Contact variants: switch travel/contacts

Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	EEx 355 4V10H 10/1S 23-24 11-12
1 NC/1 NO contact with overlapping	EEx 355 4V10H UE 23-24 15-16
2 NC contacts	EEx 355 4V10H 2Ö 11-12 21-22

	Slow action
1 NC/1 NO contact	EEx 355 TK 10/1S 23-24 11-12
2 NC contacts	EEx 355 TK 2Ö 11-12 21-22



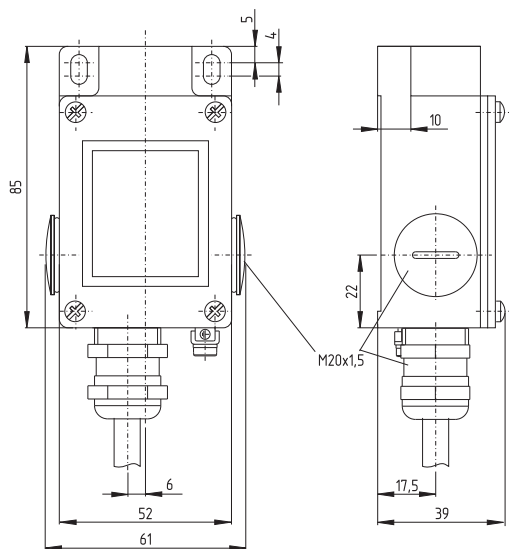
Ex position switches

// 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

Standards	IEC/EN 60947-5-1; EN 1088; EN 50014; EN 50018; EN 50019; EN 50281-1-1
Design	-
Enclosure	aluminium die casting, enamelled
Cover	steel, enamelled
Switch insert	EEExM 14, EEx 14
Protection class	IP 65 according to IEC/EN 60529
Contact material	silver
Switching system	snap or slow action, positive break NC contact ⊖
Switching elements	EEExM 61: change-over contact with single break, Form C, EEx 61: change-over contact with double break Zb, galvanically separated contact bridges
Termination	cabie H05VV-F
Cable section	4 x 0.75 mm ²
Cable length	3 m
U _{imp}	4 kV
U _i	250 V
I _{the}	6 A
I _e /U _e	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
Schaltfrequenz	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	EEExM 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/EEExM 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

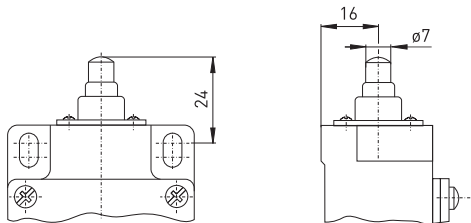
Features/Options

- 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.

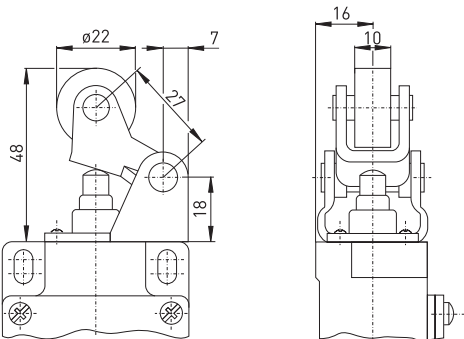
// Plunger W



Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact	EEExM 61 W 0 2 5.5 GY-BK GY-BN	EEx 61 W 1Ö/1S 0 3.5 5.5 BK-GY BN-BU 2

// Roller lever with collar WH



Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact	EEExM 61 WH 0 2 5.5 GY-BK GY-BN	EEx 61 WH 1Ö/1S 0 3.5 5.5 BK-GY BN-BU 2



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

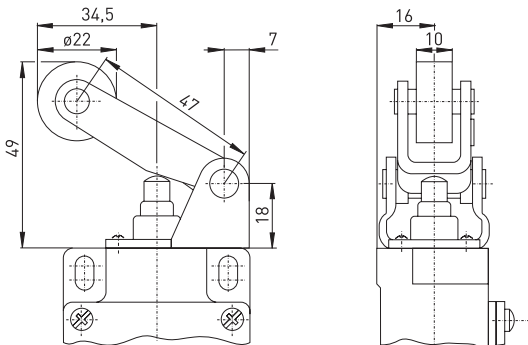
Note

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

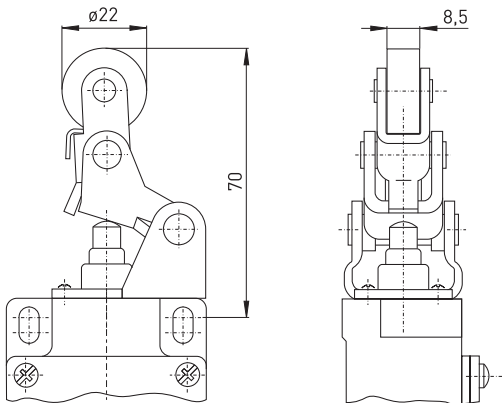
Features/Options

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



Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact	EExM 61 WHL 	EEx 61 WHL 10/1S

Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact	EExM 61 WHK 	EEx 61 WHK 10/1S



Features/Options

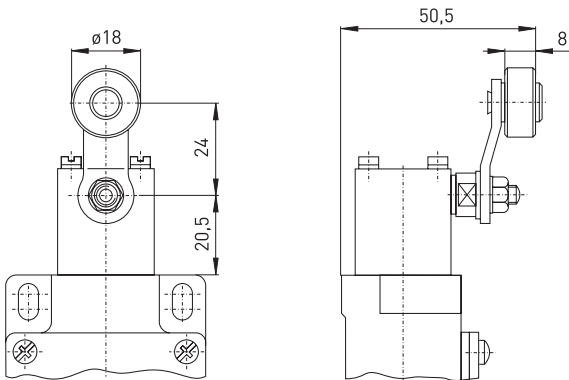
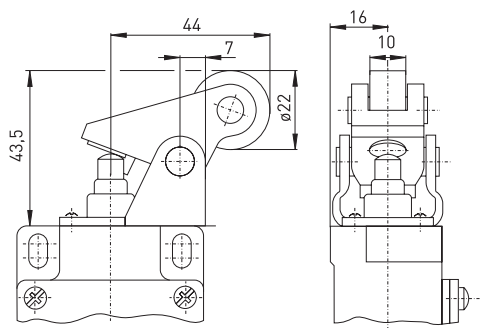
- Actuating speed 0.5 m/s with an actuating angle of $\alpha = 30^\circ$
- Actuation parallel to switch from below
- Wear-resistant thermoplastic roller
- Available with actuator repositioned by $4 \times 90^\circ$
- Collar to protect against the entry of foreign bodies
- With metal roller available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

Features/Options

- Actuating speed 0.5 m/s with an actuating angle of 45°
- 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

// Parallel roller lever with collar WPH

// Roller lever D



Contact variants: switch travel/contacts		
	Snap action	Slow action
1 NC/1 NO contact	EExM 61 WPH <div><div>01.55</div><div>GY-BK GY-BN</div></div>	EEx 61 WPH 10/1S <div><div>035</div><div>BK-GY BN-BU</div><div>1.5</div></div>

Contact variants: switch travel/contacts		
	Snap action	Slow action
1 NC/1 NO contact	EExM 61 D <div><div>70°15°0°15°70°</div><div>GY-BK GY-BN</div></div>	EEx 61 D 10/1S <div><div>70°35°0°35°70°</div><div>BK-GY BN-BU</div><div>15°15°</div></div>



Ex position switches

// Series EEx/EExM 61, actuators

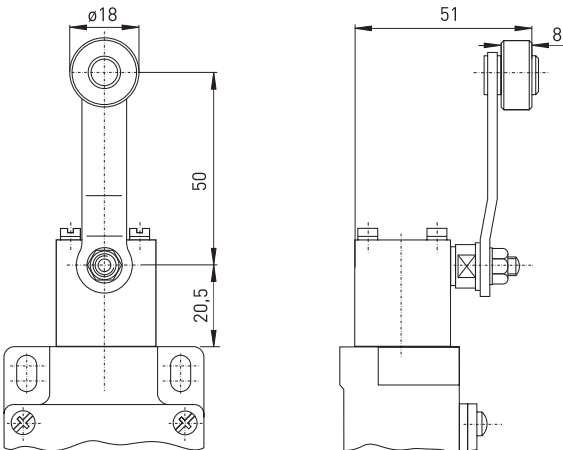
Features/Options

- 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

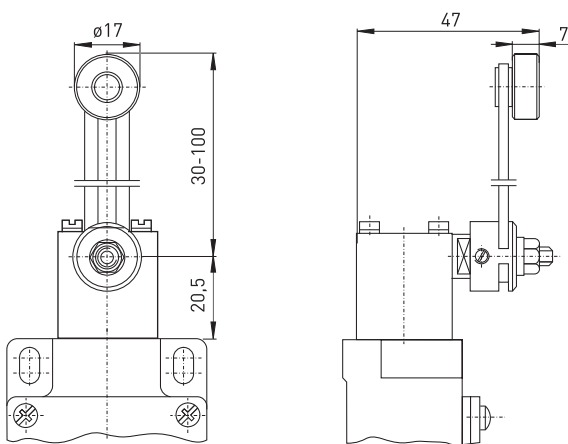
Features/Options

- 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

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

Contact variants: switch travel/contacts

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



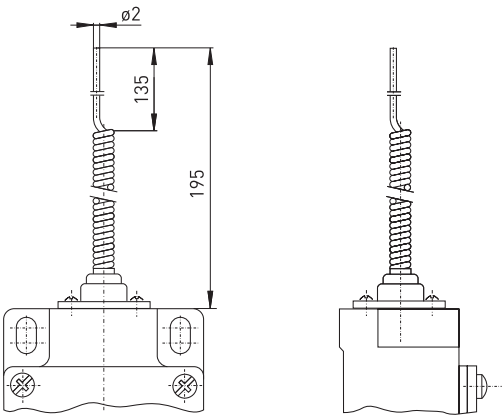
Features/Options

- 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

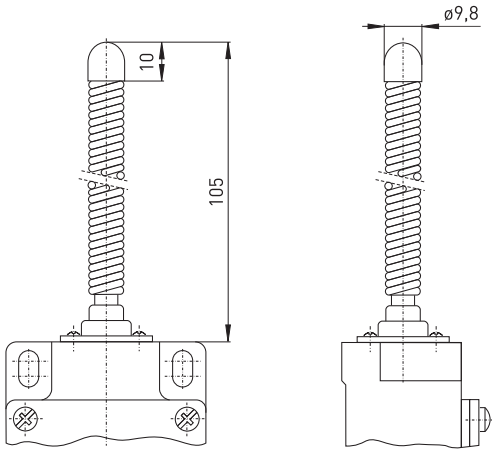
Features/Options

- 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	EExM 61 TL 10° 0° 10° GY-BK GY-BN	EEx 61 TL 10/1S 20° 0° 20° BK-GY BN-BU 10° 10°

	Snap action	Slow action
1 NC/1 NO contact	EExM 61 TF 10° 0° 10° GY-BK GY-BN	EEx 61 TF 10/1S 20° 0° 20° BK-GY BN-BU 10° 10°



Ex position switches

// Series EEx/EExM 61, actuators

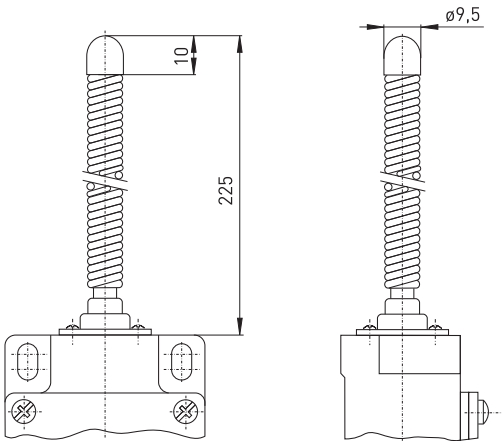
Features/Options

- 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

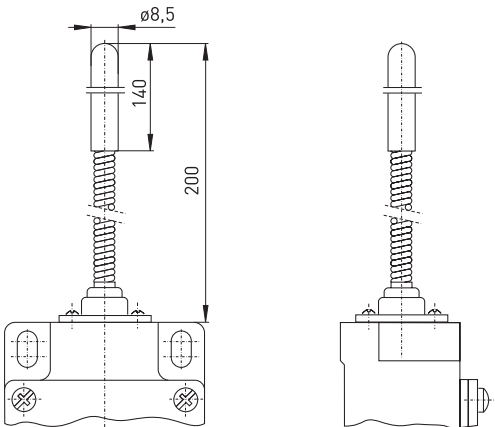
// Long spring rod rounded steel tip TFL



Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact	EExM 61 TFL <div> <div>10°0°10°</div> <div>GY-BK</div> <div>GY-BN</div> </div>	EEx 61 TFL 10/1S <div> <div>20° 0° 20°</div> <div>BK-GY</div> <div>BN-BU</div> <div>10° 10°</div> </div>

// Spring rod with plastic tip TK

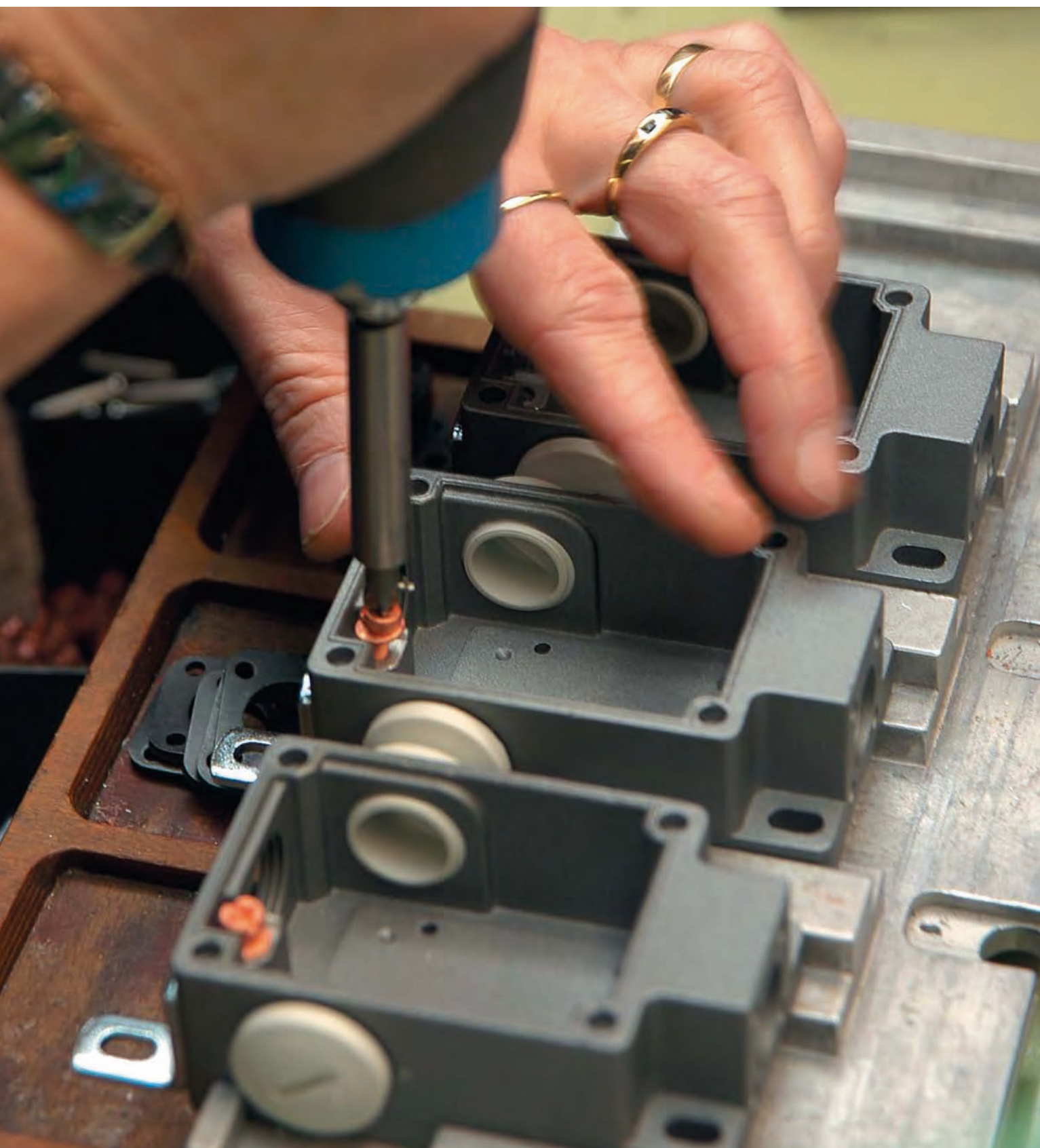


Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact	EExM 61 TK <div> <div>10°0°10°</div> <div>GY-BK</div> <div>GY-BN</div> </div>	EEx 61 TK 10/1S <div> <div>20° 0° 20°</div> <div>BK-GY</div> <div>BN-BU</div> <div>10° 10°</div> </div>



PRODUCTION PROCESS ASSEMBLY
FIXING THE GROUND SCREW





steute
ZS 23 SR 10-15 VD
125...315 °C
100 V / 6 A
180 800 mA AC-15
EN 478 IP 69
300
CE
1 300 VAC / 6 A 3P
4300 / 1000
D. 32544 Lohr / Germany



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

EEx ZS 73 SR



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

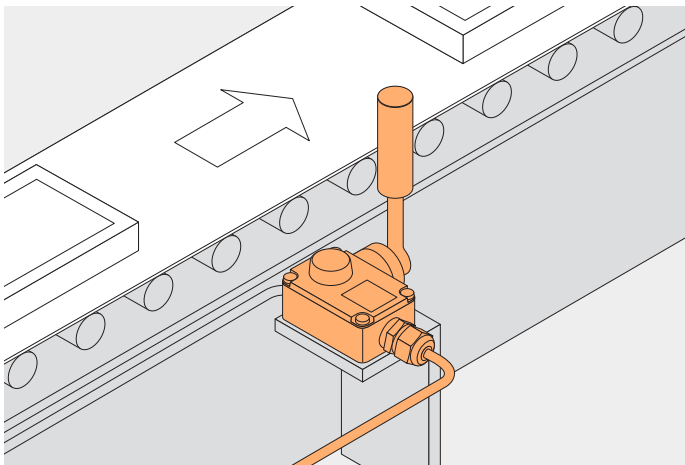
Ex belt-alignment switches are actuated when the conveyor belt becomes misaligned. Depending on the plant arrangements, this signal can either be used to switch the equipment off or to provide automatic correction of the belt alignment. Thus they should be installed at both sides of the conveyor belt 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.

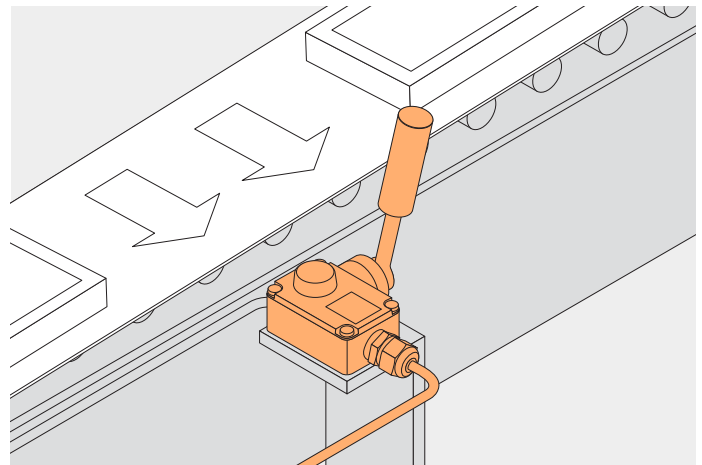
All belt-alignment switches bear the CE mark according to the Machinery Directive 98/37/EC and to ATEX 94/9/EC. The Ex belt-alignment switches per equipment category 3D bear the CE mark without the number of the notified body and have received a CE declaration of manufacturer conformity.

Application

Monitoring a conveyor belt



Belt-alignment switch in actuated state



Ex belt-alignment switches

// Series EEx 335 4VSR

Features/Options

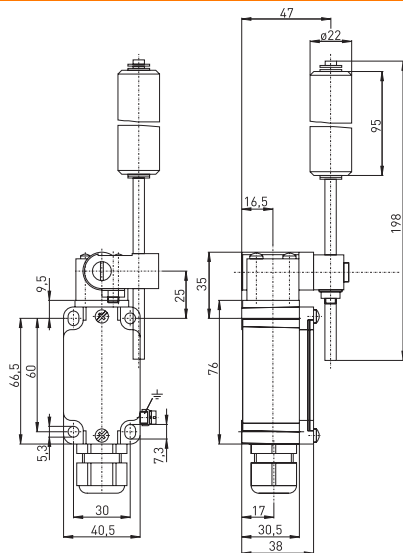
- Ex zone 1 and 2, as well as 21 and 22
- Metal enclosure
- 2 contacts
- Mounting details to DIN EN 50 041
- Wiring compartment
- Adjustable-length rod lever with nylon roller
- For light- and medium-heavy applications
- Special version only for equipment category 3D, available for dust Ex zone 22
-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

// EEX 335 4VSR



Technical data

Standards	IEC/EN 60947-5-1; EN 50014; EN 50018; EN 50019; EN 50281-1-1
Enclosure	zinc die casting, enamelled
Switch insert	Ex 95
Protection class	IP 65 according to IEC/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	M3 screw clamps
Cable section	max. 1.5 mm ² (incl. conductor ferrules)
Cable length	-
U _{imp}	4 kV
U _i	250 V
I _{the}	6 A
I _e /U _e	6 A/400 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 ... +60 °C
Mechanical life	> 1 million operations
Switching frequency	1800/h
Repeat accuracy	± 0.1 mm
Contact gap	max. 2 x 3.5 mm
Ex certification	⊕ II 2G EEx de IIC T6, II 2D IP65 T80°C
Approvals	DMT 01 ATEX E 178



Contact variants: switch travel/contacts

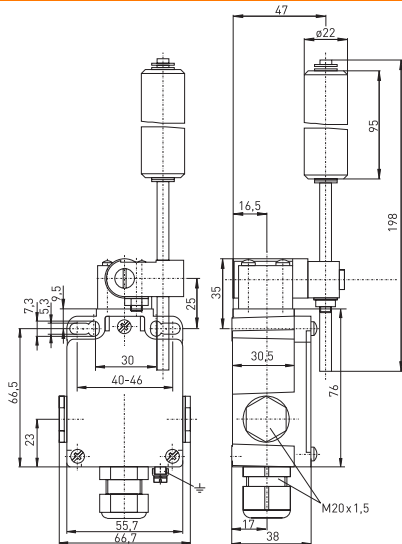
	Slow action
1 NC/1 NO contact	EEx 335 4VSR 1Ö/1S
1 NC/1 NO contact with overlapping	EEx 335 4VSR UE
2 NC contacts	EEx 335 4VSR 2Ö

Ordering details

EEx 335 4VSR 1Ö/1S-3D	
	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

Standards	IEC/EN 60947-5-1; EN 50014; EN 50018; EN 50019; EN 50281-1-1
Enclosure	zinc die casting, enamelled
Switch insert	Ex 95
Protection class	IP 67 according to IEC/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	M3 screw clamps
Cable section	max. 1.5 mm ² (incl. conductor ferrules)
Cable length	-
U _{imp}	4 kV
U _i	250 V
I _{the}	6 A
I _e /U _e	6 A/400 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 ... +60 °C
Mechanical life	> 1 million operations
Switching frequency	1800/h
Repeat accuracy	± 0.1 mm
Contact gap	max. 2 x 3.5 mm
Ex certification	⊕ II 2G EEx de IIC T6, II 2D IP67 T80°C
Approvals	BVS 04 ATEX E 126



