

Safe switchgear for complex and critical applications

Ex switchgear to ATEX

Catalogue



steute



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Product overview

Safe switching and monitoring

Safety switches with separate actuator 1.1



Solenoid interlocks 1.2



Position switches with safety function 1.3



Safety switches for hinged safety guards 1.4



Command devices

Pull-wire emergency stop switches 1.5



Command devices 1.6



Switching and positioning

Position switches 2



Belt-alignment switches 3



Pull-wire switches 4



Foot switches 5



Non-contact switching

Magnetic sensors 6



steute Schaltgeräte. An overview.

steute is a typical medium-sized company located in Löhne at the foot of the Weser hills. It was founded in 1961 and soon after began to build up a reputation as a manufacturer of electrical products for mechanical and systems engineering. The company has especially made a name for itself with an extensive range of footswitches, safety switches and pull-wire switches, including customer-specific and niche applications within this branch of capital investment.

In order to achieve a wider overall product range, steute became part of the SCHMERSAL group in 1995. With a new freedom to concentrate on its key skills, steute now consistently pursued further development of its range of foot-operated switches and safety application components.

The company simultaneously widened its vision to include new fields of product application. Medical technology and applications for explosive zones became increasingly important in this context.

Technological orientation and concentration on new market segments led to a spin-off from the SCHMERSAL Group in 2003. Since 2004, steute has remained within the enterprise, but is legally and economically independent.

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





140 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: 2000
- Certificate of Quality Assurance acknowledgement in accordance with the 94/9/EG directive (ATEX)

On the following pages please find an overview of our wide range of devices, each of which can be modified in accordance with customer specifications.

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

Your steute team.

Marking of electrical equipment used in potentially explosive

EEEx RC..
Magnetic sensor

EEEx ZS 71
Pull-wire
emergency stop
switch

EEEx GFS
Foot switch

EEEx AZM 415
Solenoid interlock

EEEx ST 14
Switchgear with
separate actuator

EEEx AZ 16
Switchgear with
separate actuator

EEEx 13 DL
Position switch

EEEx 12 WR
Position switch

EEEx 95 R
Position switch with
safety function

EEEx 335 1K
Position switch
with
safety function

EEEx 14 RUV
Command device

Conditions in the potentially explosive area

Flammable material	Temporary behaviour of the flammable material in the potentially explosive atmosphere	Classification of the potentially explosive atmospheres			Required marking of the applied device per CENELEC	
		CENELEC/IEC	US NEC 505	US NEC 500	Equipment-group	Equipment-category
Gases, vapours	• Are present continuously, for long periods or frequently	Zone 0	Class I Zone 0	Class I Division 1	II	1G
	• Are likely to occur	Zone 1	Class I Zone 1		II	2G or 1G
	• Are unlikely to occur or, if they do occur, are likely to do so only infrequently and for a short period only	Zone 2	Class I Zone 2	Class I Division 2	II	3G or 2G or 1G
Dusts	• Are present continuously, for long periods or frequently	Zone 20	—	Class II Division 1	II	1D
	• Are likely to occur	Zone 21	—		II	2D or 1D
	• Are unlikely to occur in case of whirled dust or, if they do occur, are likely to do so only infrequently and for a short period only	Zone 22	—	Class II Division 2	II	3D or 2D or 1D
Methane, Dust	— —	Mining Mining	— —	Mining —	I I	M1 M2 or M1

Classes and groups

Typical
• Gases
• Dusts
• Fluffs
• Fibres

Acetylene

Hydrogen

Ethylene

Propane

Methane

Metal dust

Coal dust

Grain dust

Fibres/Fluffs

NEC 500

NEC 505

IEC

CENELEC CE 0158



Class I,

Class I,

Division

II

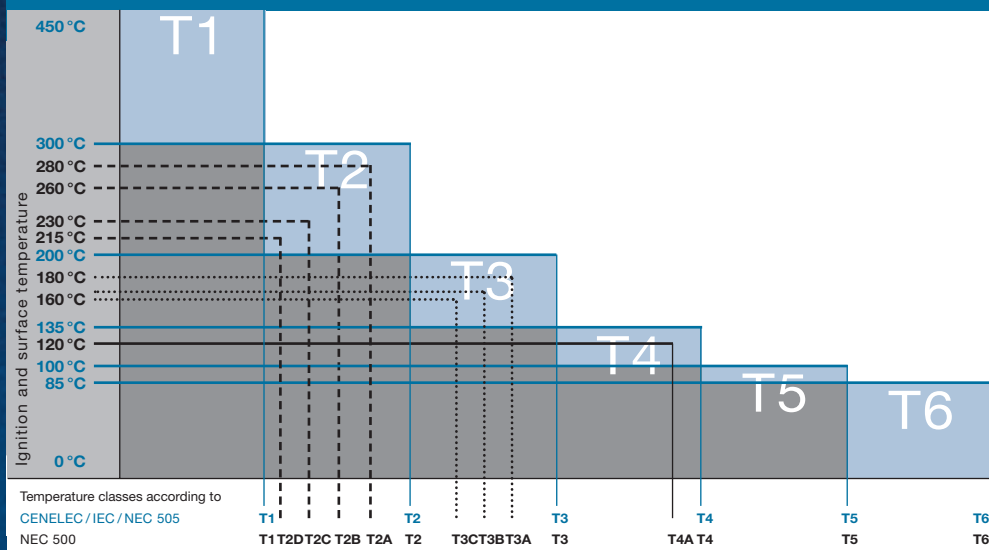
2G

ve atmospheres. Ex switchgear from steute.

roups per NEC 500

Group	
Class I	Group A
Class I	Group B
Class I	Group C
Class I	Group D
Mining	
Class II	Group E
Class II	Group F
Class II	Group G
Class III	

Temperature classes and maximum permitted surface temperature of the equipment



Classification of Gases and Dusts per CENELEC/IEC/NEC 505

	T1	T2	T3	T4	T5	T6
Explosion sub-group	Gases and dusts					
I	Methane	—	—	—	—	—
II A	Ammoniac Methane Ethane Propane	Ethyl alcohol Cyclohexane n-Butane n-Hexane	Fuel in general Aircraft fuel Fuel oil	Acetaldehyde	—	—
II B	Lighting gas Acrylonitrile	Ethylene Ethylene oxide	Ethylene glycol Hydrogen sulphide	Ethyl ether	—	—
II C	Hydrogen	Ethine (Acetylene)	—	—	—	Coal disulphide

steute - the  perts

As specialists for Ex switchgear steute offers an extensive program of explosion-proof certified safety switches, command devices, position switches, magnetic reed switches etc. to the manufacturers of machines and plants.

Thus steute contributes, that in sensitive fields a high degree of safety for men, environment and plants is achieved.

Ex switchgear from steute are used among others in the chemical and petro-chemical industry as well as in enamelling systems. But also where high fine dust concentrations can lead to explosions by deflagration – e. g. in mills, in wood processing, pharmacy and filling of powdery materials – the machine and plant manufacturers as well as the end-user use the know-how and the switchgear from steute.

All Ex switchgear produced by steute are suitable for the use in potentially explosive atmospheres of zone 1 or 2 (21 or 22). Corresponding type-examination certificates per EC Directive 94/9/EC (ATEX) are available.

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on 1,

Group A,B,C,D,
Zone 1,

A Ex de
Ex de
E Ex de

IIC
IIC
IIC

T6
T6
T6
T6

DMT 01 ATEX E118 –

Marking of electrical equipment used in potentially explosive

NEC 500

NEC 505

IEC

CENELEC CE 0158



Class I,

Class I,

II

2G

Division 1,

Notified Body		
Notified Body	Country	Code number
TÜV Hannover/ Sachsen-Anhalt e.V.	Germany	0032
PTB	Germany	0102
EXAM	Germany	0158
DQS	Germany	0297
FSA	Germany	0588
BAM	Germany	0589
IBExU	Germany	0637
INERIS	France	0080
LCIE	France	0081
KEMA	Netherlands	0344
SP	Sweden	0402
LOM	Spain	0163
EECS (BASEEFA)	UK	0600
SCS	UK	0518

Methods of protection				
Method of protection	Symbol	Marking	Protection principle	Zone
General requirements	—	—	—	—
Flameproof enclosure		EEx d	Transmission of an explosion to the outside is excluded	1 or 2
Increased safety		EEx e	Avoidance of sparks and surface temperatures	1 or 2
Intrinsic safety		EEx i	Limit energy of sparks and surface temperatures	0, 1 or 2***
Pressurized		EEx p	Potentially explosive atmosphere is kept away from the ignition source	1 or 2
Encapsulation		EEx m	Potentially explosive atmosphere is kept away from the ignition source	1 or 2
Oil immersion		EEx o	Potentially explosive atmosphere is kept away from the ignition source	1 or 2
Sand encapsulation		EEx q	Transmission of an explosion to the outside is excluded	1 or 2
Type of protection „n“	—	EEx n	Different protection principles for zone 2	2
Protection by housing		IP	Potentially explosive atmosphere is kept away from the ignition source	20/21/22

* devices, ** systems, ***ia application in zone 0, 1, 2/ib application in zone 1, 2



osive atmospheres. Ex switchgear from steute.

Group A,B,C,D,

Zone 1,

A Ex de
Ex de
E Ex de

IIC
IIC
IIC

T6
T6
T6
T6

DMT 01 ATEX E118

—

Methods of protection				
IEC	CENELEC	VDE	FM/UL	Application
60079-0	EN 50014	VDE 0171 Part 1	— —	All applications
60079-1	EN 50018	VDE 0171 Part 5	FM 3600 UL 2279	Switchgear, control units, motors, command and signalling devices, power electronics
60079-7	EN 50019	VDE 0171 Part 6	FM 3600 UL 2279	Terminal and connection boxes, housings motors, lights, terminals
60079-11	EN 50020* EN 50039**	VDE 0171 Part 7, Part 8	FM 3610 UL 2279	Measuring, control technology and engineering, sensors, actuators, instrumentation
60079-2	EN 50016**	VDE 0171 Part 3	FM 3620 NFPA 496	Switchgear and control cabinets, motors, measuring and analysis devices, calculators
60079-18	EN 50028	VDE 0171 Part 9	FM 3600 UL 2279	Coils from relays and motors, electronics magnetic valves, interconnection systems
60079-6	EN 50015	VDE 0171 Part 6	FM 3600 UL 2279	Transformers, relays, start-up control units, switchgear
60079-5	EN 50017	VDE 0171 Part 4	FM 3600 UL 2279	Transformers, relays, capacitors
60079-15	EN 50021	VDE 0170/ 0171 Part 16	— —	Only applications for zone 2
61241-1	EN 50281-1-1	VDE 0170 / 0171 Part 15-1-1	— —	All applications

Additional conditions	
Conditions	Marking
Equipment applicable without restrictions	—
Observe special application conditions	X
Ex device with part certificate cannot be used alone; CE conformity will be certified through assembly in a complete equipment	U

1.

1.1

Ex switchgear

Safety switches

Safety switches with separate actuator



Application

These Ex safety switches are suitable for sliding, hinged and particularly removable safety guards, which need to be closed to ensure the necessary operational security. They are also suitable for mounting on profile chapters and retro fitting on existing equipment.

In combination with the "Protect" range guard door monitors, all Ex safety switches with separate actuator shown in this chapter meet Control Category 3 or 4 to EN 954-1.

The Ex switches are intended for use in Zone 1 and Zone 2, Zone 21 and 22.

Design and mode of operation

On the Ex safety switches with separate actuator, the switching element is not physically connected to the actuator but functionally brought together or separated by switching. When the guard device is opened, the actuator is separated from the base unit. In the process, NC contacts are positively opened and NO contacts closed. A wide range of accessories is available for the EEx AZ 16 range of safety switches, including various coded actuators, also suitable for small radii, lockout tags and various latching devices such as magnets and ball latches.

Protection class of all Ex safety switches is IP 65/67.

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

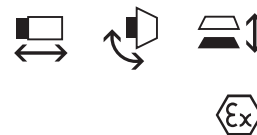
1.

1.1

Ex switchgear

Safety switches

Safety switches with separate actuator



Features

EEx ST 14

- 2 contacts
- Thermoplastic enclosure
- 2 actuating planes
- For applications with restricted space
- Pre-wired cable

EEx 335 AZ

EEx 355 AZ

- 2 contacts
- Metal enclosure
- 3 actuating planes
- Wiring compartment

EEx 95 AZ

- 2 contacts
- Thermoplastic enclosure
- 2 actuating planes
- Wiring compartment

EEx AZ 16

- 2 contacts
- Thermoplastic enclosure
- 4 actuating planes
- Available with ejection force or latching force 30 N
- Pre-wired cable
- Wide range of accessories

EEx ST 61

- 2 contacts
- Thermoplastic enclosure
- 1 actuating plane
- Wiring compartment

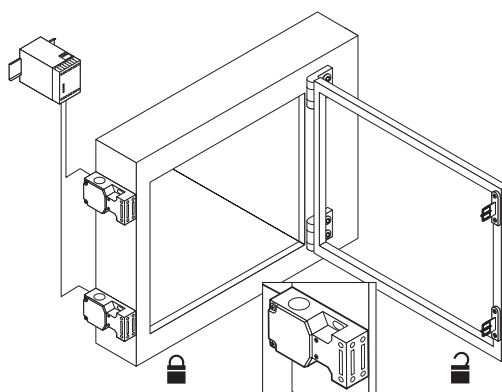
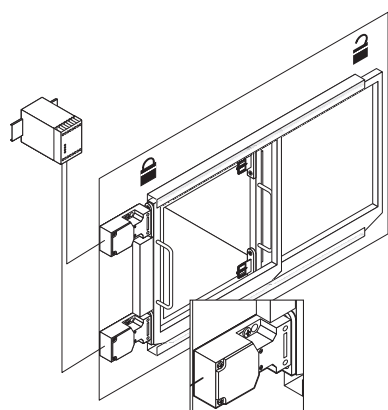
Note

Technical data are shown in tabular form in chapter 1.1.8.

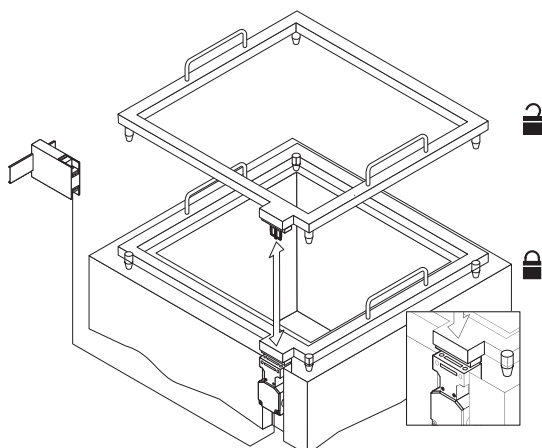
Application

On sliding doors

On hinged doors

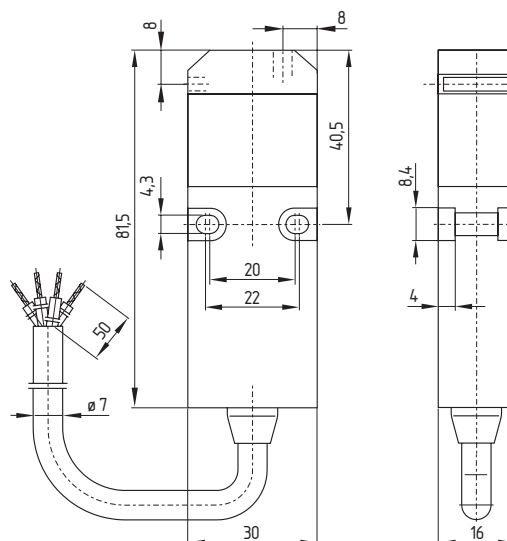
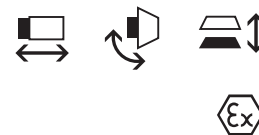


On removable doors



1.
1.1
1.1.1

Ex switchgear
Safety switches
Safety switches with separate actuator
EEx ST 14 range



Features

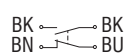
- Thermoplastic enclosure
- II 2G EEx d IIC T6
II 2D IP65 T80°C
- Slim design
- Long life
- Double-insulated
- High level of contact reliability with low voltages and currents
- Pre-wired cable
- Actuator with rubber mountings

Info

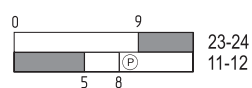
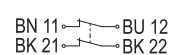
Version for equipment category 3D
(dust-Ex zone 22) available
Ordering suffix: -3D

Contacts/
Switch travel

1 NO
1 NC

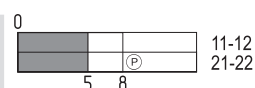


2 NC



Standard version

EEx ST 14 10/1S



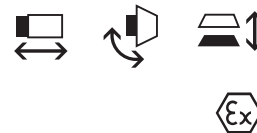
EEx ST 14 20

Note

Inserted position of actuator = 0 in switch travel diagrams.
Actuators must be ordered separately.

1.
1.1
1.1.1

Ex switchgear
Safety switches
Safety switches with separate actuator
EEx ST 14 range



Cable length

- 1 metre long ordering suffix -1m
- 2 metres long ordering suffix -2m
- 5 metres long ordering suffix -5m
- 10 metres long ordering suffix -10m

Other cable lengths possible on request.
Always specify cable length when placing an order.

Ordering details

To order, select the part number of the desired switch from the table "Contacts/Switch travel", e.g. safety switch with with one NO and one NC contact, 5 m long cable:
EEx ST 14 1Ö/1S-5m

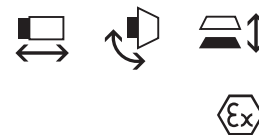
Actuators and accessories must be ordered separately,
e.g. straight actuator: ST 14-B1

The applicable ordering suffix is added at the end of the part number of the safety switch.
Further variants not shown here are available on request.

Approvals EC Type Test Certificate: PTB 03 ATEX 1070 X

1.
1.1
1.1.1

Ex switchgear
Safety switches
Safety switches with separate actuator
Ex ST 14 range

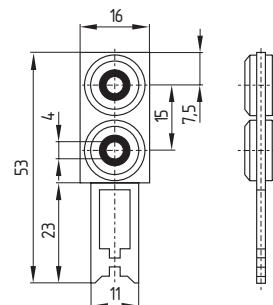


Straight actuator ST 14-B1

- On hinged guards, minimum actuating radius 140 mm
- Damps vibration on guards



- The axis of the hinge should be 30 mm above the top edge of the safety switch and in the same plane

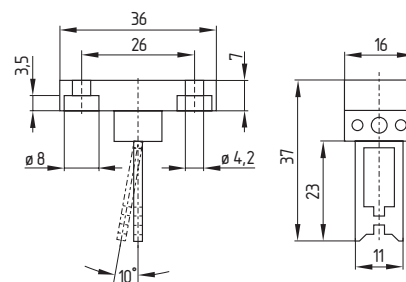


Adjustable actuator ST 14-B3

- Particularly suitable for hinged guards
- For very small actuating radii at 90° to the plane of the actuator
- Minimum actuating radius 50 mm on hinged guards



- The axis of the hinge should be 14 mm above the top edge of the safety switch and in the same plane

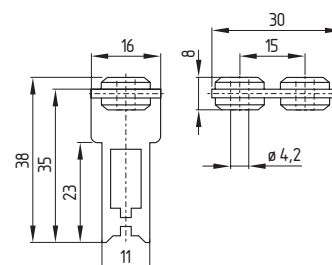


Angled actuator ST 14-B5

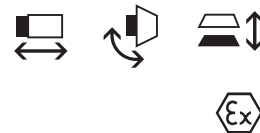
- Particularly suitable for hinged guards
- Minimum actuating radius 140 mm on hinged guards



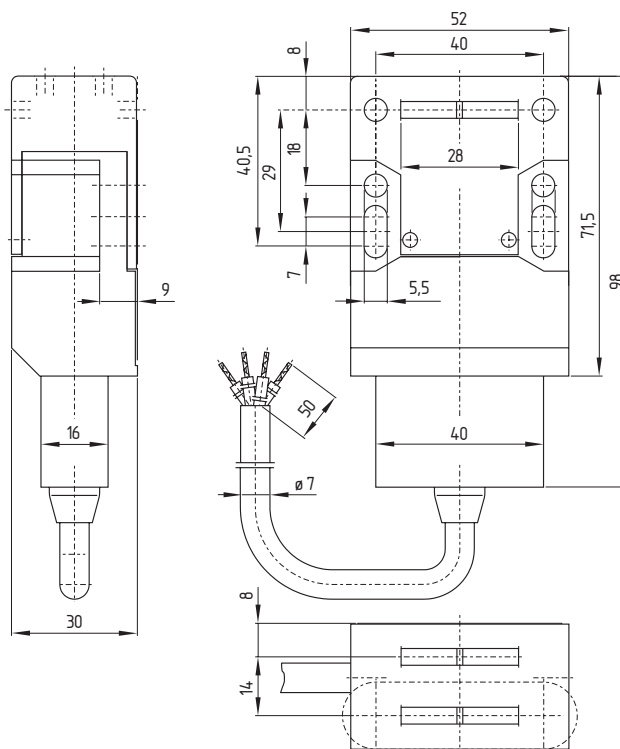
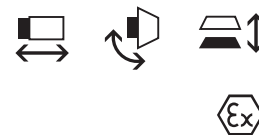
- The axis of the hinge should be 15 mm above the top edge of the safety switch and in the same plane



- 1.** Ex switchgear
- 1.1** Safety switches
- 1.1.1** Safety switches with separate actuator
- 1.1.1** EEx ST 14 range



1. Ex switchgear
 1.1 Safety switches
 1.1.2 Safety switches with separate actuator
 EEx AZ 16 range



Features

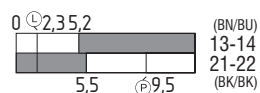
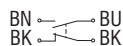
- Thermoplastic enclosure
- Multiple coding
- II 2G EEx d IIC T6
II 2D IP65 T80°C
- Long life
- Double-insulated
- Pre-wired cable
- High level of contact reliability with low voltages and currents
- Not sensitive to dirty conditions by virtue of patented roller system
- Slotted holes for adjustment, circular holes for location

Info

Version for equipment category 3D
 (dust-Ex zone 22) available
 Ordering suffix: -3D

Contacts/
Switch travel

1 NO
1 NC



Ejection force
 Latching force 30 N

EEx AZ 16zvz
 EEx AZ 16zvzk

Note

Inserted position of actuator = 0 in switch travel diagrams.
 Actuators must be ordered separately.

1.

1.1

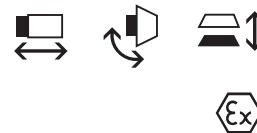
1.1.2

Ex switchgear

Safety switches

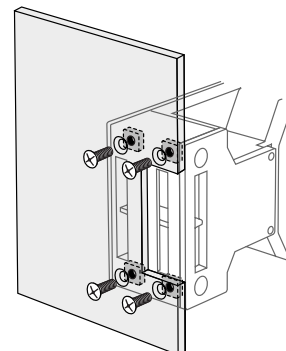
Safety switches with separate actuator

EEx AZ 16 range



Version with M 5 nuts

- For front mounting of safety switch, e.g. on sheet-steel covers
- Suitable for use with actuators AZ 15/16-B1, -B2, -B3 and -B6
- Nuts cannot be retro fitted
- Ordering suffix -1762



Cable length 2 metres long ordering suffix -2m
 5 metres long ordering suffix -5m
Order must always include cable length!

Ordering details

To order, select the part number of the desired switch from the table "Contacts/Switch travel", e.g. safety switch EEx AZ 16 with one NO and one NC contact, with ejection force and cable 2 m long: EEx AZ 16zv-k-2m

Actuators and accessories must be ordered separately, e.g. straight actuator with ball latch: AZ 15/16-B1-2053

The applicable ordering suffix is added at the end of the part number of the safety switch.
Further variants not shown here are available on enquiry.

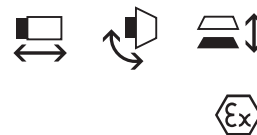
Approvals

EC Type Test Certificate: PTB 03 ATEX 1068 X*

*referring to the switch insert

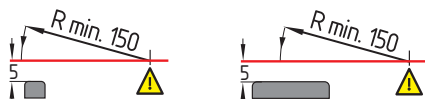
1.
1.1
1.1.2

Ex switchgear
Safety switches
Safety switches with separate actuator
EEx AZ 16 range

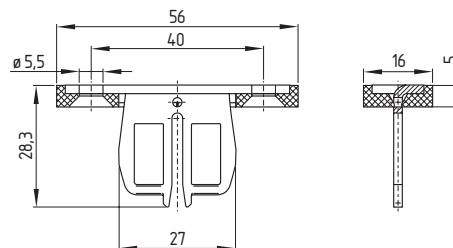


Straight actuator AZ 15/16-B1

- Particularly suitable for sliding doors
- Minimum actuating radius on hinged guards 150 mm

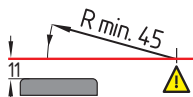


- The axis of the hinge should be 5 mm above the top edge of the safety switch and in the same plane

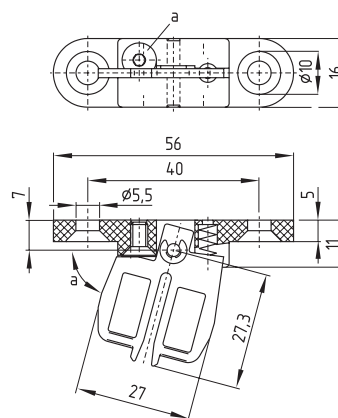


Adjustable actuator AZ 15/16-B2

- For very small actuating radii in line with the plane of the actuator
- Actuating radius adjustable, minimum 45 mm, using a hexagonal key wrench 2.5 mm A/F (a)



- The axis of the hinge should be 11 mm above the top edge of the safety switch and in the same plane

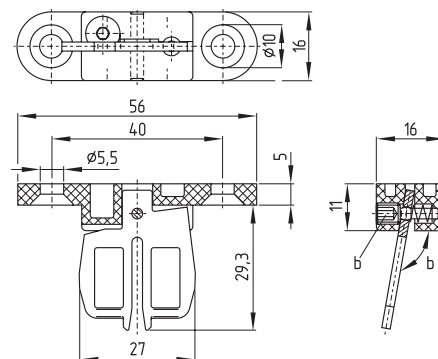


Adjustable actuator AZ 15/16-B3

- For very small actuating radii at 90° to the plane of the actuator
- Actuating radius adjustable, minimum 32 mm, using a hexagonal key wrench 2.5 mm A/F (b)