Contact variants: switch travel/contacts

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

Ordering details

EEx 355 4VSR 10/1S-G-3D
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

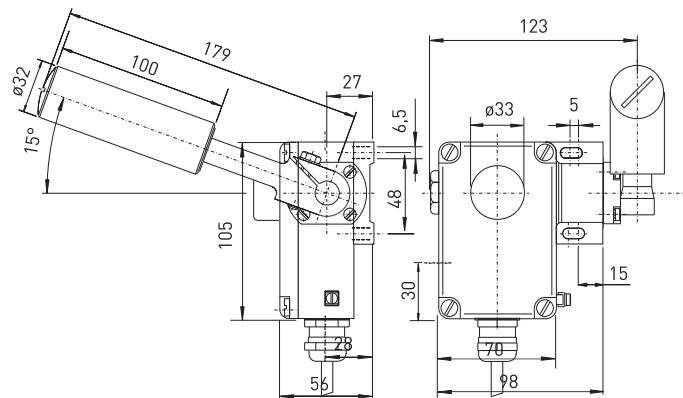
- Ex zone 1 and 2, as well as 21 and 22
- Metal enclosure
- 2 contacts
- Cable
- Release by push button or key possible
- Belt-alignment roller made of stainless steel 1.4104
- Special version only for equipment category 3D, available for dust Ex zone 22
- Inmetro approval for Brazil to be ordered separately

// 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	cabie H05VV-F
Cable section	4 x 0.75mm ² (incl. conductor ferrules)
Cable length	3 m
U _{imp}	4 kV
U _i	250 V
I _{the}	6 A
Utilisation category	AC-15, DC-13
I _e /U _e	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
Equipment Categ. 3D, Ex Zone 22
Indicator lamp for 3D, see accessories
VD Push button release (VS key release, blank without mechanical latching)
1 NC/1 NO contact (20)
SR Belt-alignment lever
Series
Ex certified component

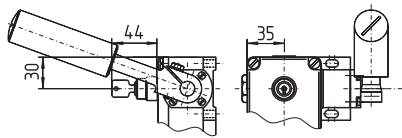
Ex belt-alignment switches

// 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

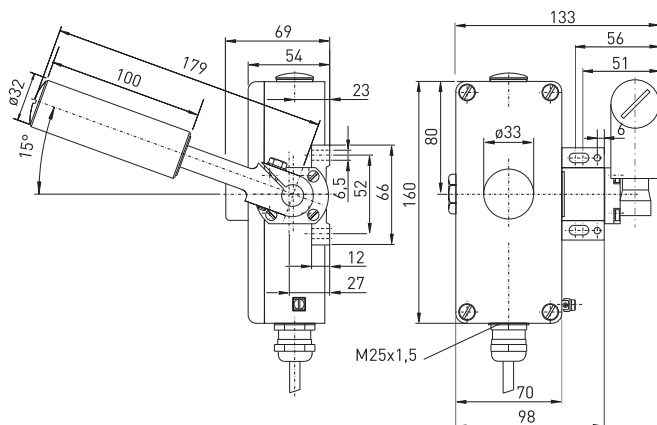
- Ex zone 1 and 2, as well as 21 and 22
- Metal enclosure
- 2 or 4 contacts
- Cable
- Release by push button or key possible
- Belt-alignment roller made of stainless steel 1.4104
- Special version only for equipment category 3D, available for dust Ex zone 22
- Inmetro approval for Brazil to be ordered separately

// EEX ZS 75 SR



Technical data

Standards	IEC/EN 60947-5-1, EN 50014, EN 50018, EN 50281-1-1
Enclosure	aluminium die casting, enamel finish
Cover	aluminium die casting, enamel finish
Switch insert	EEx 14
Protection class	EEx ZS 75 SR VD: IP 65; EEx ZS 75 SR VS: IP 54 to IEC/EN 60529
Contact material	silver
Switching system	slow action, positive break NC contacts \ominus
Switching elements	change-over contact with double break or 2 NO/2 NC or 4 NC contacts
Termination	4 x 0.75mm ² (incl. conductor ferrules) per switch insert
Cable section	4 x 0.75mm ² (incl. conductor ferrules) per switch insert
Cable length	3 m
U _{imp}	4 kV
U _i	250 V
I _{the}	6 A
Utilisation category	AC-15, DC-13
I _e /U _e	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 1067 X



Contact variants: switch travel/contacts

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

Ordering details

EEx ZS 75 SR 20/2S VD-G-3D	
	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

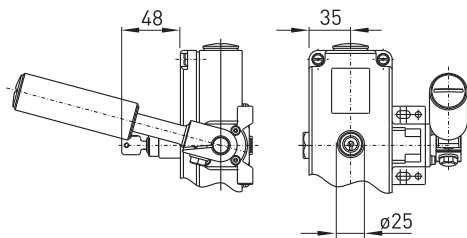
Ex belt-alignment switches

// 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





steute

EEx 81 WZ 10/18



61.1.42.0.01

AC-15

400 V / 10 A

IEC 60947-5-1

IP 65

3Q6



D-32584 Löhne / Germany



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

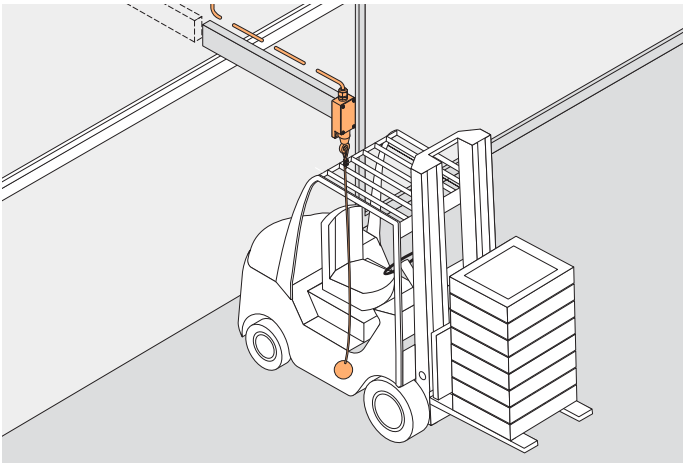
Ex pull-wire switches are actuated manually by pulling. The pull-wire switches generate a switching impulse on actuation.

In the appendix the mounting accessories for pull-wire switches can be selected.

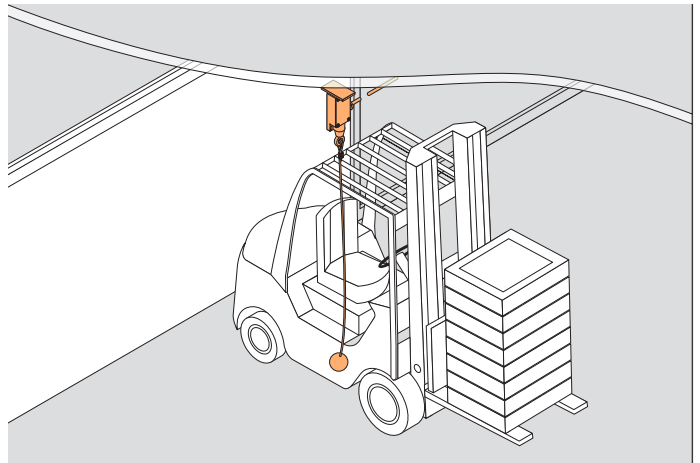
All Ex pull-wire switches presented in this chapter bear the CE mark according to the Low Voltage Directive 609/95/EC and to ATEX 94/9/EC. The Ex pull-wire switches per equipment category 3D bear the CE mark without the number of the notified body and have received a CE declaration of manufacturer conformity.

Application

Wall mounting as door opener



Ceiling mounting



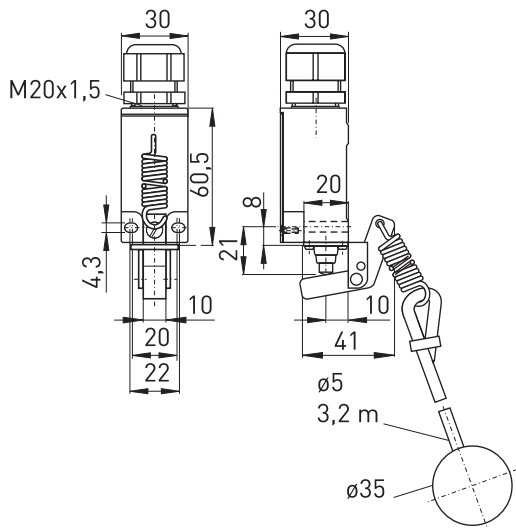
PRODUCTION PROCESS ASSEMBLY
MOUNTING THE PULL-WIRE UNIT ON A PULL-WIRE SWITCH



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
Switching elements	change-over contact with double break Zb, galvanically separated contact bridges
Termination	M3 screw clamps
Cable section	max. 1.5 mm ² (incl. conductor ferrules)
Cable entry	M 20 x 1.5
U _{imp}	4 kV
U _i	250 V
I _{the}	6 A
Utilisation category	AC-15; DC-13
I _e /U _e	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	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

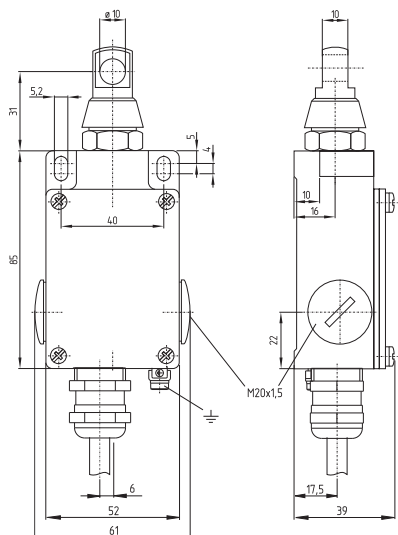
- Ex zone 1 and 2, as well as 21 and 22
- Metal enclosure
- Wall mounting
- Slow or snap action: 2 contacts
- Various spring force variants (actuating forces)
- Pull-wire function

// EEX/EEXM 61 Z



Technical data

Standards	IEC/EN 60947-5-1; EN 1088; EN 50014; EN 50018; EN 50019; EN 50281-1-1
Design	-
Enclosure	aluminium die casting, enamel finish
Cover	steel, enamel finish
Switch insert	EExM 14, EEx 14
Protection class	IP 65 according to IEC/EN 60529
Contact material	silver
Switching system	slow or snap action, positive break NC contact ⊖
Switching elements	EExM 61: change-over contact Form C, EEx 61: change-over with double break Zb, galvanically separated contact bridges
Termination	cable H05VV-F
Cable section	4 x 0.75 mm ²
Cable length	3 m
U _{imp}	4 kV
U _i	250 V
I _{the}	6 A
I _e /U _e	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	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 2.5

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)

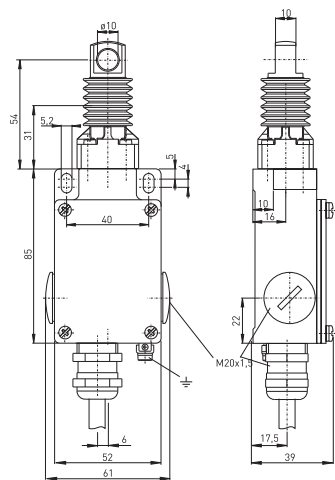
Ex pull-wire switches

// 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

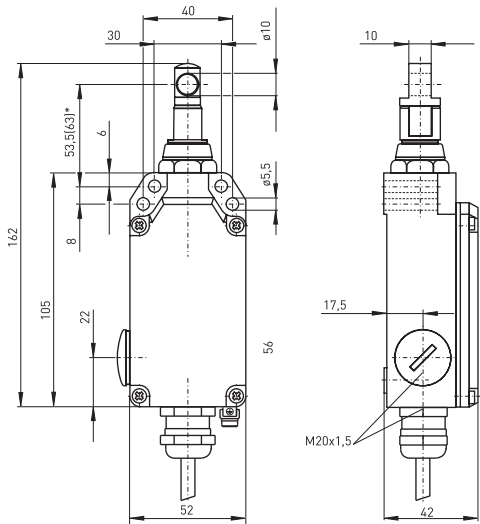
// Series EEx ZS 71 Z

- 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
Switching elements	NC contacts \ominus to IEC 60947-5-1 change-over contact with double break, galvanically separated contact bridges
Termination	cable H05VV-F
Cable section	4 x 0.75mm ²
Cable length	3 m
U _{imp}	4 kV
U _i	250 V
I _{the}	6 A
Utilisation category	AC-15, DC-13
I _e /U _e	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 PTB 06 ATEX 1065 X
Approvals	<div> <div>IECEx</div> <div>  </div> </div>

// EEX ZS 71 Z



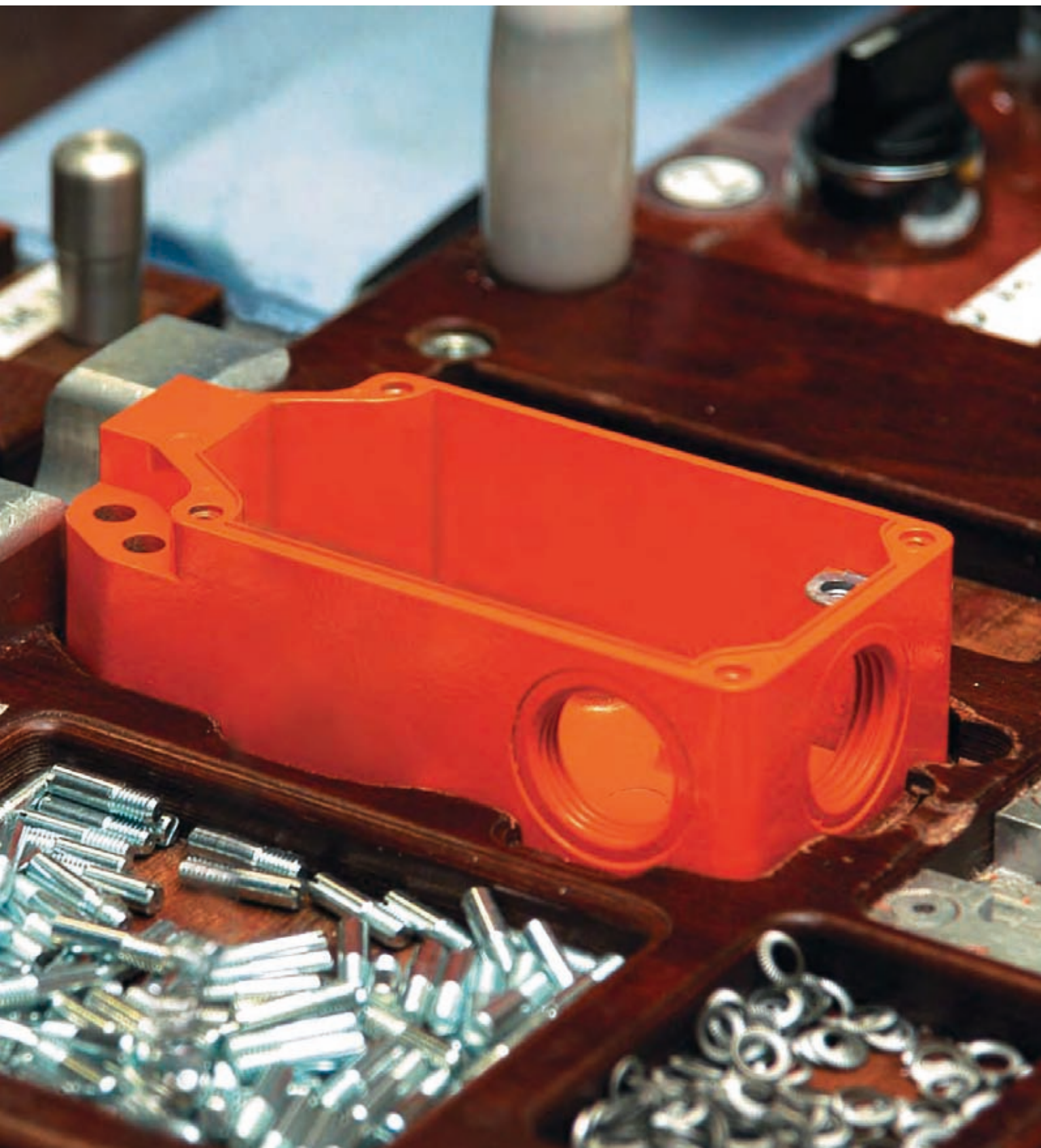
Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	EEx ZS 71 Z 10/1S
	<div> <div>0</div> <div>5</div> <div>10</div> <div>4</div> <div>7,5</div> <div>BK-GY</div> <div>BN-BU</div> </div>

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



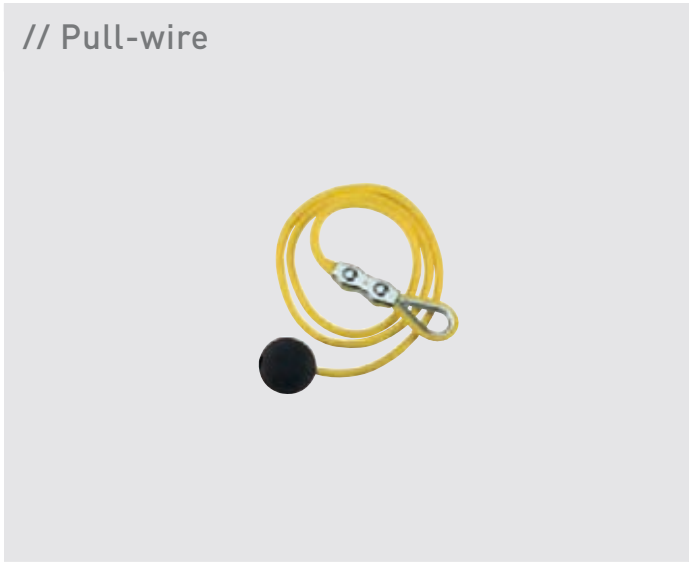
Appendix

// 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

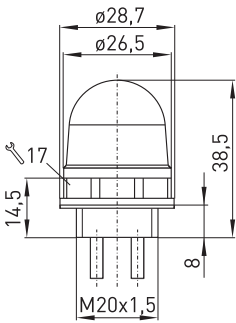
// Pull-wire



// 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

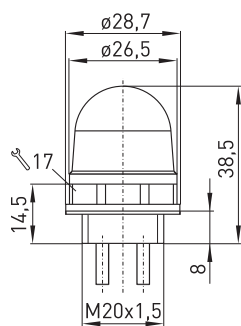
Features/Options

- 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.

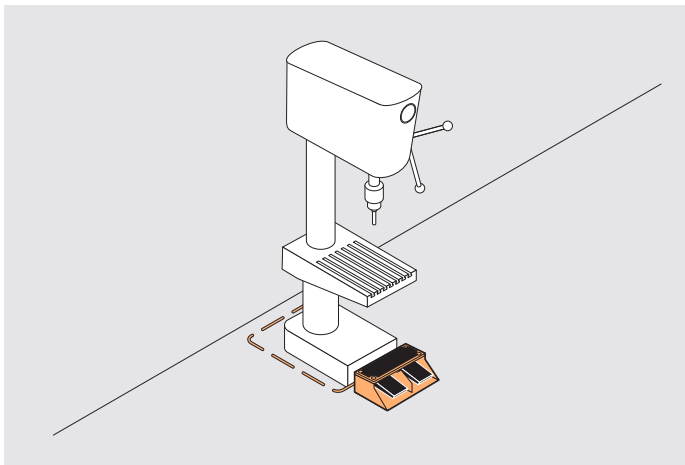
All Ex foot switches are equipped with slow or snap action contacts. They have protection class IP 65.

All foot switches series EEx GF, EEx GFS, EEx GFI and EEx GFSI are Ex approved according to ATEX.

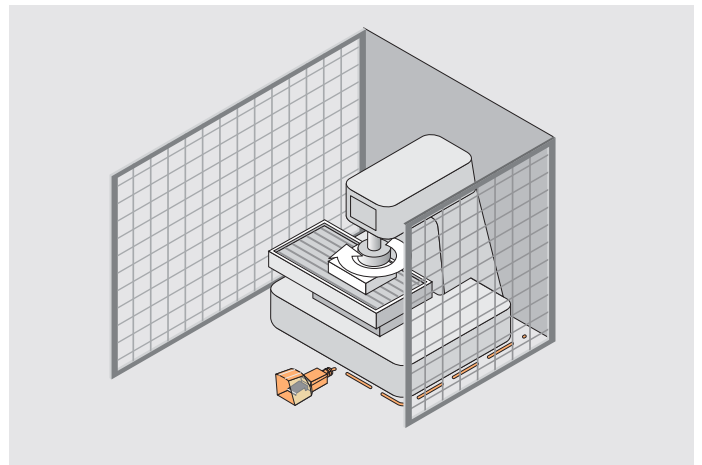
The foot switches bear the CE mark according to the Low Voltage Directive 06/95/EC and to ATEX 94/9/EC. The Ex foot switches per equipment category 3D bear the CE mark without the number of the notified body and have received a CE declaration of manufacturer conformity.

Application

Foot switch on a drill machine



Foot switch on a CNC machining centre



Ex foot switches

// Series EEx GF

Features/Options

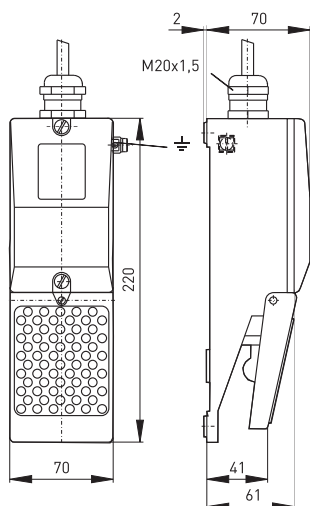
- Ex zone 1 and 2, as well as 21 and 22
- Metal enclosure
- Without protective shield
- Max. 2 contacts
- Low pedal height
- With pre-wired cable, cable length 3 metres
- Available with special finish in RAL colour tones
- Special version only for equipment category 3D, available for dust Ex zone 22
- Inmetro approval for Brazil to be ordered separately

// EEX GF



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	glass-fibre reinforced thermoplastic
Pedal	glass-fibre reinforced thermoplastic
Protective shield	-
Termination	cable H05VV-F
Cable section	4 x 0.75 mm ²
Cable length	3 m
Contact material	silver
Protection class	IP 65 to IEC/EN 60529
Switching system	slow action with double break, positive break NC contact \ominus or snap action with single break
Switch insert	slow action: EEx 14 snap action: EExM 14
Utilisation category	AC-15; DC-13
I_e/U_e	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: PTB 03 ATEX 1070 X; EEx GFM: PTB 03 ATEX 1069 X, referring to the switch insert



Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact	EEx GFM BN GY BK	EEx GF 10/1S BN 11 12 BU BK 23 24 GY

Ordering details

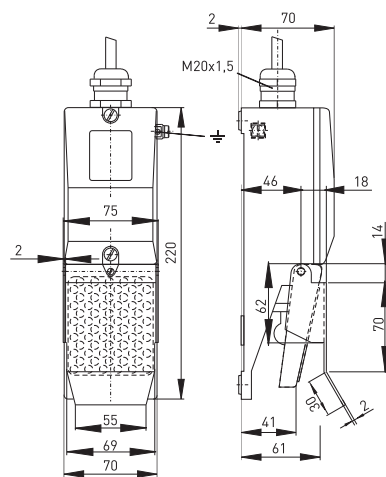
EEx GFM K 10/1S-3D	
	Equipment Categ. 3D, dust Ex zone 22
	1 NC/1 NO contact
	Pedal cover
	M Snap action (without M slow action)
	Series
	Ex certified component

Ex foot switches
 // Series EEx GF, variants

// Pedal cover K



// Pedal cover K



Ex foot switches

// Series EEx GFS

Features/Options

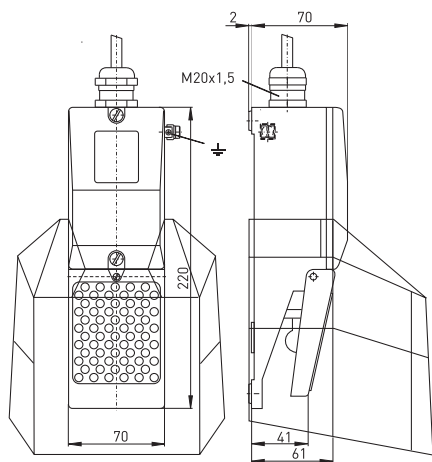
- Ex zone 1 and 2, as well as 21 and 22
- Metal enclosure
- With protective shield
- Max. 2 contacts
- Low pedal height
- With pre-wired cable, cable length 3 metres
- Available with special finish in RAL colour tones
- Special version only for equipment category 3D, available for dust Ex zone 22
- Inmetro approval for Brazil to be ordered separately