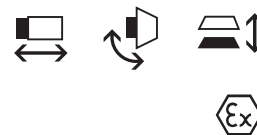


- The axis of the hinge should be 11 mm above the top edge of the safety switch and in the same plane



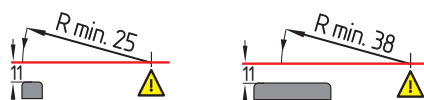
1.
1.1
1.1.2

Ex switchgear
Safety switches
Safety switches with separate actuator
EEx AZ 16 range

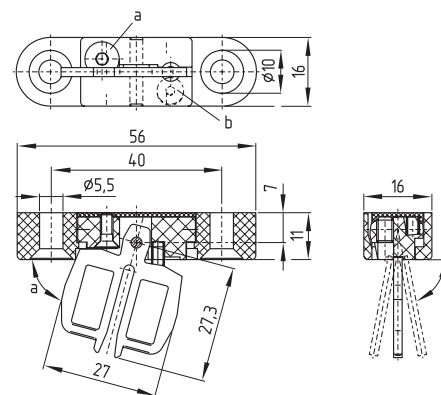


Adjustable actuator AZ 15/16-B6

- For very small actuating radii in line with or at 90° to the plane of the actuator
- Actuating radius adjustable using a hexagonal key wrench 2.5 mm A/F (a and b), minimum 25 mm at 90° to the plane of the actuator and minimum 38 mm in line with the plane of the actuator

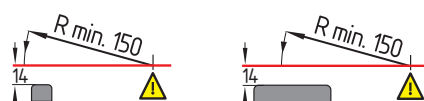


- The axis of the hinge should be 11 mm above the top edge of the safety switch and in the same plane

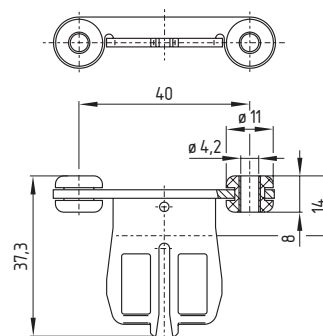


Straight actuator with rubber mountings AZ 15/16-B1-2245

- Particularly suitable for sliding doors
- Minimum actuating radius on hinged guards 150 mm
- Damps vibration on guard devices



- The axis of the hinge should be 14 mm above the top edge of the safety switch and in the same plane
- Max. 200 Ncm tightening torque for fixing the actuator



1.

1.1

1.1.2

Ex switchgear

Safety switches

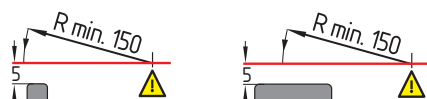
Safety switches with separate actuator

EEx AZ 16 range

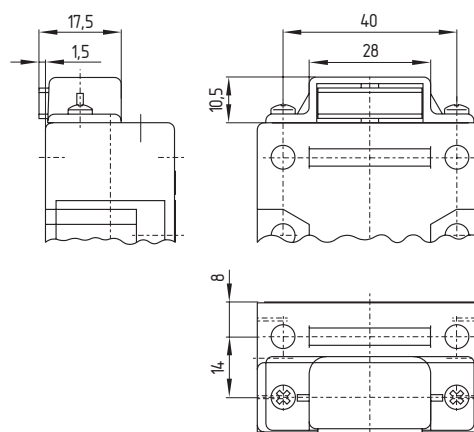
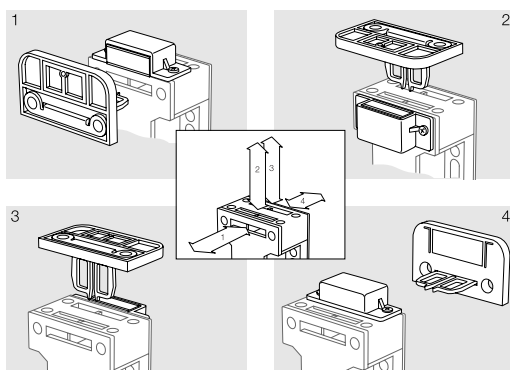
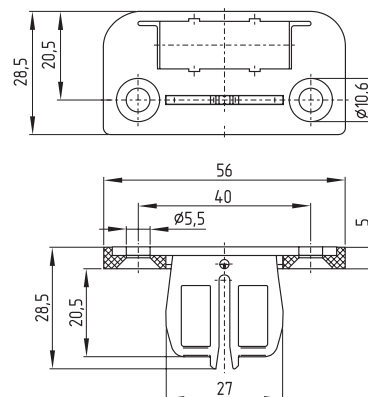


Straight actuator with magnetic latch AZ 15/16-B1-1747

- For play-free interlocking of light guards
- Latching force 30 N
- The magnetic latch can easily be fitted in any actuating plane
- Suitable for retrofitting
- Particularly suitable for sliding doors
- Minimum actuating radius on hinged guards 150 mm

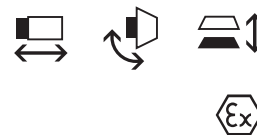


- The axis of the hinge should be 5 mm above the top edge of the safety switch and in the same plane



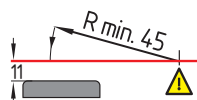
1.
1.1
1.1.2

Ex switchgear
Safety switches
Safety switches with separate actuator
EEx AZ 16 range

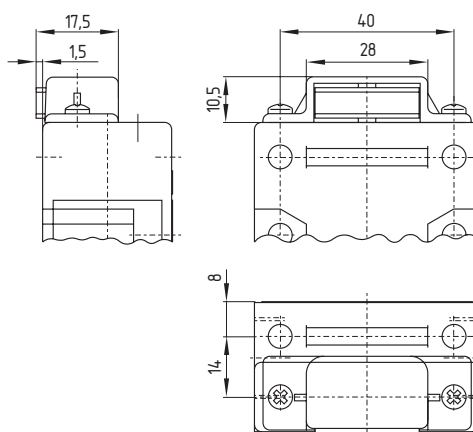
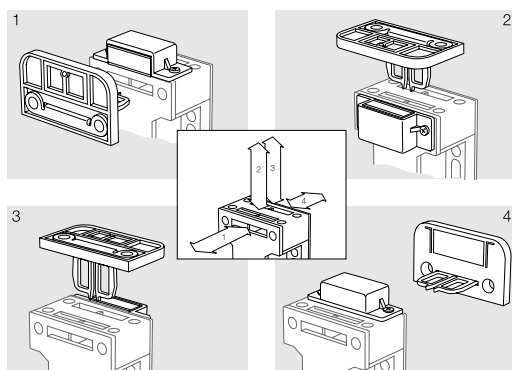
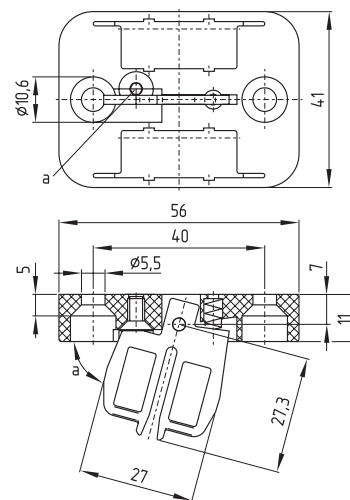


Adjustable actuator with magnetic latch AZ 15/16-B2-1747

- For play-free interlocking of light guards
- Latching force 30 N
- The magnetic latch can easily be fitted in any actuating plane
- Suitable for retrofitting
- For very small actuating radii in line with the plane of the actuator
- Actuating radius adjustable, minimum 45 mm, using a hexagonal key wrench 2.5 mm A/F (a)



- The axis of the hinge should be 11 mm above the top edge of the safety switch and in the same plane



1.

1.1

1.1.2

Ex switchgear

Safety switches

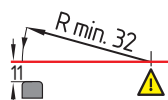
Safety switches with separate actuator

EEx AZ 16 range

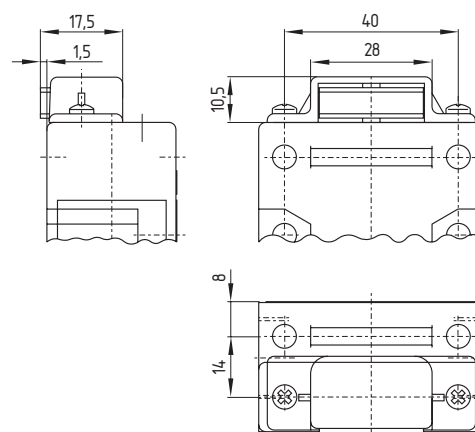
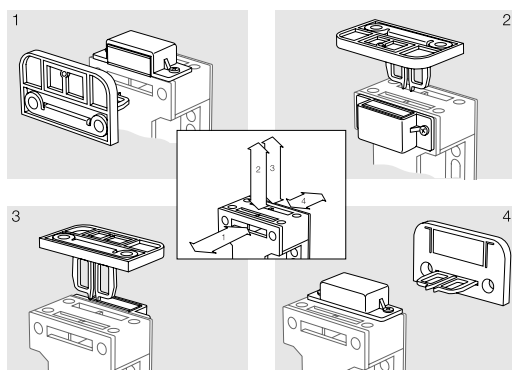
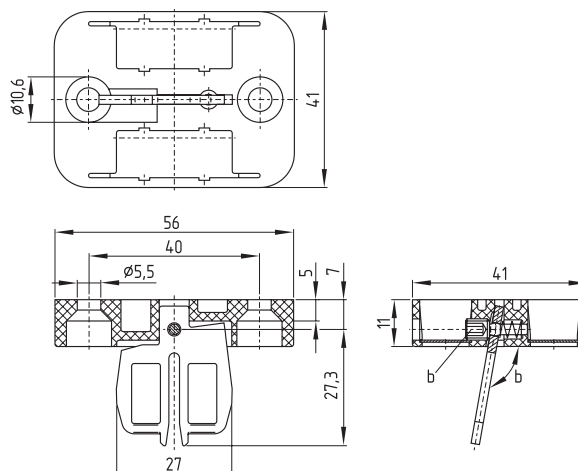


Adjustable actuator with magnetic latch AZ 15/16-B3-1747

- For play-free interlocking of light guards
- Latching force 30 N
- The magnetic latch can easily be fitted in any actuating plane
- Suitable for retrofitting
- For very small actuating radii at 90° to the plane of the actuator
- Actuating radius adjustable, minimum 32 mm, using a hexagonal key wrench 2.5 mm A/F (b)

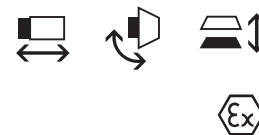


- The axis of the hinge should be 11 mm above the top edge of the safety switch and in the same plane



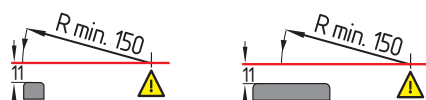
1.
1.1
1.1.2

Ex switchgear
Safety switches
Safety switches with separate actuator
EEx AZ 16 range

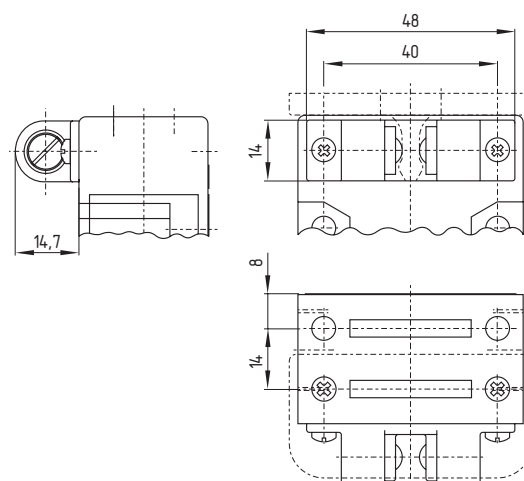
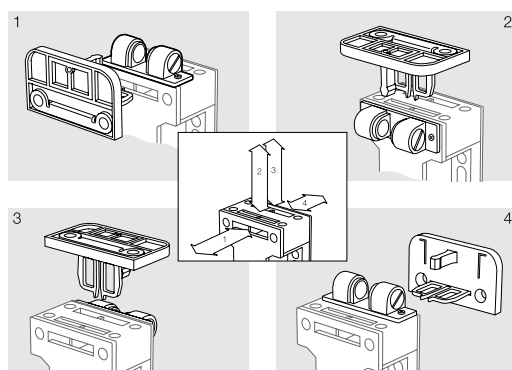
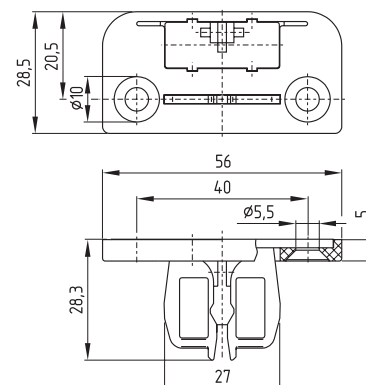


Straight actuator with ball latch AZ 15/16-B1-2053

- For interlocking of light to medium-weight guards
- Latching force adjustable up to 100 N
- Particularly suitable for sliding doors
- Minimum actuating radius on hinged guards
150 mm



- The axis of the hinge should be 11 mm above the top edge of the safety switch and in the same plane



1.