// EEX GFS



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 ²
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 \ominus or snap action with single break
Switch insert	slow action: EEx 14 snap action: EExM 14
Utilisation category	AC-15; DC-13
I_e/U_e	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: PTB 03 ATEX 1070 X; EEx GFSM: PTB 03 ATEX 1069 X, referring to the switch insert



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 10/1S-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

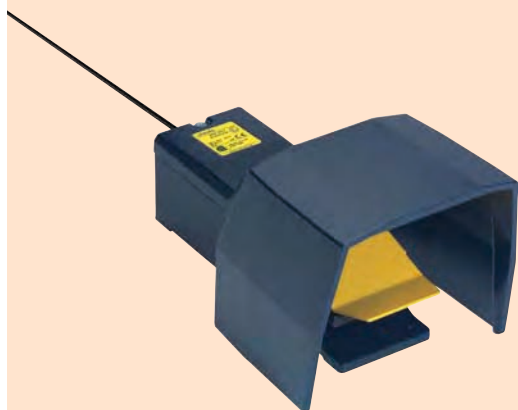
Ex foot switches

// Series EEx GFS, variants

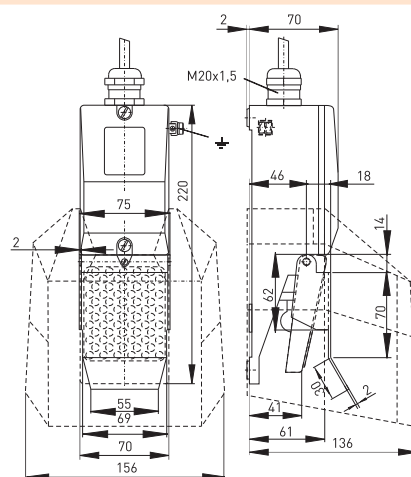
Features/Options

- Carrying handle:
stainless steel 4104 with thermoplastic grip

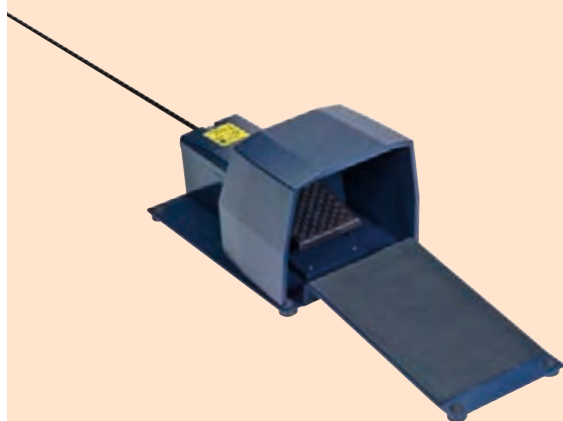
// Pedal cover K



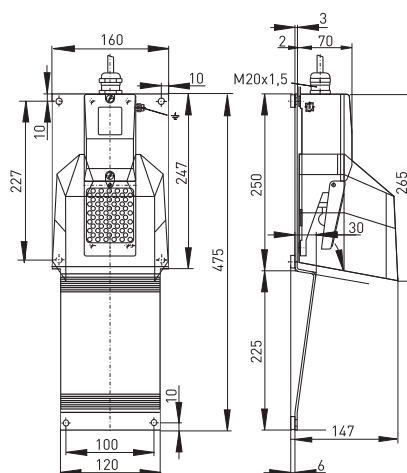
// Pedal cover K



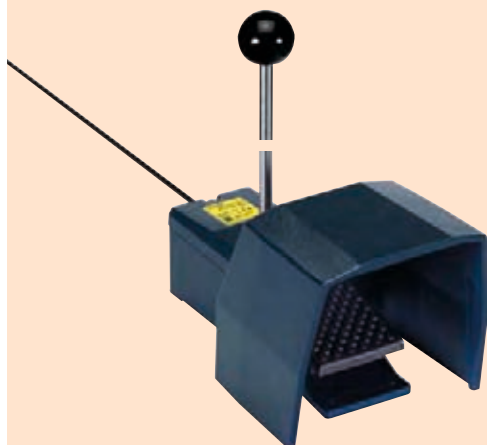
// Foot rest FST



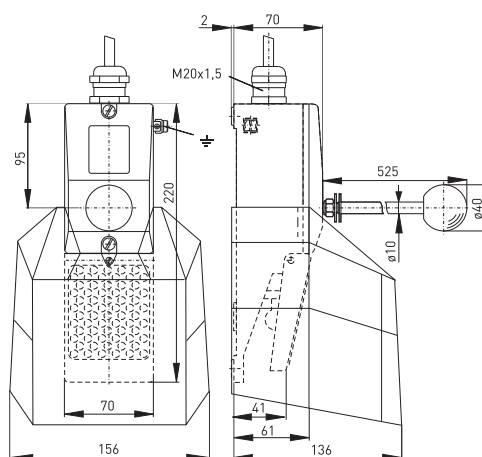
// Foot rest FST



// Carrying handle TST



// Carrying handle TST



Ex foot switches

// Series EEx GFI

Features/Options

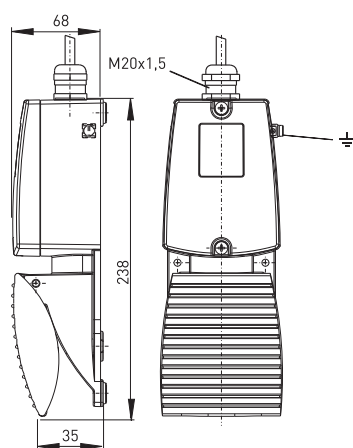
- Ex zone 1 and 2, as well as 21 and 22
- Metal enclosure
- Without protective shield
- Max. 2 contacts
- Low pedal height
- With pre-wired cable, cable length 3 metres
- Available with special finish in RAL colour tones
- Special version only for equipment category 3D, available for dust Ex zone 22
- Inmetro approval for Brazil to be ordered separately

// EEX GFI



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 2004
Pedal	aluminium die casting, enamel finish, RAL 5011
Protective shield	-
Termination	cable H05VV-F
Cable section	4 x 0.75 mm ²
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 _e /U _e	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 GFI: PTB 03 ATEX 1070 X; EEx GFIM: PTB 03 ATEX 1069 X, referring to the switch insert



Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact	EEx GFIM BN GY BK	EEx GFI 10/1S BN 11 12 BU BK 23 24 GY

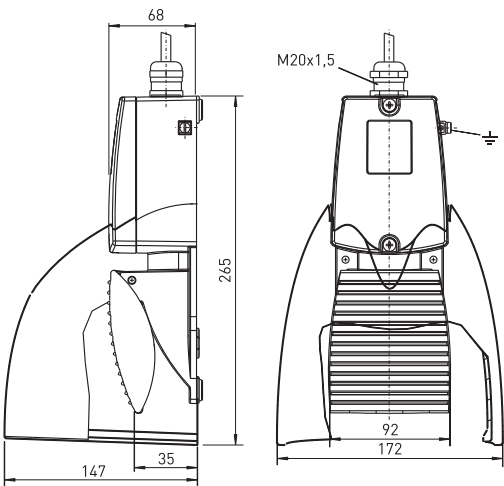
Ordering details

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

Standards	IEC/EN 60947-5-1; EN 50014; EN 50018; EN 50281-1-1
Enclosure	aluminium die casting, enamel finish, RAL 5011
Cover	-
Pedal	aluminium die casting, enamel finish, RAL 5011
Protective shield	aluminium die casting, enamel finish, RAL 2004
Termination	cable H05VV-F
Cable section	4 x 0.75 mm ²
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 I _e /U _e	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
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 GFSI: PTB 03 ATEX 1070 X; EEx GFSIM: PTB 03 ATEX 1069 X, referring to the switch insert



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 GY

Ordering details

EEx GFSIM 10/1S-3D	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

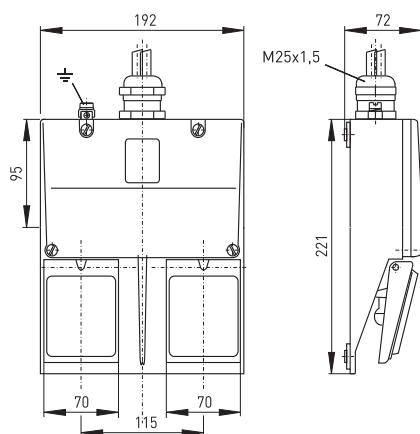
- Ex zone 1 and 2, as well as 21 and 22
- Metal enclosure
- Without protective shield
- Max. 2 contacts per pedal
- Low pedal height
- With pre-wired cable, cable length 3 metres
- Available with special finish in RAL colour tones
- Special version only for equipment category 3D, available for dust Ex zone 22
- Inmetro approval for Brazil to be ordered separately

// EEX GF 2



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 ²
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 \ominus or snap action with single break
Switch insert	slow action: EEx 14 snap action: EExM 14
Utilisation category	AC-15; DC-13
I_e/U_e	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 2: PTB 03 ATEX 1070 X; EEx GFM 2: 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 2 BN GY BK	EEx GF 2 1ÖS/1ÖS BN 11 12 BU BK 23 24 GY

Ordering details

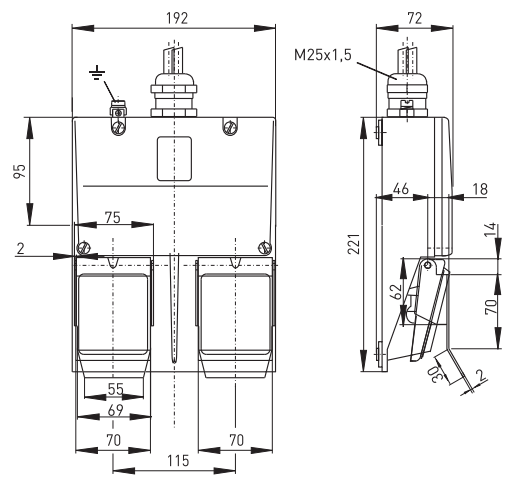
EEx GFM 2 1ÖS/1ÖS-3D
Equipment Categ. 3D, dust Ex zone 22
1 NC/1 NO contact per pedal
2 pedals
M Snap action (without M slow action)
Series
Ex certified component

Ex foot switches
// Series EEx GF 2, variants

// Pedal cover K



// Pedal cover K



Ex foot switches

// Series EEx GFS 2

Features/Options

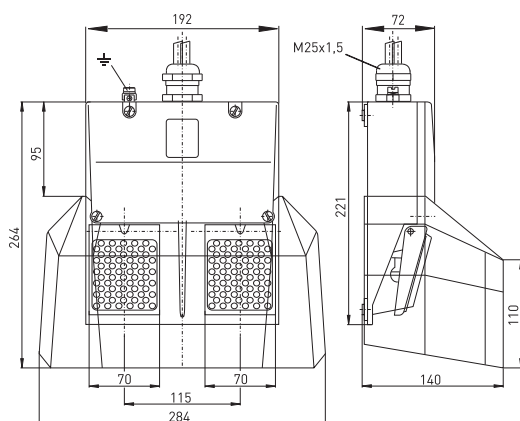
- Ex zone 1 and 2, as well as 21 and 22
- Metal enclosure
- With protective shield
- Max. 2 contacts per pedal
- Low pedal height
- With pre-wired cable, cable length 3 metres
- Available with special finish in RAL colour tones
- Special version only for equipment category 3D, available for dust Ex zone 22
- Inmetro approval for Brazil to be ordered separately

// EEX GFS 2



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 ²
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 \ominus or snap action with single break
Switch insert	slow action: EEx 14 snap action: EExM 14
Utilisation category	AC-15; DC-13
I_e/U_e	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 2: PTB 03 ATEX 1070 X; EEx GFSM 2: 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 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

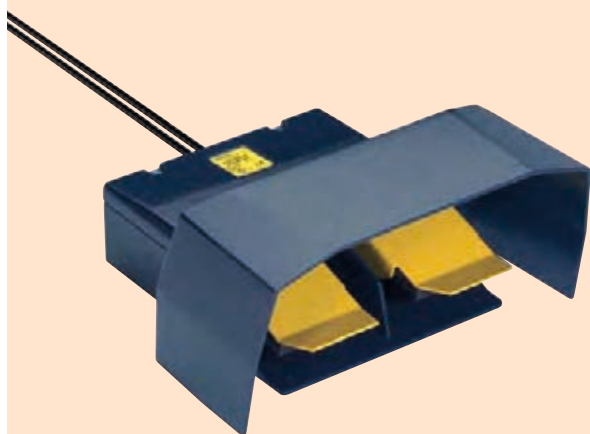
Ex foot switches

// Series EEx GFS 2, variants

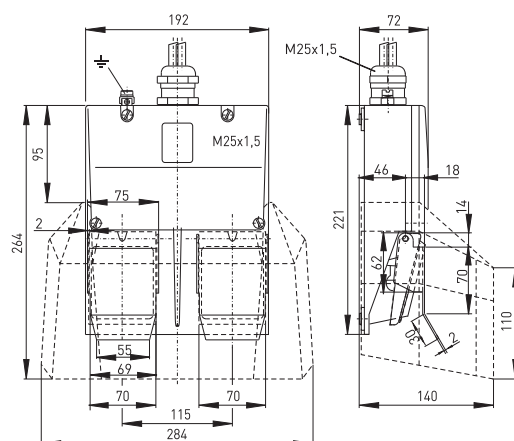
Features/Options

- Carrying handle:
stainless steel 4104 with thermoplastic grip

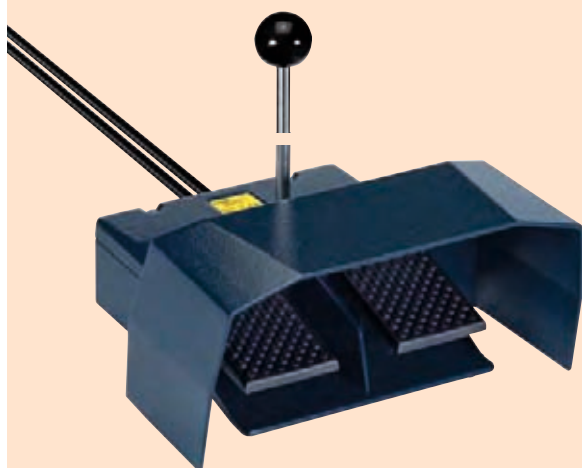
// Pedal cover K



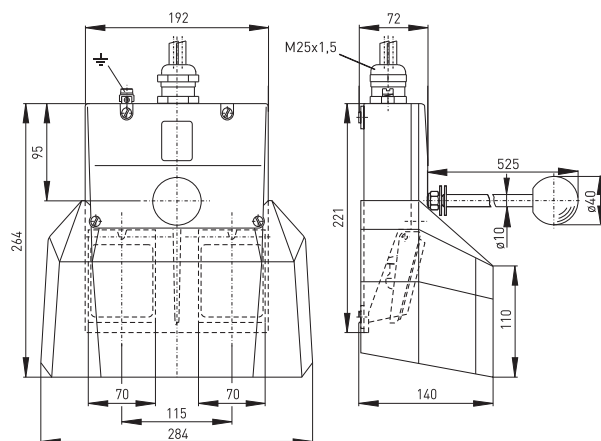
// Pedal cover K



// Carrying handle TST



// Carrying handle TST



Ex foot switches

// Series EEx GF 3

Features/Options

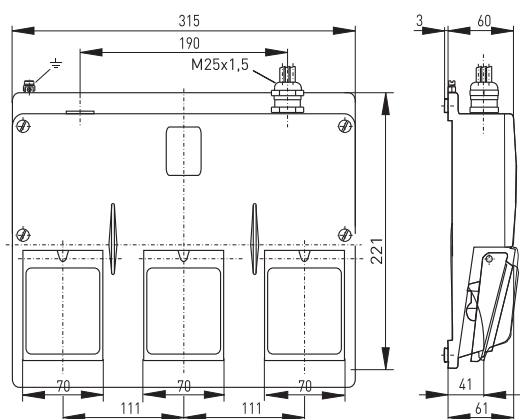
- Ex zone 1 and 2, as well as 21 and 22
- Metal enclosure
- Without protective shield
- Max. 2 contacts per pedal
- Low pedal height
- With pre-wired cable, cable length 3 metres
- Available with special finish in RAL colour tones
- Special version only for equipment category 3D, available for dust Ex 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 ²
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 I _e /U _e	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
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

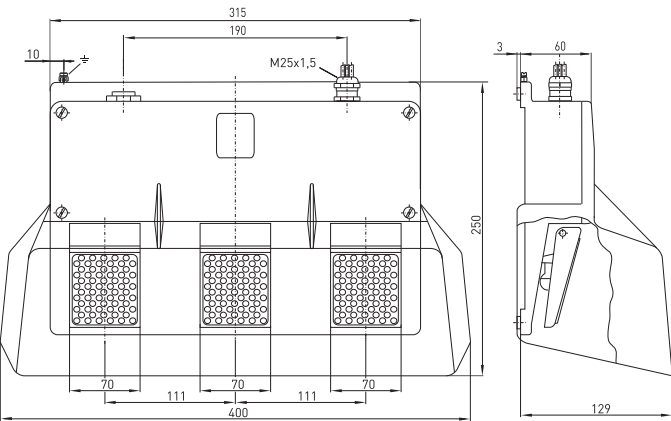
// EEX GFS 3



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 ²
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 _e /U _e	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

Ordering details

	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 GY

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 GY

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

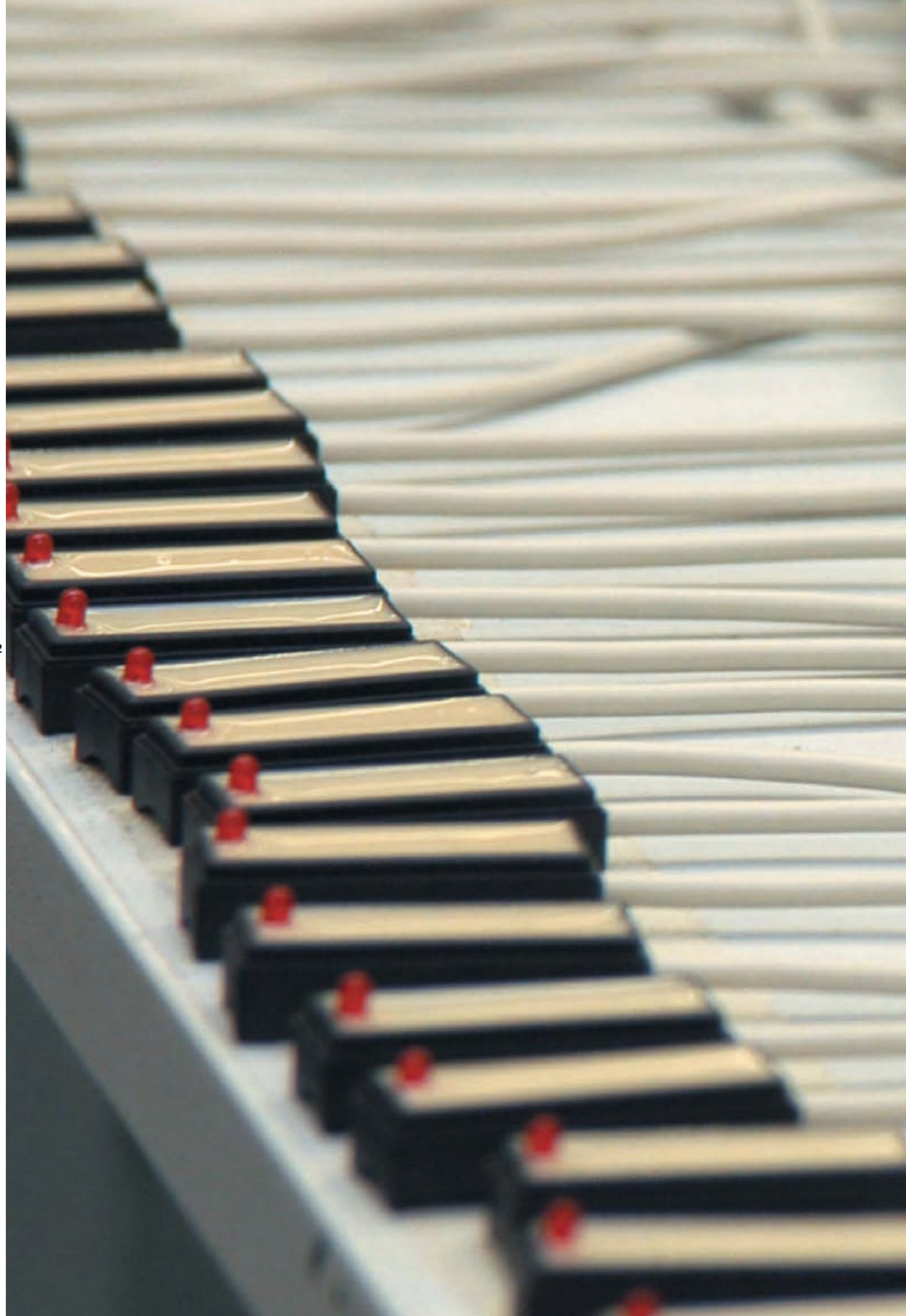
// Series EEx RC 12
from page 274

// Series EEx RC 13,5
from page 276

// Series EEx RC 15
from page 278

// Series EEx RC M20
from page 280





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

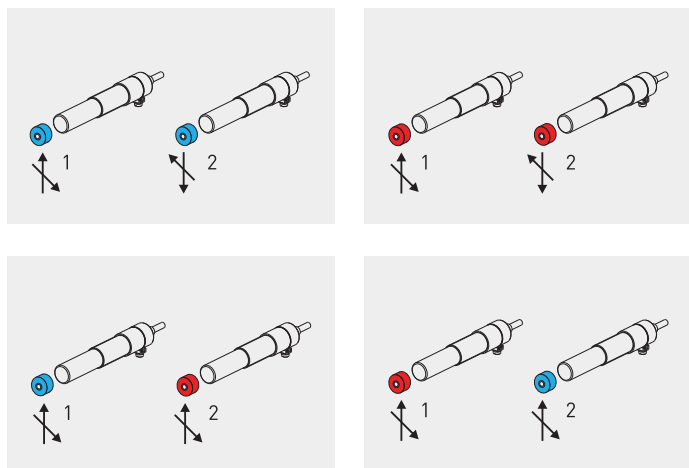
The Ex magnetic sensors are actuated by an M series permanent magnet, described at the end of this chapter, without any mechanical contact. The devices can be selected with NO, change-over or bistable contacts. All magnetic sensors described in this chapter are supplied with pre-wired cables.

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

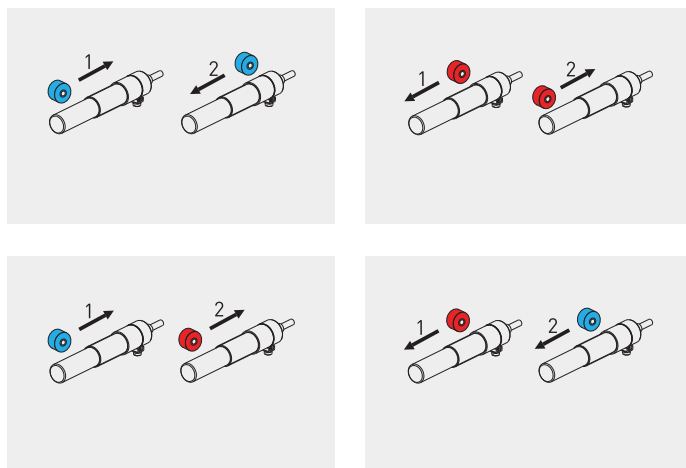
The magnetic sensors described in this chapter bear the CE mark according to the Low Voltage Directive 06/95/EC and to ATEX 94/9/EC. The Ex magnetic sensors per equipment category 3G/D bear the CE mark without the number of the notified body and have received a CE declaration of manufacturer conformity.