1.1

1.1.2

Ex switchgear

Safety switches

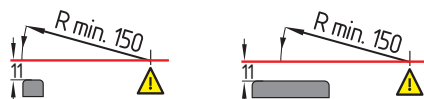
Safety switches with separate actuator

EEx AZ 16 range

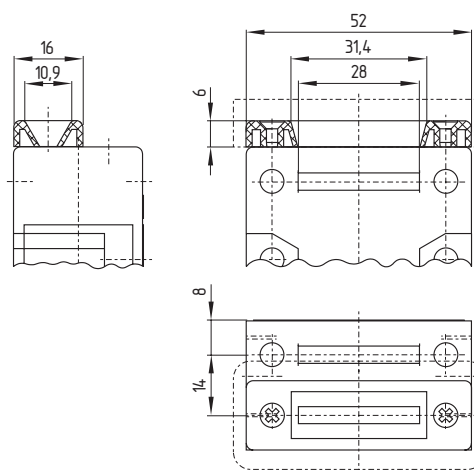
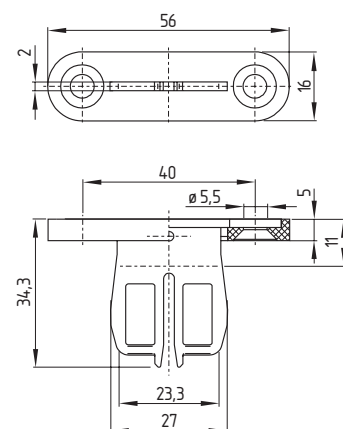
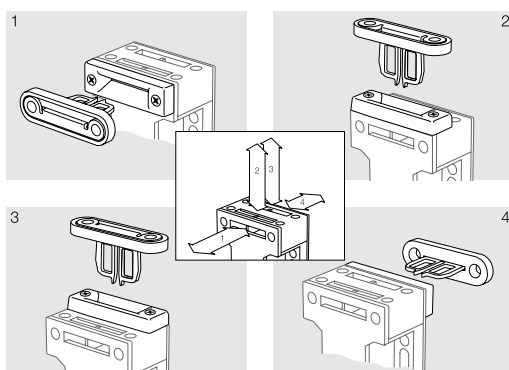


Straight actuator with centering guide AZ 15/16-B1-2177

- For interlocking of light, unguided guards
- Particularly suitable for sliding doors
- Minimum actuating radius on hinged guards 150 mm

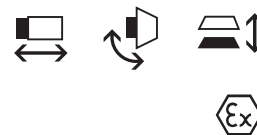


- The axis of the hinge should be 11 mm above the top edge of the safety switch and in the same plane



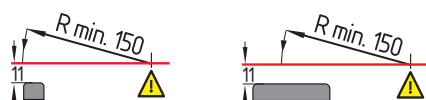
1.
1.1
1.1.2

Ex switchgear
Safety switches
Safety switches with separate actuator
EEx AZ 16 range

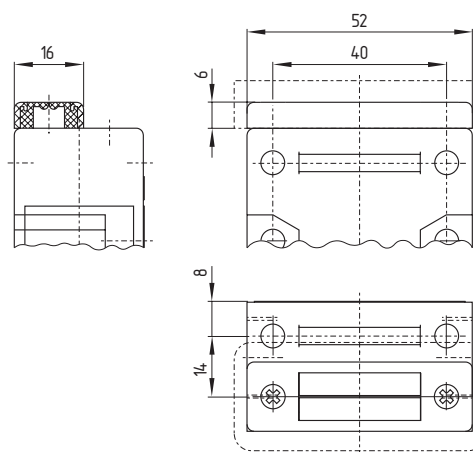
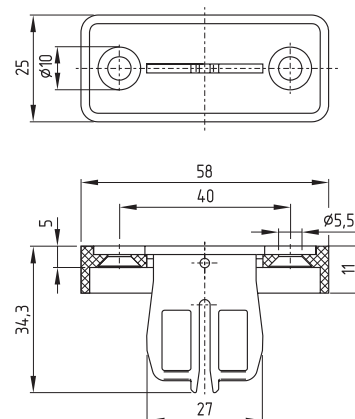
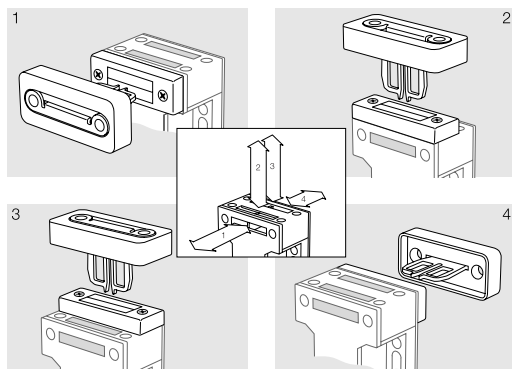


Straight actuator with slot lip-seal AZ 15/16-B1-2024

- For protection against the ingress of coarse dirt
- Particularly suitable for sliding doors
- Minimum actuating radius on hinged guards
150 mm



- The axis of the hinge should be 11 mm above the top edge of the safety switch and in the same plane



1.

Ex switchgear

Safety switches

1.1

Safety switches with separate actuator

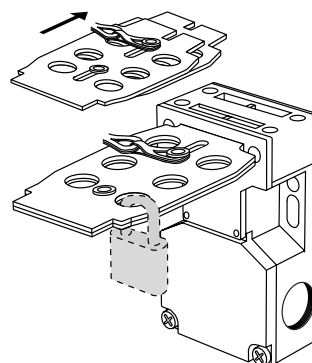
1.1.2

EEx AZ 16 range



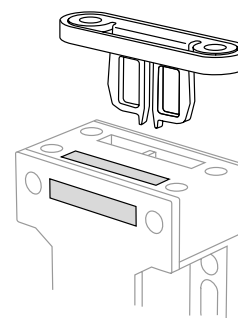
Lockout tag SZ 16/335

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



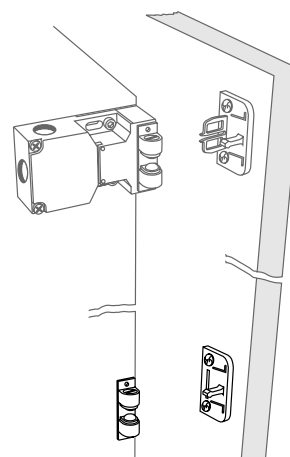
Slot sealing plug AZ 15/16-1476

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



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



1.

Ex switchgear

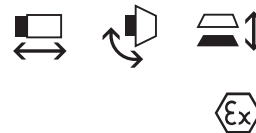
1.1

Safety switches

1.1.2

Safety switches with separate actuator

EEx AZ 16 range



Tamperproof screws



Screw lengths

Countersunk-head screws

M 5 x 12, Id. No.: 402 530 3000

M 5 x 16, Id. No.: 402 530 3001

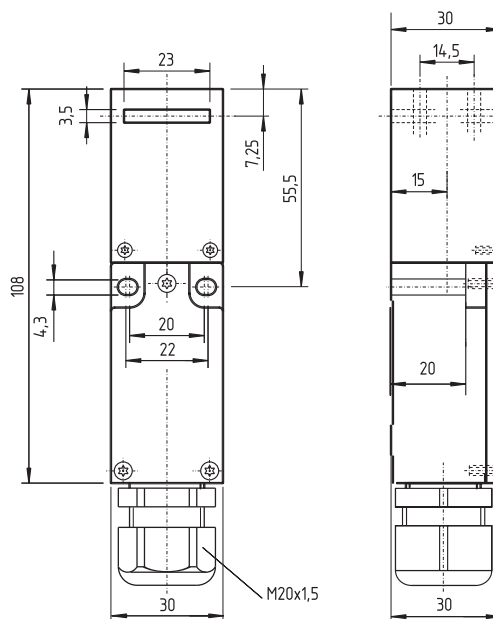
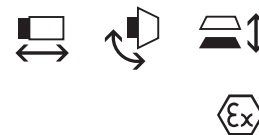
M 5 x 20, Id. No.: 402 530 3002

Supplied in sets of 2 screws

- To mount the actuator
- Higher protection against tampering with interlock
- Protects against unauthorised removal of actuator
- Available in various lengths

1.
1.1
1.1.3

Ex switchgear
Safety switches
Safety switches with separate actuator
Ex 95 AZ range



Features

- Thermoplastic enclosure
- II 2G EEx de IIC T6
II 2D IP67 T80°C
- Mounting dimensions to EN 50047
- Transversely slotted mounting holes
- Double-insulated □
- Slow action
- Actuating head can be turned
4 x 90° in factory
- Cable entry M20 x 1.5
- Wiring compartment

Info

Enclosure with vertically slotted mounting holes, ordering suffix LL

Info

Version for equipment category 3D
(dust-Ex zone 22) available
Ordering suffix: -3D

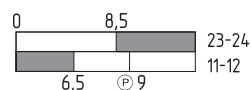
Approval

EC type test certificate:
DMT 01 ATEX E 118

Contacts/
Switch travel

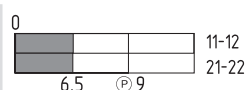
1 NO 23-24
1 NC 11-12

2 NC 11-12
21-22



Standard version

EEx 95 AZ 10/1S



EEx 95 AZ 2Ö

Note

Inserted position of actuator = 0 in switch travel diagrams.
Actuators must be ordered separately.

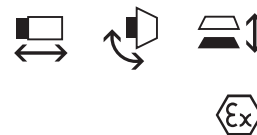
Ordering
details

To order, select the part number of the desired switch from the table "Contacts/Switch travel", e.g. safety switch EEx 95 AZ with two NC contacts:
EEx 95 AZ 2Ö

Actuators and accessories must be ordered separately,
e.g. adjustable actuator: AZ 335/355/95-B6

1.
1.1
1.1.3

Ex switchgear
Safety switches
Safety switches with separate actuator
Ex 95 AZ range

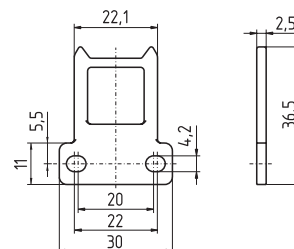


Straight actuator 95 AZ-B1

- On hinged guards, minimum actuating radius 350 mm
- Damps vibration on guards



- The axis of the hinge should be 11 mm above the top edge of the safety switch and in the same plane

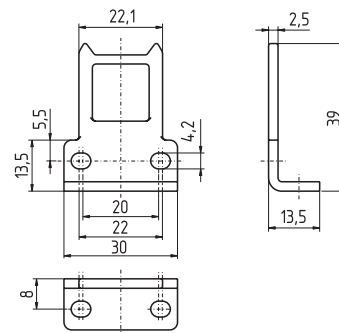


Angled actuator 95 AZ-B5

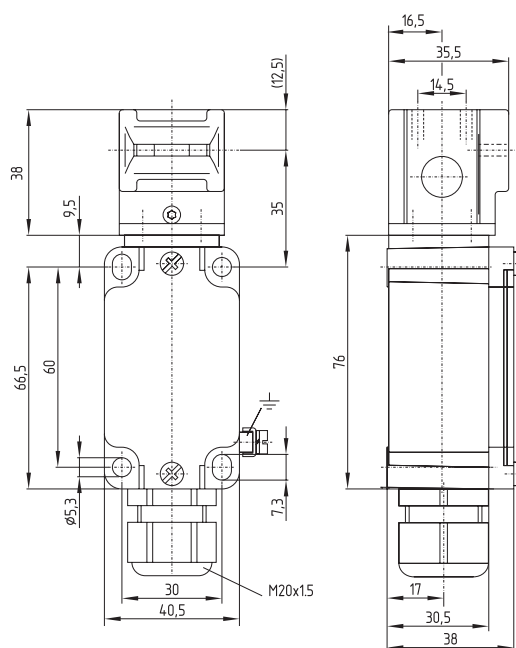
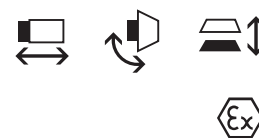
- Particularly suitable for hinged guards
- Minimum actuating radius 350 mm on hinged guards



- The axis of the hinge should be 13.5 mm above the top edge of the safety switch and in the same plane



1. Ex switchgear
 1.1 Safety switches
 1.1.4 Safety switches with separate actuator
 EEx 335 AZ range



Features

- Metal enclosure
- II 2G EEx de IIC T6
II 2D IP65 T80°C
- Mounting dimensions to EN 50041
- Long life
- High level of contact reliability with low voltages and currents
- Wiring compartment

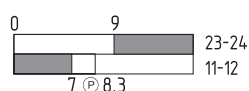
Info

Version for equipment category 3D
 (dust-Ex zone 22) available
 Ordering suffix: -3D

**Contacts/
Switch travel**

1 NO 23-24
 1 NC 11-12

2 NC 11-12
 21-22



Standard version

EEx 335 AZ 1Ö/1S



EEx 335 AZ 2Ö

Note

Inserted position of actuator = 0 in switch travel diagrams.
 Actuators must be ordered separately.

1.

1.1

1.1.4

Ex switchgear

Safety switches

Safety switches with separate actuator

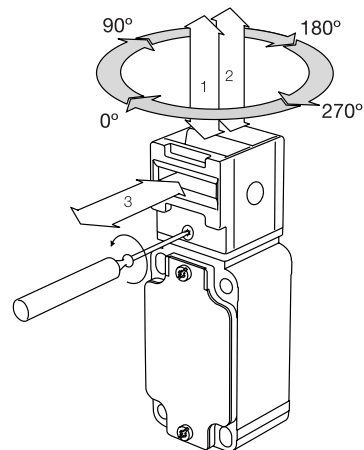
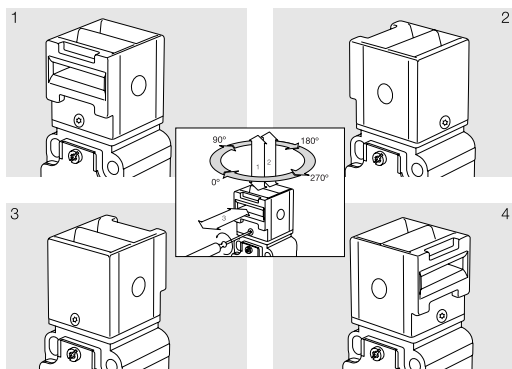
EEx 335 AZ range



Actuating head

By turning the head in 90° steps, 8 actuating planes are possible. A Torx T10 screwdriver is needed for this purpose.

Even when the screw is removed, the head is self-retaining. The switch can thus not be tampered with.



Ordering details

To order, select the part number of the desired switch from the table "Contacts/Switch travel", e.g. safety switch with one NO and one NC contact:
EEx 335 AZ 1Ö/1S

Actuators and accessories must be ordered separately, e.g. straight actuator: AZ 335/355-B1

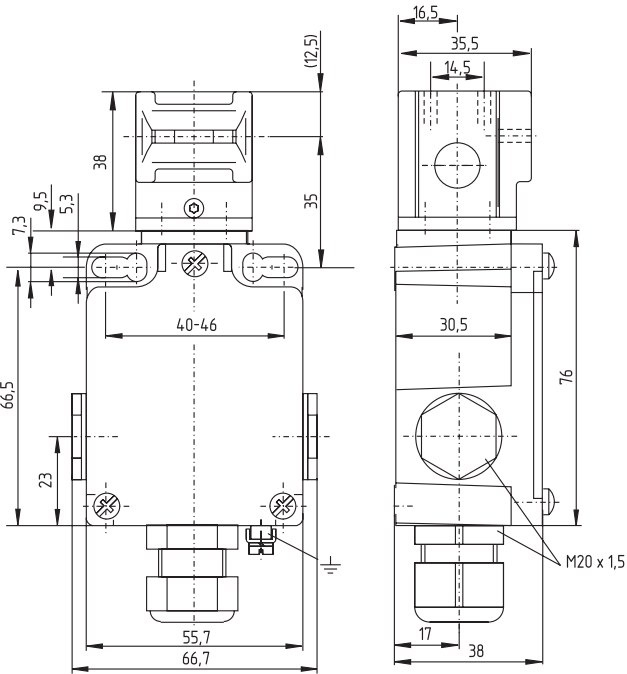
The applicable ordering suffix is added at the end of the part number of the safety switch.
Further variants not shown here are available on request.

Approvals

EC Type Test Certificate: DMT 01 ATEX E 178

1.
1.1
1.1.5

Ex switchgear
Safety switches
Safety switches with separate actuator
Ex 355 AZ range



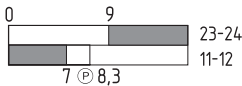
Features

- Metal enclosure
- II 2G EEx de IIC T6
II 2D IP67 T80°C
- Mounting dimensions to EN 50041
- Long life
- High level of contact reliability with low voltages and currents
- Wiring compartment
- 3 cable entries

Info

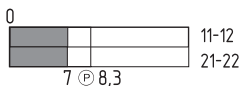
Version for equipment category 3D
(dust-Ex zone 22) available
Ordering suffix: -3D

Contacts/
Switch travel



Standard version

EEx 355 AZ 1Ö/1S



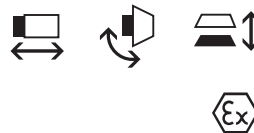
EEx 355 AZ 2Ö

Note

Inserted position of actuator = 0 in switch travel diagrams.
Actuators must be ordered separately.

1.
1.1
1.1.5

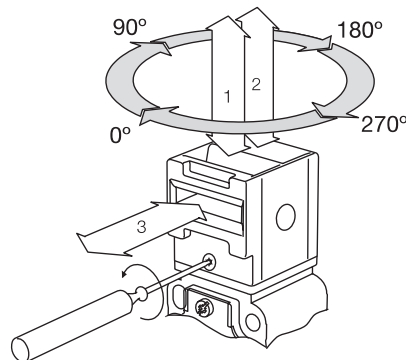
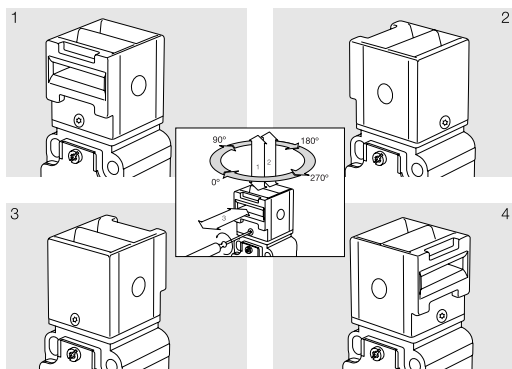
Ex switchgear
Safety switches
Safety switches with separate actuator
EEx 355 AZ range



Actuating head

By turning the head in 90° steps, 8 actuating planes are possible. A Torx T10 screwdriver is needed for this purpose.

Even when the screw is removed, the head is self-retaining. The switch can thus not be tampered with.



Ordering details

To order, select the part number of the desired switch from the table "Contacts/Switch travel", e.g. safety switch with one NO and one NC contact:
 EEx 355 AZ 1Ö/1S

Actuators and accessories must be ordered separately, e.g. straight actuator: AZ 335/355/95-B1

The applicable ordering suffix is added at the end of the part number of the safety switch.
 Further variants not shown here are available on request.

Approvals

EC Type Test Certificate: BVS 04 ATEX E 126

1.

1.1

1.1.6

Ex switchgear

Safety switches

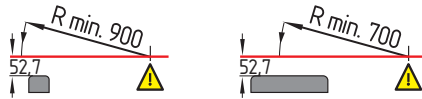
Safety switches with separate actuator

Actuators/Accessories EEx 335 AZ, EEx 355 AZ

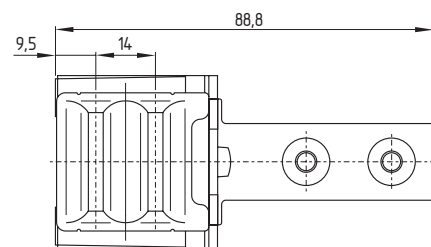
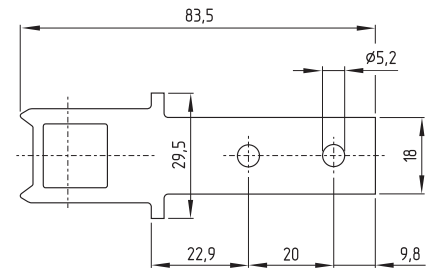


Straight actuator AZ 335/355-B1

- Particularly suitable for sliding doors
- Actuating radius minimum 700 mm on hinged doors at 90° to the plane of the actuator
- Actuating radius minimum 900 mm on hinged doors in line with the plane of the actuator

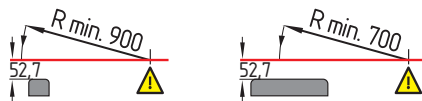


- The axis of the hinge should be 52.7 mm above the top edge of the safety switch and in the same plane

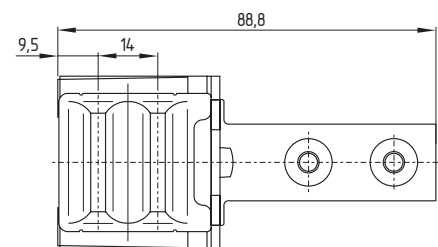
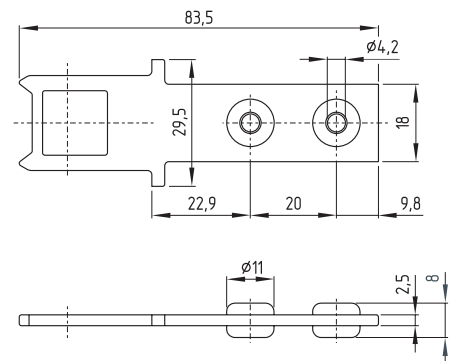


Straight actuator with rubber mountings AZ 335/355-B1-2245

- Particularly suitable for sliding doors
- Actuating radius minimum 700 mm on hinged doors at 90° to the plane of the actuator
- Actuating radius minimum 900 mm on hinged doors in line with the plane of the actuator



- The axis of the hinge should be 52.7 mm above the top edge of the safety switch and in the same plane
- max. 200 Ncm tightening torque fixing the actuator



1.

Ex switchgear



1.1

Safety switches



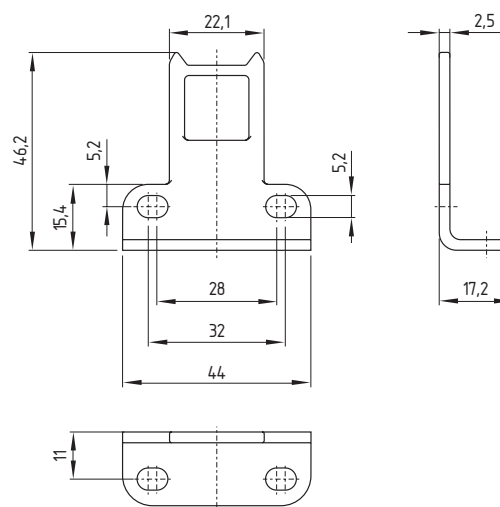
1.1.6

Safety switches with separate actuator

Actuators/Accessories EEx 335 AZ, EEx 355 AZ

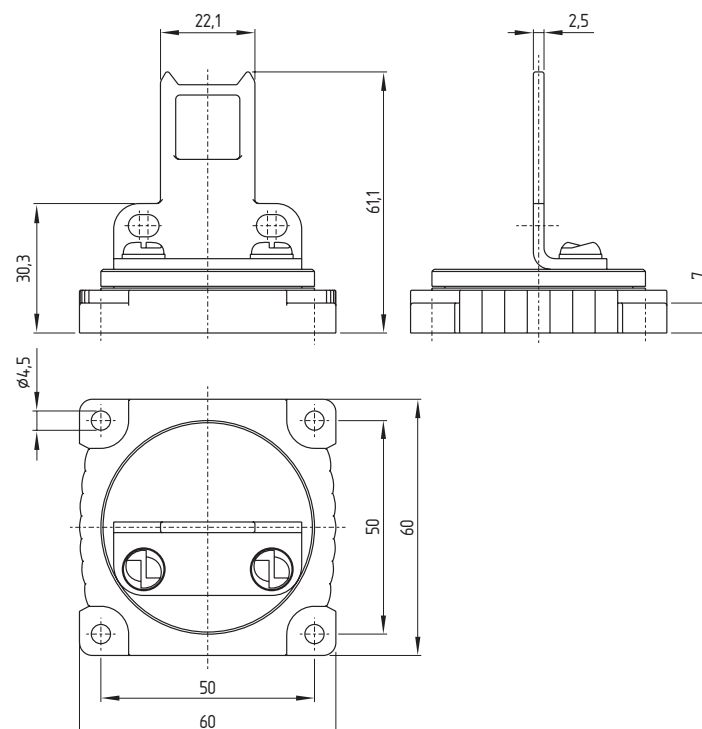
Angled actuator AZ 335/355-B5

- Particularly suitable for sliding doors



Angled actuator AZ 335/355-B5-Flex

- For sliding and removable doors
- Compensates play of ± 5 mm in two axes



1.