Operating principle

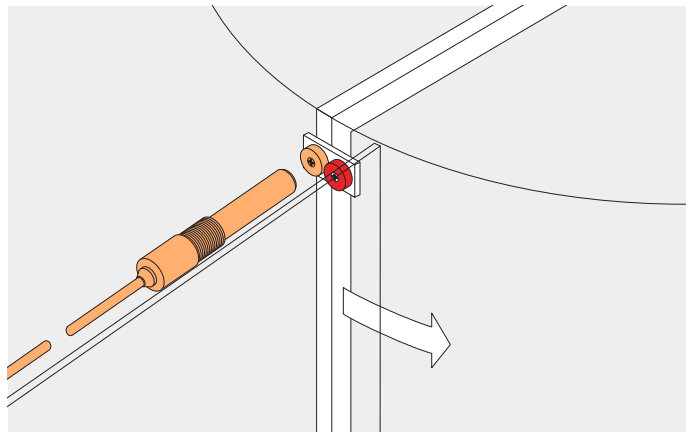
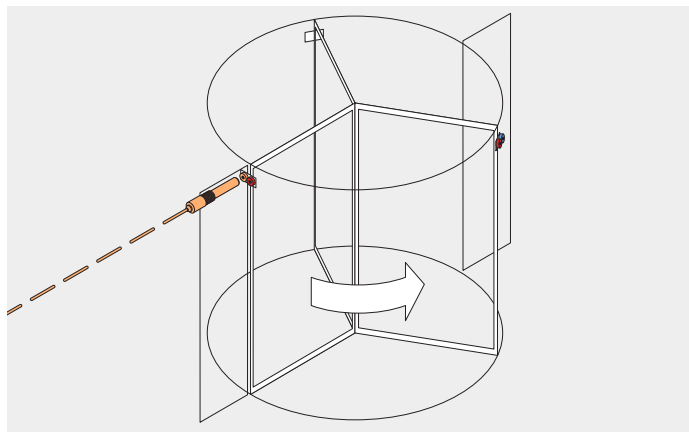
Magnetic sensors change-over contact, actuation from front



Magnetic sensors change-over contact, actuation from side



Magnetic sensors on a revolving door



Ex magnetic sensors

// Series EEx RC 12

Features/Options

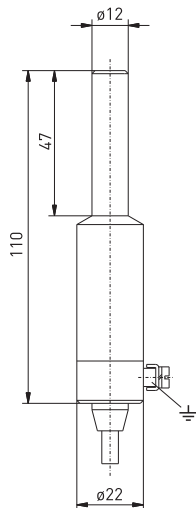
- Ex zone 1 and 2, as well as 21 and 22
- Brass enclosure, nickeled
- Long life
- 1 Reed contact
- Actuation from front
- Switching distance up to 25 mm depending on the actuating magnet
- With pre-wired cable, cable length 1 metre
- Special version only for equipment category 3G/D, available for gas Ex zone 2 and dust Ex zone 22
- Inmetro approval for Brazil to be ordered separately

Technical data

Standards	IEC 60947-5-2; EN 60079-0; EN 60079-18; EN 61241-0; EN 61241-1
Enclosure	brass, nickeled
Actuator	series M permanent magnet
Protection class	IP 67 according to EN 60529
Contact material	silver
Switching system	reed contacts
Contact types	NC contact, NO contact or change-over contact
Termination	cable, H05VV-F or Lappterm 145
Cable section	1S, 1Ö: 3 x 0.75 mm ² , 1W: 4 x 0.75 mm ²
Cable length	1, 2 and 5 m
Switching voltage	250 V
Switching current	1,5 A
Switching capacity	1Ö, 1W: max. 50 VA/W, 1S: max. 100 VA/W
Utilisation category	AC-15, DC-13
Bounce duration	0.3 ... 0.6 ms
Ambient temperature	H05VV-F: -20 °C ... +70 °C, Lappterm 145: -40 °C ... +70 °C
Mechanical life	> 1 million operations
Electrical life	10 ⁶ ... 10 ⁷ operations
Resistance to vibrations	1S: 50 ... 100 g, 1Ö, 1W: 10 ... 50 g
Ex certification	⊕ II 2G EEx mb IIC T ₆ , II 2D Ex tD A21 IP67 T80°C
Approvals	DMT 01 ATEX E 058 X



// EEX RC 12



Contact variants: switch travel/contacts

	actuation from front
1 change-over	EEx RC 12 1W BN \rightarrow BK BU
1 NC contact	EEx RC 12 1Ö BU \rightarrow BN
1 NO contact	EEx RC 12 1S BU \rightarrow 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

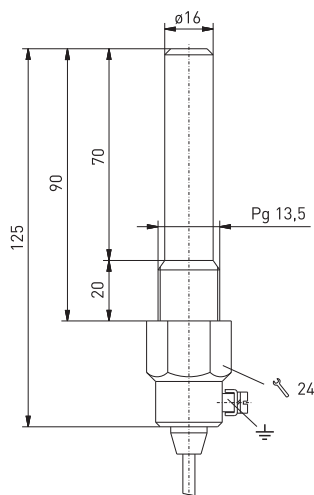
Ex magnetic sensors

// Series EEx RC 13,5

Features/Options

- Ex zone 1 and 2, as well as 21 and 22
- Brass enclosure, 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, available for gas Ex zone 2 and dust Ex zone 22
- Inmetro approval for Brazil to be ordered separately

// EEX RC 13,5



Technical data

Standards	IEC 60947-5-2; EN 60079-0; EN 60079-18; EN 61241-0; EN 61241-1
Enclosure	brass, nickeled
Actuator	series M permanent magnet
Protection class	IP 67 according to EN 60529
Contact material	silver
Switching system	reed contacts
Contact types	NC contact, NO contact or change-over contact
Termination	cable, H05VV-F or Lappterm 145
Cable section	1S, 1Ö: 3 x 0.75 mm ² , 1W: 4 x 0.75 mm ²
Cable length	1, 2 and 5 m
Switching voltage	250 V
Switching current	1.5 A
Switching capacity	1Ö, 1W: max. 50 VA/W, 1S: max. 100 VA/W
Utilisation category	AC-15, DC-13
Bounce duration	0.3 ... 0.6 ms
Ambient temperature	H05VV-F: -20 °C ... +70 °C, Lappterm 145: -40 °C ... +70 °C
Mechanical life	> 1 million operations
Electrical life	10 ⁶ ... 10 ⁷ operations
Resistance to vibrations	1S: 50 ... 100 g, 1Ö, 1W: 10 ... 50 g
Ex certification	⊕ II 2G EEx mb IIC T6, II 2D Ex tD A21 IP67 T80°C
Approvals	DMT 01 ATEX E 058 X



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 BN — BU

Ordering details

EEx RC 13,5 1W-3G/D
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

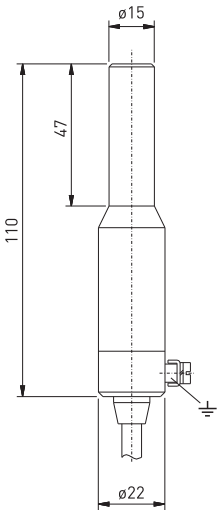
Actuating distances

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

// EEX RC 15



Technical data

Standards	IEC 60947-5-2; EN 60079-0; EN 60079-18; EN 61241-0; EN 61241-1
Enclosure	brass, nickeled
Actuator	series M permanent magnet
Protection class	IP 67 according to EN 60529
Contact material	silver
Switching system	reed contacts
Contact types	NC contact, NO contact or change-over contact
Termination	cable, H05VV-F or Lappterm 145
Cable section	1S, 1Ö: 3 x 0.75 mm ² , 1W: 4 x 0.75 mm ²
Cable length	1, 2 and 5 m
Switching voltage	250 V
Switching current	1.5 A
Switching capacity	1Ö, 1W: max. 50 VA/W, 1S: max. 100 VA/W
Utilisation category	AC-15, DC-13
Bounce duration	0.3 ... 0.6 ms
Ambient temperature	H05VV-F: -20 °C ... +70 °C, Lappterm 145: -40 °C ... +70 °C
Mechanical life	> 1 million operations
Electrical life	10 ⁶ ... 10 ⁷ operations
Resistance to vibrations	1S: 50 ... 100 g, 1Ö, 1W: 10 ... 50 g
Ex certification	⊕ II 2G EEx mb IIC T6, II 2D Ex tD A21 IP67 T80°C
Approvals	DMT 01 ATEX E 058 X



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 — BK

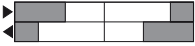

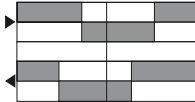
Ordering details

EEx RC 15 1W-3G/D
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

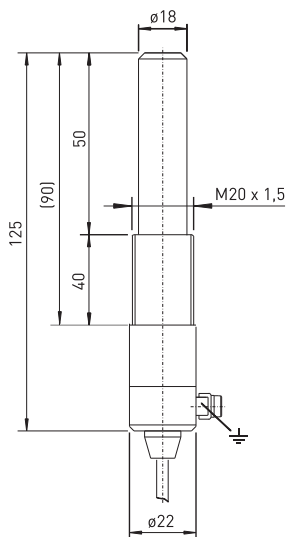
Ex magnetic sensors

// 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

Standards	IEC 60947-5-2; EN 60079-0; EN 60079-18; EN 61241-0; EN 61241-1
Enclosure	brass, nicked
Actuator	series M permanent magnet
Protection class	IP 67 according to EN 60529
Contact material	silver
Switching system	reed contacts
Switching elements	NO contact or change-over, bistable contact or bistable change-over contact
Termination	cable, H05VV-F or Lappterm 145
Cable section	1S, 1Sr: 3 x 0.75 mm ² , 1W, 1Wr: 4 x 0.75 mm ²
Cable length	1, 2 and 5 m
Switching voltage	250 V
Switching current	1.5 A
Switching capacity	1W, 1Wr: max. 50 VA/W, 1S, 1Sr: max. 100 VA/W
Utilisation category	AC-15, DC-13
Bounce duration	0.3 ... 0.6 ms
Ambient temperature	H05VV-F: -20 °C ... +70 °C, Lappterm 145: -40 °C ... +70 °C
Mechanical life	> 1 million operations
Electrical life	10 ⁶ ... 10 ⁷ operations
Resistance to vibrations	1S: 50 ... 100 g, 1Ö, 1W: 10 ... 50 g
Ex certification	Ⓔ II 2G EEx mb IIC T ₆ , II 2D Ex tD A21 IP67 T80°C
Approvals	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 → BU	
1 change-over bistable	EEx RC M20 1Wr BN → BK BU → BU	EEx RC M20 1Wr BN → BK BU → BU

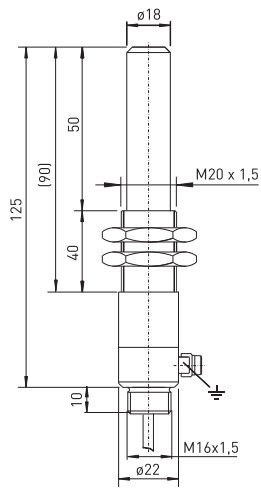
Ordering details

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

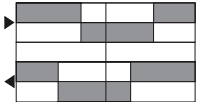

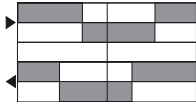

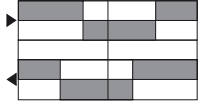
Features/Options

- 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



Actuating distances

Actuating direction	from front	from front	from front
Switch travel			
Contacts	1 change-over contact	1 bistable contact	1 change-over contact bistable
Actuating direction	N or S	N/S	N/S
Actuating magnet	Switching distance [mm] on off	Switching distance [mm] on off	Switching distance [mm] on off
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	1 bistable contact	1 change-over contact bistable	
Actuating direction	N or S	N or S	
Actuating magnet	Switching distance [mm] on off	Switching distance [mm] on off	
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