1.1

1.1.6

Ex switchgear

Safety switches

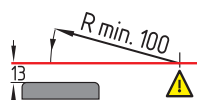
Safety switches with separate actuator

Actuators/Accessories EEx 335 AZ, EEx 355 AZ

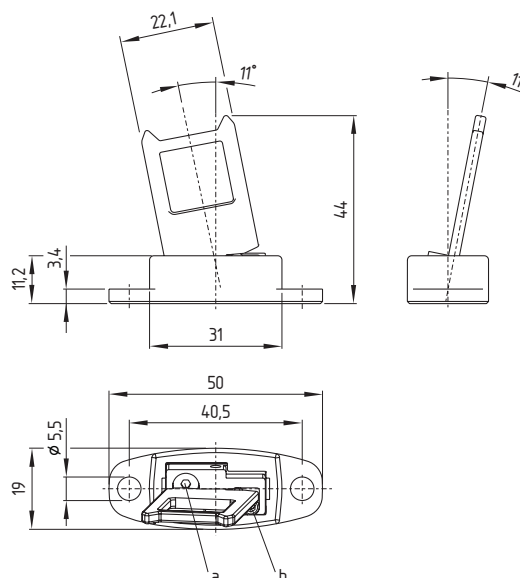


Adjustable actuator AZ 335/355-B6

- Particularly suitable for hinged doors
- For very small actuating radii
- Actuating radius adjustable, min. 100 mm, using a hexagonal key wrench 2 mm A/F (a or b)

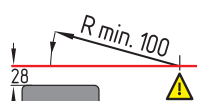


- The axis of the hinge should be 13 mm above the top edge of the safety switch and in the same plane

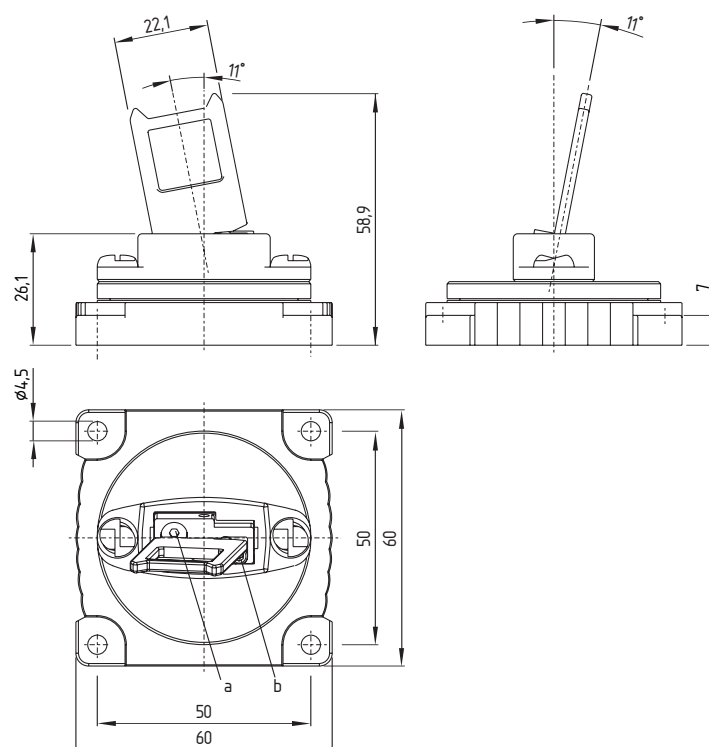


Adjustable actuator AZ 335/355-B6-Flex

- Particularly suitable for hinged doors
- For very small actuating radii
- Compensates play of ± 5 mm in two axes
- Actuating radius adjustable, min. 100 mm, using a hexagonal key wrench 2 mm A/F (a or b)

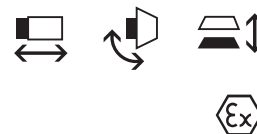


- The axis of the hinge should be 28 mm above the top edge of the safety switch and in the same plane



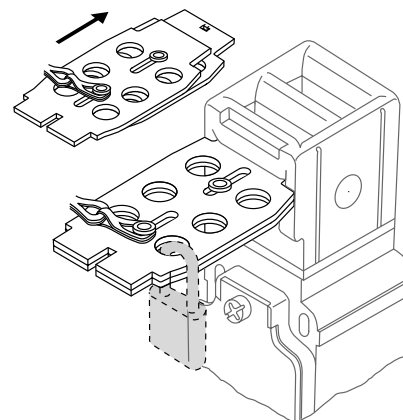
1.
1.1
1.1.6

Ex switchgear
Safety switches
Safety switches with separate actuator
Actuators/Accessories EEx 335 AZ, EEx 355 AZ



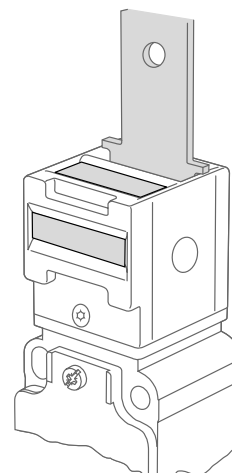
Lockout tag SZ 16/335

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

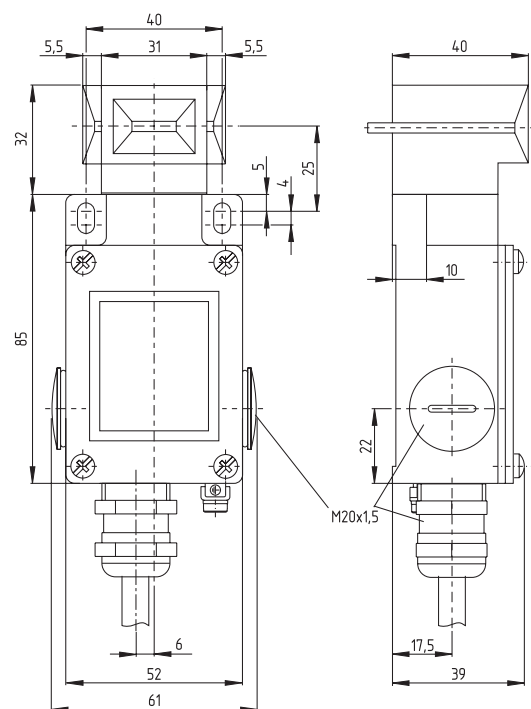
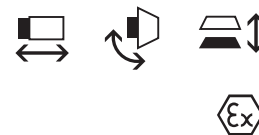


Slot sealing plug AZ 15/16-1476

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



1. Ex switchgear
1.1 Safety switches
1.1.7 Safety switches with separate actuator
EEx ST 61 range

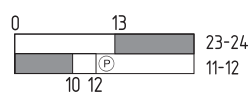


Features

- Metal enclosure
- II 2G EEx d IIC T6
II 2D IP65 T80°C
- Long life
- Double insulated
- High level of contact reliability with low voltages and currents
- Pre-wired cable 3 m long

**Contacts/
Switch travel**

1 NO BK BK
1 NC BN BU



Standard version

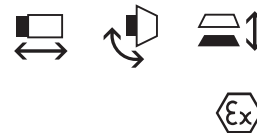
EEx ST 61 10/1S

Note

Inserted position of actuator = 0 in switch travel diagrams.
 Actuators must be ordered separately.

1.
1.1
1.1.7

Ex switchgear
Safety switches
Safety switches with separate actuator
EEx ST 61 range



Cable length Other cable lengths possible on request.

Ordering details To order, select the part number of the desired switch from the table "Contacts/Switch travel", e.g. safety switch with with one NO and one NC contact, 5 m long cable:
EEx ST 61 1Ö/1S -5m

Actuators and accessories must be ordered separately,
e.g. straight actuator: ST 61-B1

The applicable ordering suffix is added at the end of the part number of the safety switch.
Further variants not shown here are available on request.

Approvals EC Type Test Certificate: PTB 03 ATEX 1068 X*

*referring to the switch insert

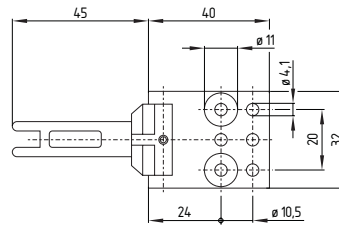
1.
1.1
1.1.7

Ex switchgear
Safety switches
Safety switches with separate actuator
ST 61 EX range



Straight actuator ST 61-B1

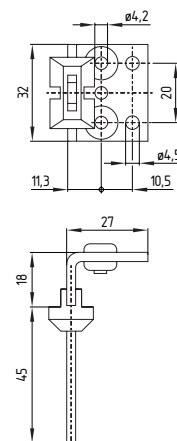
- On hinged guards, minimum actuating radius 140 mm
- Damps vibration on guards



- The axis of the hinge should be 30 mm above the top edge of the safety switch and in the same plane

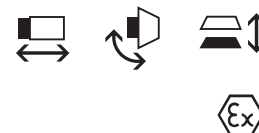
Angled actuator ST 61-B5

- Particularly suitable for hinged guards
- Minimum actuating radius 140 mm on hinged guards



- The axis of the hinge should be 15 mm above the top edge of the safety switch and in the same plane

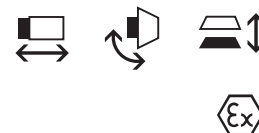
1. Ex switchgear
1.1 Safety switches
1.1.8 Safety switches with separate actuator
Technical data



	EEx ST 14	EEx AZ 16
Standards:	IEC/EN 60947-5-1; EN 1088 EN 50014; EN 50018; EN 50281-1-1	
Ex marking:	⊕ II 2G EEx d IIC T6 II 2D IP65 T80°C	
Certification :	PTB 03 ATEX 1070 X*	PTB 03 ATEX 1068 X*
Enclosure material:	Glass-fibre reinforced thermoplastic, self-extinguishing	
Switch insert:	–	EEx 13
Actuator:	Stainless steel 1.4301	
Protection class:	IP 65 to IEC/EN 60529	
Contact material:	Silver	
Contact type:	Change-over contact with double break Zb	
Switching system:	⊖ IEC 60947-5-1; slow action, NC contact with positive break	
Termination:	Pre-wired cable H05VV-F 4 x 0.75 mm²	
Cable length:	1, 2, 5 and 10 m	2 and 5 m
Rated impulse withstand voltage U_{imp} :	4 kV	
Rated insulation voltage U_i :	250 V	
Thermal test current I_{the} :	6 A	
Utilisation category:	AC-15	AC-15; DC-13
Rated operating current/voltage I_e/U_e :	6 A/250 V	6 A/250 V; 4 A/24 VDC
Max. fuse rating:	6 A gL/gG D-fuse	
Positive break travel:	8 mm	9.5 mm
Ambient temperature:	–20 °C ... +65 °C	
Mechanical life:	>1 million operations	
	CE 0158	

* referring to the switch insert

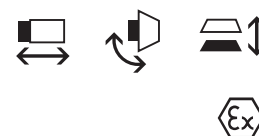
1. Ex switchgear
1.1 Safety switches
1.1.8 Safety switches with separate actuator
Technical data



	EEx 95 AZ	EEx 335 AZ
Standards:	IEC/EN 60947-5-1; EN 1088	
	EN 50014; EN 50018; EN 50019; EN 50281-1-1	
Ex marking:	Ⓔ II 2G EEx de IIC T6	Ⓔ II 2G EEx de IIC T6
	II 2D IP67 T80°C	II 2D IP65 T80°C
Certification :	DMT 01 ATEX E 118	DMT 01 ATEX E 178
Enclosure material:	Glass-fibre reinforced thermoplastic,	Zinc die-cast, enamel finish
	self-extinguishing	
Switch insert:	–	EEx 95
Actuator:	Stainless steel 1.4301	
Protection class:	IP 67 to IEC/EN 60529	IP 65 to IEC/EN 60529
Contact material:	Silver	
Contact type:	Change-over contact with double break Zb or 2 NC contacts	
Switching system:	⊖ IEC 60947-5-1; slow action, NC contact with positive break	
Termination:	M3 screw terminals, wire max. 1.5 mm²	
	(incl. conductor ferrules)	
Cable length:	–	
Rated impulse		
withstand voltage U _{imp} :	4 kV	
Rated insulation		
voltage U _i :	250 V	
Thermal test current I _{the} :	6 A	
Utilisation category:	AC-15	
Rated operating		
current/voltage I _e /U _e :	6 A/250 V	
Max. fuse rating:	6 A gL/gG D-fuse	
Positive break travel:	9 mm	7 mm
Ambient temperature:	–20 °C ... +60 °C	
Mechanical life:	>1 million operations	
	CE 0158	

* referring to the switch insert

1. Ex switchgear
1.1 Safety switches
1.1.8 Safety switches with separate actuator
Technical data



	EEx 355 AZ	EEx ST 61
Standards:	IEC/EN 60947-5-1; EN 1088	
	EN 50014; EN 50018; EN 50019; EN 50281-1-1	EN 50014; EN 50018; EN 50281-1-1
Ex marking:	Ⓔ II 2G EEx de IIC T6 II 2D IP67 T80°C	Ⓔ II 2G EEx d IIC T6 II 2D IP65 T80°C
Certification :	BVS 04 ATEX E 126	PTB 03 ATEX 1068 X*
Enclosure material:	Zinc die-cast, enamel finish	Aluminium die-cast, enamel finish
Switch insert:	EEx 95	EEx 13
Actuator:	Stainless steel 1.4301	
Protection class:	IP 67 to IEC/EN 60529	IP 65 to IEC/EN 60529
Contact material:	Silver	
Contact type:	Change-over contact with double break Zb or 2 NC contacts	
Switching system:	⊖ IEC 60947-5-1; slow action, NC contact with positive break	
Termination:	M3 screw terminals, wire max. 1.5 mm ² (incl. conductor ferrules)	Pre-wired cable H05VV-F 4 x 0.75 mm ²
Cable length:	–	3 m
Rated impulse		
withstand voltage U_{imp} :	4 kV	
Rated insulation		
voltage U_i :	250 V	
Thermal test current I_{the} :	6 A	
Utilisation category:	AC-15; DC-13	
Rated operating		
current/voltage I_e/U_e :	6 A/250 VAC; 0.25 A/230 VDC	
Max. fuse rating:	6 A gL/gG D-fuse	
Positive break travel:	7 mm	12 mm
Ambient temperature:	–20 °C ... +60 °C	–20 °C ... +65 °C
Mechanical life:	>1 million operations	
	CE ₀₁₅₈	

* referring to the switch insert



Application

AZM and AZP range 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 coordination with the control system of a machine. Fail-safe standstill monitors or delay timers monitor run-on movements or time sequences. These 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 "Protect" range safety monitoring modules, 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 mode of operation

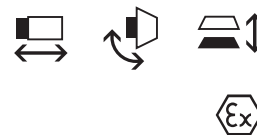
On the AZM and AZP range Ex solenoid and pneumatic interlocks, the switching element with interlock is not physically connected to the actuator but functionally brought together or separated on switching. When the guard device is opened in the uninterlocked condition, the actuator is separated from the base unit. In the process, NC contacts are positively opened and NO contacts closed. The machine control circuit is only enabled 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. Or the AZM range with the power-to-lock principle working in the opposite way.

The solenoid and pneumatic interlocks can be mounted in any desired mounting position.

Protection class of the solenoid and pneumatic interlocks is IP 67.

1. 1.2

Ex switchgear Safety switches Solenoid interlocks



Features EEx AZM 415

- Two Ex contact blocks 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 3500 N
- Ball latch
- Wiring compartment

EEx AZP 415

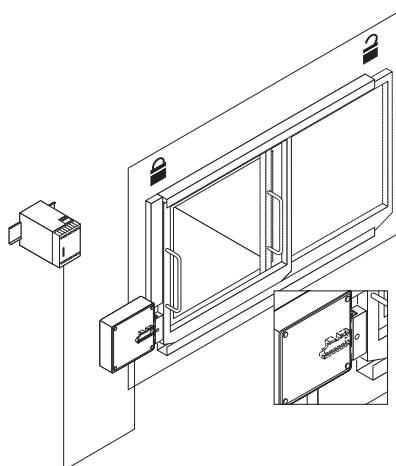
- Two Ex contact blocks in one enclosure
- Release by means of pneumatic cylinder
- Actuated with air supply off
- Problem-free opening of stressed doors by means of bell-crank system
- High holding force 3500 N
- Ball latch
- Wiring compartmentssraum

Note

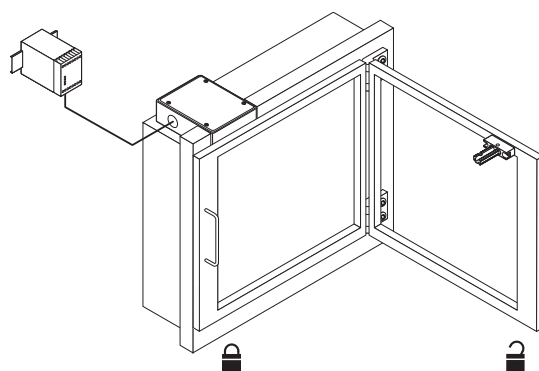
Technical data are shown in tabular form in chapter 1.2.5.

Application

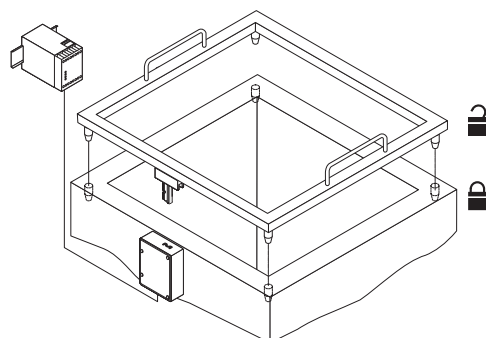
On sliding doors



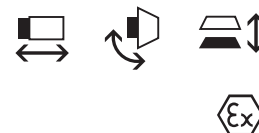
On hinged doors



On removable covers



1. Ex switchgear
1.2 Safety switches
1.2.1 Solenoid interlocks
1.2.1 EEx AZM 415 range

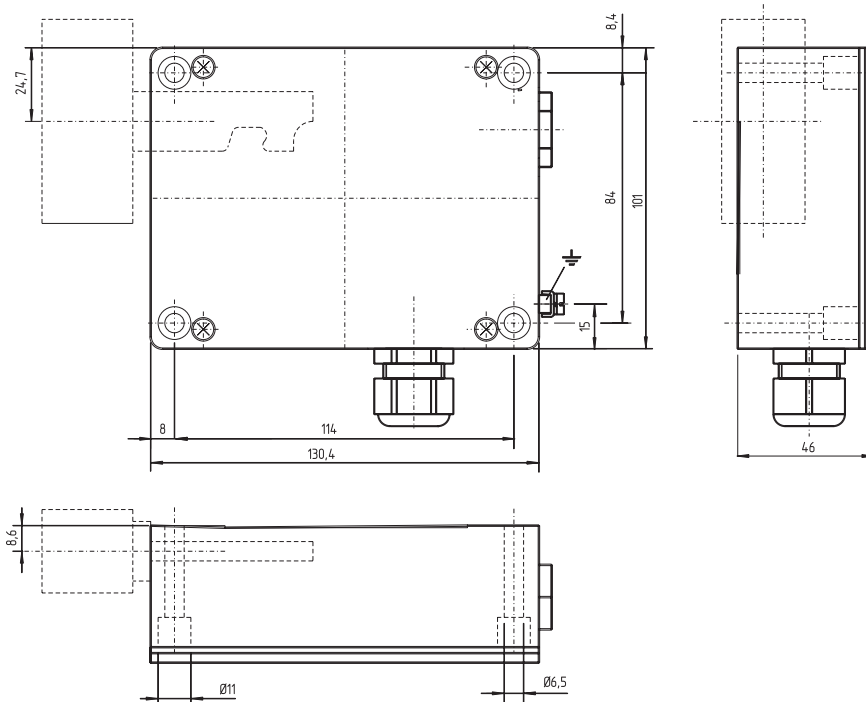


Features

- Metal enclosure
- Two Ex contact blocks in one enclosure
- Ex II 2G EEx dem IIC T6
II 2D IP67 T80°C
- Spring-to-lock or power-to-lock principle
- Problem-free opening of stressed doors by means of bell-crank system
- Robust design
- Long life
- High holding force 3,500 N
- Ball latch
- Wiring compartment
- Spring-loaded actuator
- Includes 2 cable entries M 20 x 1.5

Info

Version for equipment category 3D
(dust-Ex zone 22) available
Ordering suffix: -3D



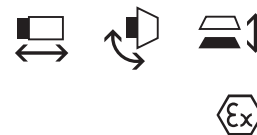
Approvals EC Type test certificate: DTM 02 ATEX E 255 X

1. Ex switchgear

1.2 Safety switches

1.2.1 Solenoid interlocks

1.2.1 EEx AZM 415 range



Ordering details Ex interlock, spring-to-lock principle, two NO and two NC contacts: EEx AZM 415 2Ö/2S-R
Actuators and accessories must be ordered separately, e.g. straight actuator: AZ/AZM 415-B1

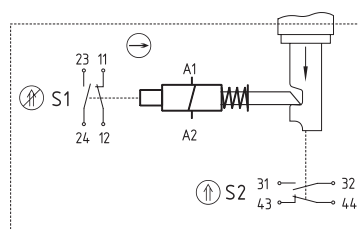
Info Further variants not shown here are available on request.
The applicable ordering suffix is added at the end of the part number of the safety switch.

- Available with gold-plated contacts

Contacts

Spring-to-lock principle

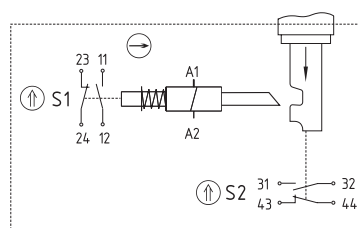
**2 NO
2 NC**



EEx AZM 415 2Ö/2S-R

Power-to-lock principle

**2 NO
2 NC**



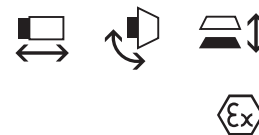
EEx AZM 415 2Ö/2S-A

Note Circuit diagrams show condition without power supply, with actuator inserted (0 in switch travel diagram).
Actuators must be ordered separately.

A selection of suitable actuators and accessories can be found on the following pages.

1.
1.2
1.2.2

Ex switchgear
Safety switches
Pneumatic interlocks
Exx AZP 415 range

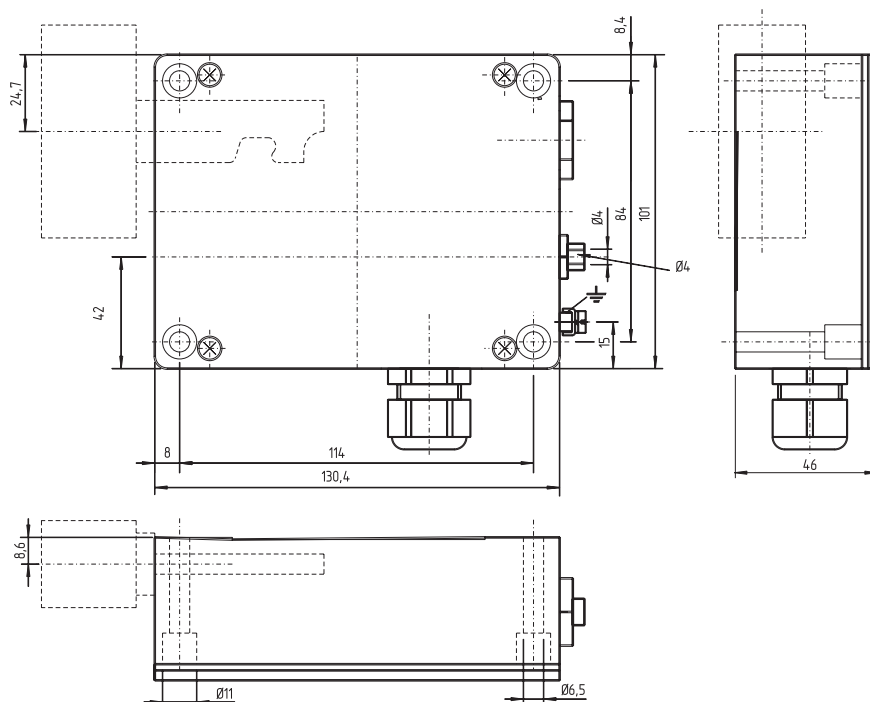


Features

- Metal enclosure
- Two Ex contact blocks in one enclosure
- Ex II 2G EEx de IIC T6
II 2D IP67 T80°C
- Release by means of pneumatic cylinder
- Actuated with air supply off
- Problem-free opening of stressed doors by means of bell-crank system
- Robust design
- Long life
- High holding force 3500 N
- Ball latch
- Wiring compartment
- Spring-loaded actuator
- Includes 2 cable entries M20 x 1.5

Info

Version for equipment category 3D
(dust-Ex zone 22) available
Ordering suffix: -3D

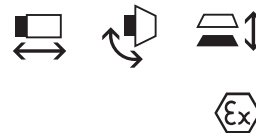


Approvals

EC Type test certificate: DTM 02 ATEX E 255 X

1.
1.2
1.2.2

Ex switchgear
Safety switches
Pneumatic interlocks
EEx AZP 415 range



Ordering details

EEx interlock, actuated with air supply off, with pneumatic cylinder, two NO and two NC contacts:
 EEx AZP 415 2Ö/2S
 Actuators and accessories must be ordered separately,
 e.g. straight actuator: AZ/AZM 415-B1

Info

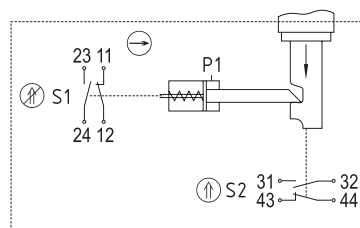
Further variants not shown here are available on enquiry.
 The applicable ordering suffix is added at the end of the part number of the safety switch.

- Available with gold-plated contacts

Contacts

Actuation with air supply off

2 NO
2 NC



EEx AZP 415-22zpk

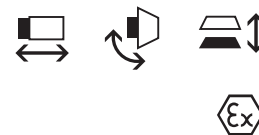
Note

The contacts 11-12 and 23-24 of the switch insert S1 are actuated on air supply being connected to or disconnected from the pneumatic cylinder P1.
 Circuit diagrams show condition without air supply, with actuator inserted (0 in switch travel diagram).
 Actuators must be ordered separately.

A selection of suitable actuators and accessories can be found on the following pages.

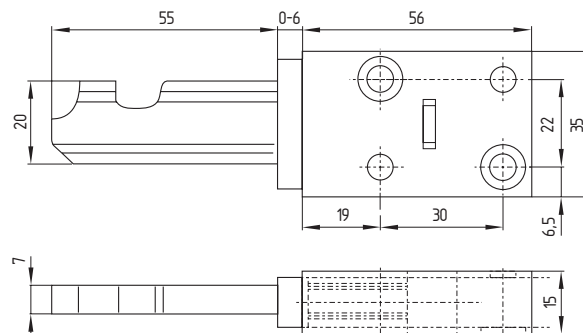
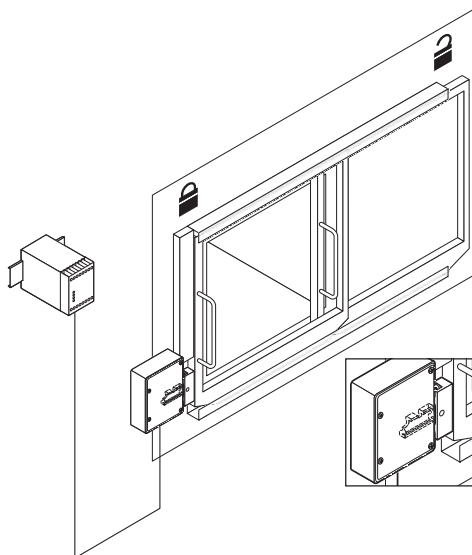
1.
1.2
1.2.3

Ex switchgear
Safety switches
Solenoid interlocks
Actuators



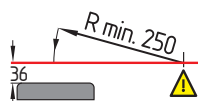
Straight actuator AZ/AZM 415-B1

- Particularly suitable for sliding doors
- Actuator with return spring
- Tolerates up to max. 6 mm overtravel

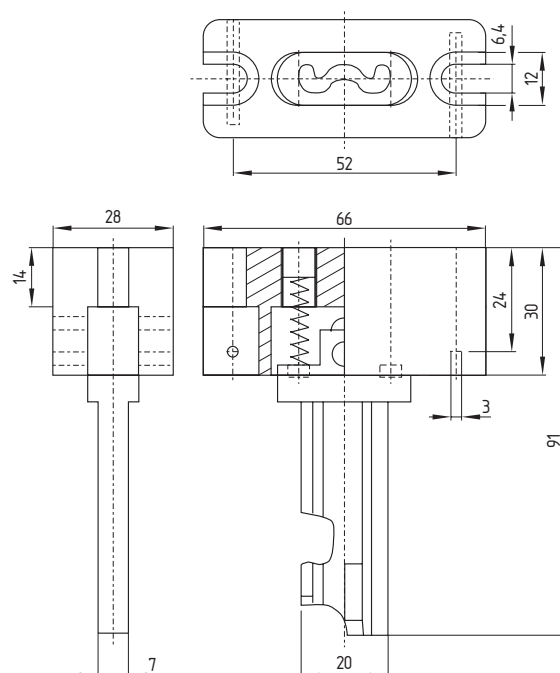
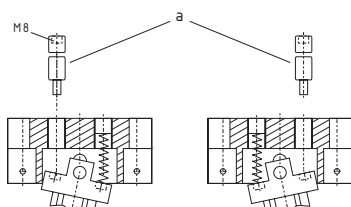


Adjustable actuator AZ/AZM 415-B2

- Particularly suitable for hinged guards
- For very small actuating radii in line with the plane of the actuator
- Actuating radius adjustable, minimum 250 mm, using a hexagonal key wrench 4 mm A/F
- Removal of the actuator can be prevented by fitting dowel pins in the holes provided.
- The actuator can be brought into any desired position by adjustment of the socket screw (a). This actuator can also be used for sliding doors.