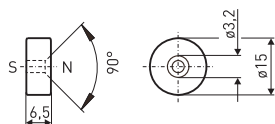
- Not encapsulated
- Barium ferrite
- Ambient temperature: -20 °C ... +80 °C

Features/Options

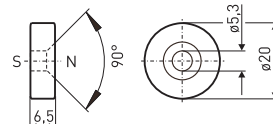
M 100 S, M 100 N, M 200 S

- Thermoplastic enclosure polyamide 6.6, blue S or red N
- Barium ferrite
- Ambient temperature: -20 °C ... +80 °C

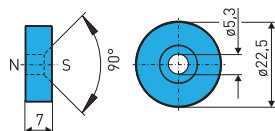
// Actuator M 50 N U



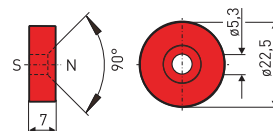
// Actuator M 100 N U



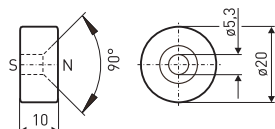
// Actuator M 100 S



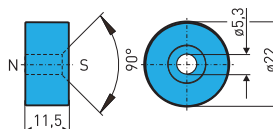
// Actuator M 100 N



// 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

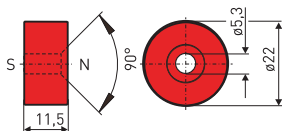
- Not encapsulated
- M 300 U: North pole with colour marking (red dot)
- Barium ferrite
- Ambient temperature: -20 °C ... +80 °C

Features/Options

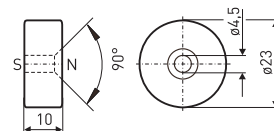
M 200 N, M 300 S, M 300 N

- Thermoplastic enclosure polyamide 6.6, blue S or red N
- Barium ferrite
- Ambient temperature: -20 °C ... +80 °C

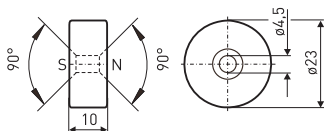
// Actuator M 200 N



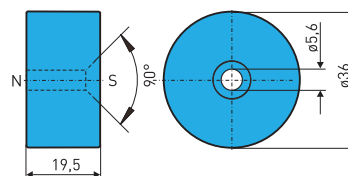
// Actuator M 300 N U



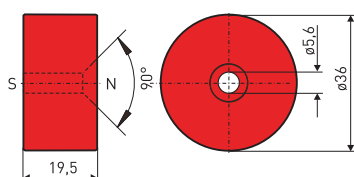
// Actuator M 300 U B



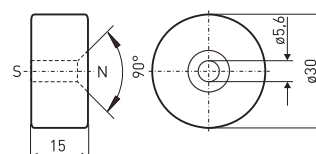
// Actuator M 300 S



// Actuator M 300 N



// Actuator M 400 N U



Ex magnetic sensors

// Actuating magnets

Features/Options

M 400 U B

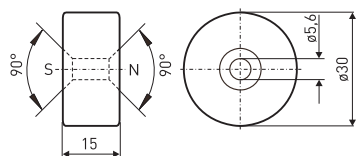
- Not encapsulated
- Barium ferrite
- Ambient temperature: -20 °C ... +80 °C

Features/Options

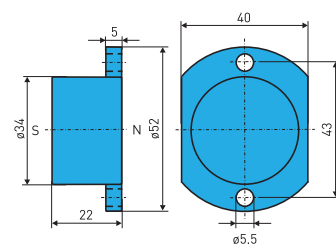
M 700 S, M 700 N

- Thermoplastic enclosure polyamide 6.6, blue S or red N
- Barium ferrite
- Ambient temperature: -20 °C ... +80 °C

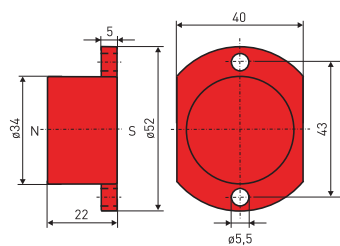
// Actuating magnet M 400 U B



// 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.

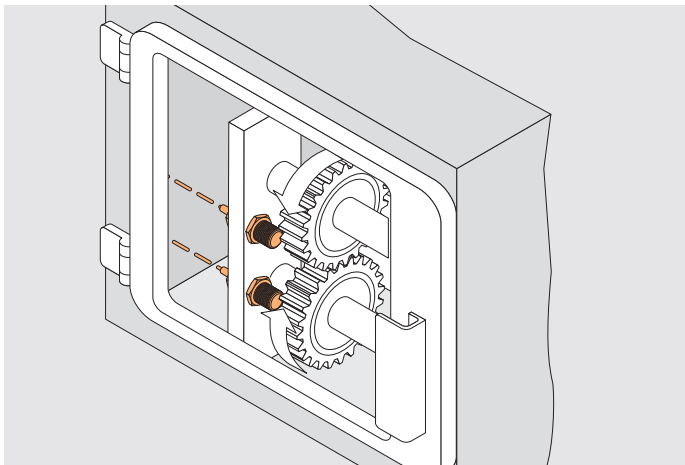
The EEx IS M12/M18/M30 range is offered as a complete system with a relay module. The relay module, which is suitable for cabinet mounting, supplies the required intrinsic power for the sensor and transmits the sensor signal. The function of the input circuit can be programmed as NO or NC contact.

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



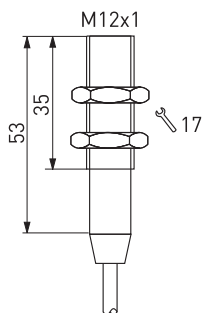
Ex inductive sensors

// 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

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 ² , 3D version: plug-in connector M12 x 1, 4-pole
Protection class	IP 67
Switching distance s_n	EEx IS M12 b: 2 mm, EEx IS M12 nb: 4 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	M12 x 1: 10 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 M12 NB-ST-3D
Equipment Categ. 3D, dust Ex zone 22
ST Plug-in connector M12 x 1
NB Non-flush, (B flush)
Enclosure diameter M12
Series
Ex certified component

Ex inductive sensors

// Series EEx IS M12, variants

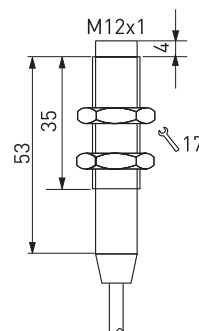
Features/Options

- 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



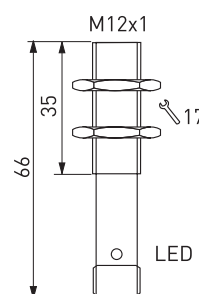
// EEX IS M12 NB



// EEX IS M12 B-ST-3D



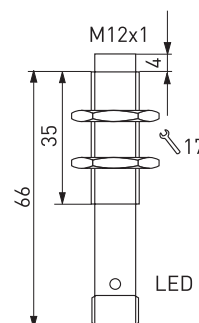
// EEX IS M12 B-ST-3D



// EEX IS M12 NB-ST-3D



// EEX IS M12 NB-ST-3D



Ex inductive sensors

// Series EEx IS M18

Features/Options

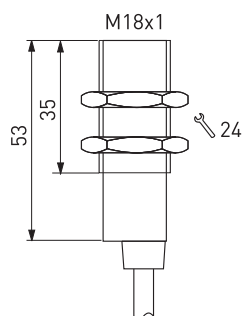
- Ex zone 0, 1 and 2, as well as 20, 21 and 22
- Metal enclosure
- Variants for flush or non-flush mounting
- Long life, no mechanical wear
- Suitable for the food processing industry
- Insensitive to soiling
- Enclosure diameter M18 x 1
- Version for equipment category 3D, Dust-Ex zone 22 available
- 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 ² , 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
				ST Plug-in connector M12 x 1
				NB Non-flush, (B flush)
				Enclosure diameter M18
				Series
				Ex certified component

Ex inductive sensors

// Series EEx IS M18, variants

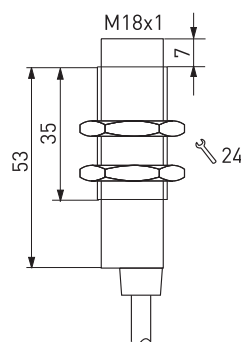
Features/Options

- 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



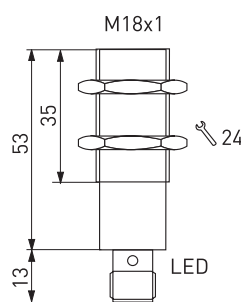
// EEX IS M18 NB



// EEX IS M18 B-ST-3D



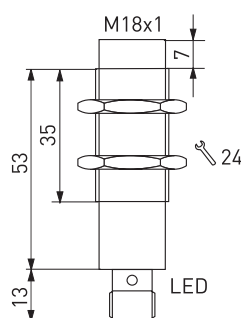
// EEX IS M30 B-ST-3D



// EEX IS M18 NB-ST-3D



// EEX IS M30 NB-ST-3D



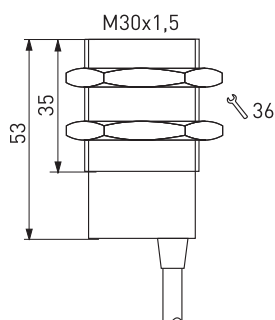
Ex inductive sensors

// 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

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 ² , 3D version: plug-in connector M12 x 1, 4-pole
Protection class	IP 67
Switching distance s_n	EEx IS M30 b: 10 mm, EEx IS M30 nb: 15 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	M30 x 1,5: 100 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 M30 NB-ST-3D				
				Equipment Categ. 3D, dust Ex zone 22
				ST Plug-in connector M12 x 1
				NB Non-flush, (B flush)
				Enclosure diameter M30
				Series
				Ex certified component

Ex inductive sensors

// Series EEx IS M30, variants

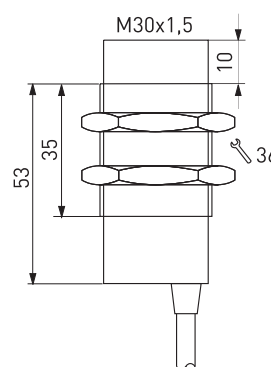
Features/Options

- 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



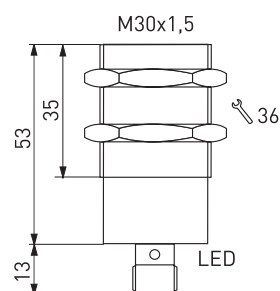
// EEX IS M30 NB



// EEX IS M30 B-ST-3D



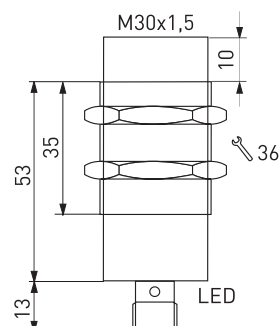
// EEX IS M30 B-ST-3D



// EEX IS M30 NB-ST-3D



// EEX IS M30 NB-ST-3D



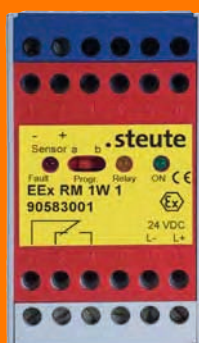
Ex Relay module

// Series EEx RM 1W 1

Features/Options

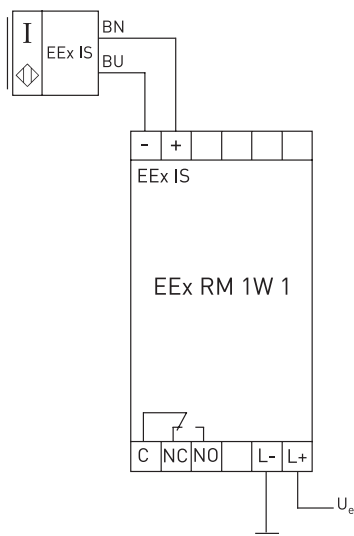
- Thermoplastic enclosure
- Output: Relay
- 40 mm housing width
- 24 VDC or 230 VAC operating voltage

// 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

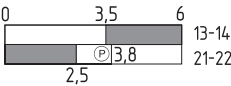
I_{the} Thermal test current



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

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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