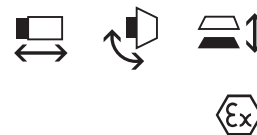


- The axis of the hinge should be 36 mm above the top edge of the solenoid interlock and in the same plane



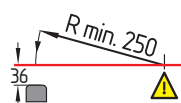
1.
1.2
1.2.3

Ex switchgear
Safety switches
Solenoid interlocks
Actuators

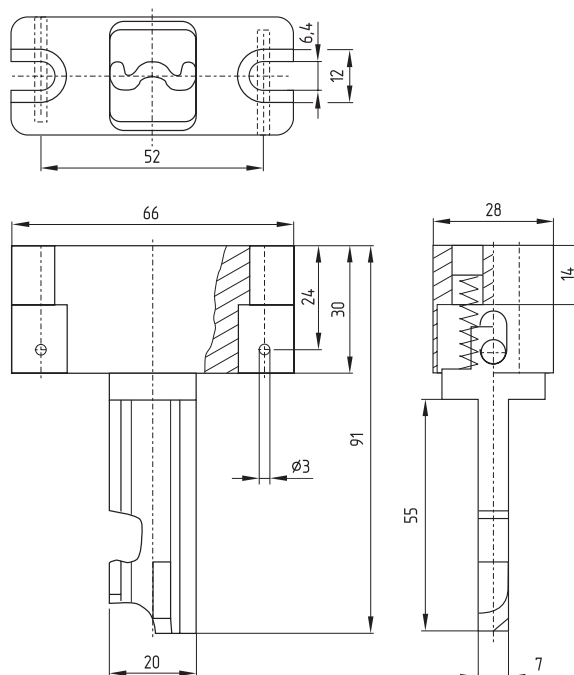
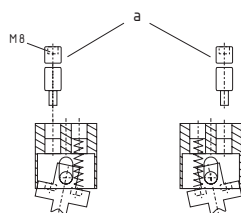


Adjustable actuator AZ/AZM 415-B3

- Particularly suitable for hinged guards
- For very small actuating radii at 90° to the plane of the actuator
- Actuating radius adjustable, minimum 250 mm, using a hexagonal key wrench 4 mm A/F
- Removal of the actuator can be prevented by fitting dowel pins in the holes provided.
- The actuator can be brought into any desired position by adjustment of the socket screw (a). This actuator can also be used for sliding doors.

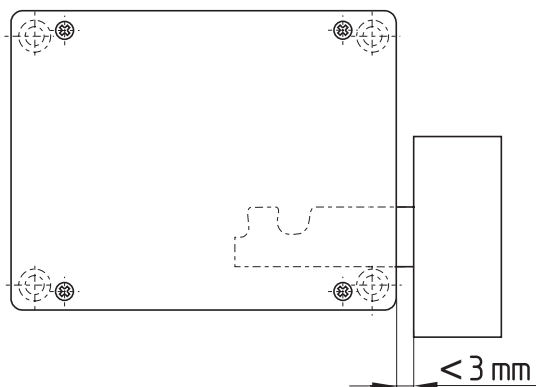


- The axis of the hinge should be 36 mm above the top edge of the solenoid interlock and in the same plane



Note

The distance between the flange of the actuator and the switch enclosure must be less than 3 mm when the actuator is inserted.



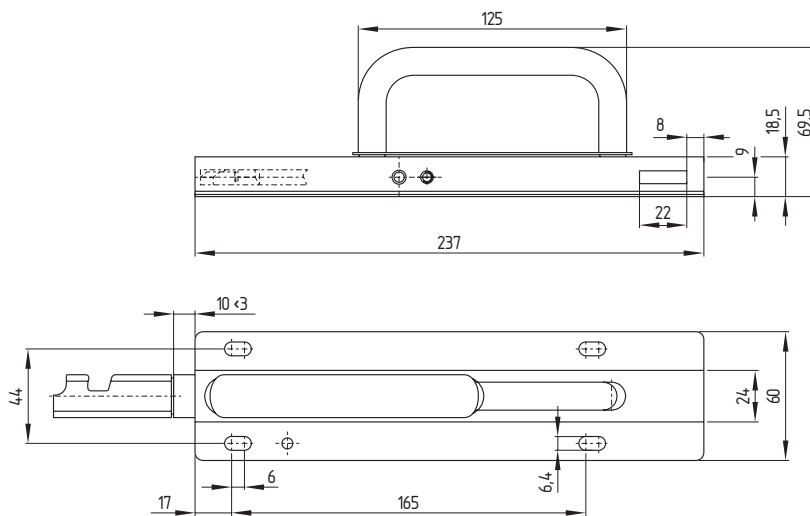
1.
1.2
1.2.3

Ex switchgear
Safety switches
Solenoid interlocks
Actuators



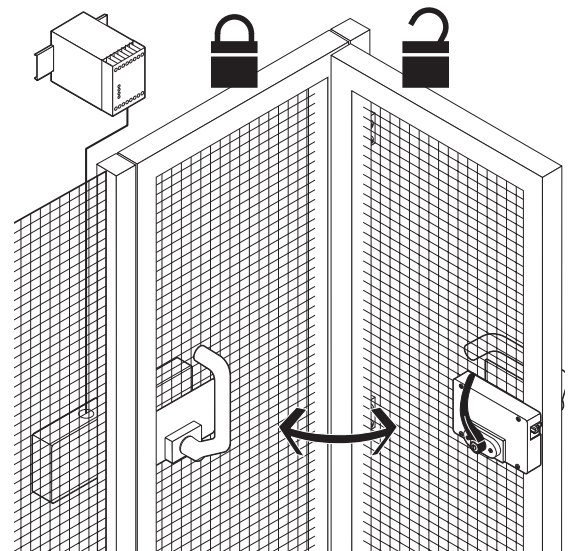
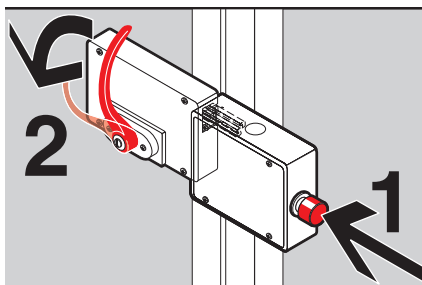
Actuator AZ/AZM 415-B4pS with locking bolt and ball latch

- Suitable for all types of guard
- Hinge radius not critical
- No other handle or lever needed on the guard
- Shearing force 25,000 N
- Mounting plate to simplify mounting, see accessories
- Lockout tag SZ 415-B4pS to prevent unintentional closing, see accessories



Actuator AZ/AZM 415-B30 with or without emergency handle

- Suitable for all guard types
- No other handle or lever needed on the guard
- Hinge radius not critical
- Latching actuating handle
- Emergency handle to open the guard from within the guarded area



1.
1.2
1.2.3

Ex switchgear
Safety switches
Solenoid interlocks
Actuators

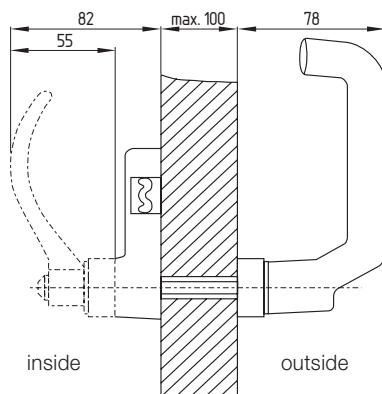


Actuator AZ/AZM 415-B30 with or without emergency handle

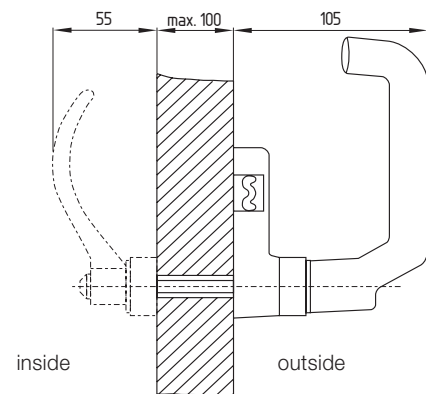
Mounting details

- SZ 415 lockout tag to prevent unintentional closing, see 2.36
- Shearing force 25,000 N
- Mounting plates to simplify mounting, see 2.36

Actuator mounted inside



Actuator mounted outside



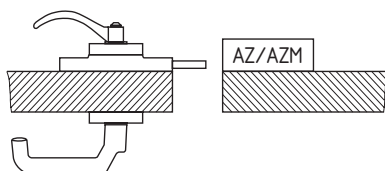
Actuators AZ/AZM 415-B30-02, -01 with emergency handle

- Actuator mounted inside
- AZ/AZM 415-B30-02: Door hinge on left-hand side
- AZ/AZM 415-B30-01: Door hinge on right-hand side
- For door thickness max. 100 mm

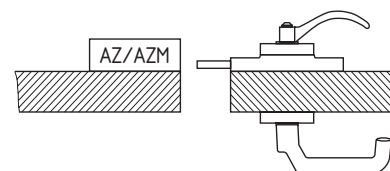
Note

This version is only to be used in combination with an **EEx AZM 415 2Ö/2S-RT** solenoid interlock with emergency release.

AZ/AZM 415-B30-02

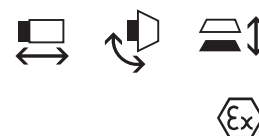


AZ/AZM 415-B30-01



1.
1.2
1.2.3

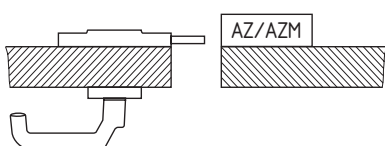
Ex switchgear
Safety switches
Solenoid interlocks
Actuators



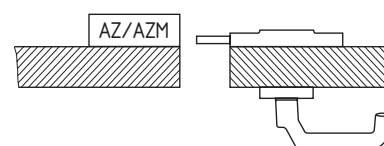
Actuators AZ/AZM 415-B30-04, -03

- Actuator mounted inside
- AZ/AZM 415-B30-04: Door hinge on left-hand side
- AZ/AZM 415-B30-03: Door hinge on right-hand side
- For door thickness max. 100 mm

AZ/AZM 415-B30-04



AZ/AZM 415-B30-03



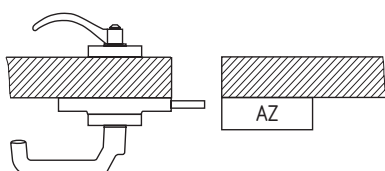
Actuators AZ/AZM 415-B30-06, -05 with emergency handle

- Actuator mounted outside
- AZ/AZM 415-B30-06: Door hinge on left-hand side
- AZ/AZM 415-B30-05: Door hinge on right-hand side
- For door thickness max. 100 mm

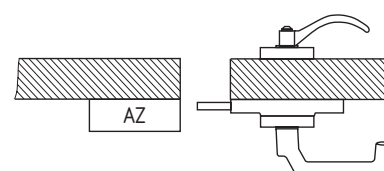
Note

This version is only to be used in combination with an **EEx AZM 415 2Ö/2S-A** solenoid interlock, solenoid locking principle and one push button to de-energize the solenoid mounted next to the emergency handle

AZ/AZM 415-B30-06



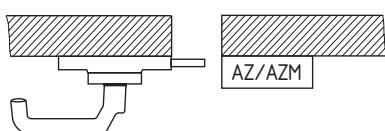
AZ/AZM 415-B30-05



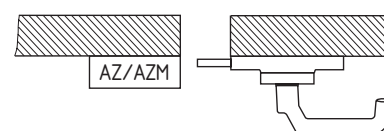
Actuators AZ/AZM 415-B30-08, -07

- Actuator mounted outside
- AZ/AZM 415-B30-08: Door hinge on left-hand side
- AZ/AZM 415-B30-07: Door hinge on right-hand side

AZ/AZM 415-B30-08

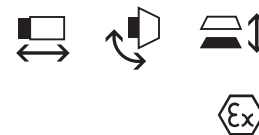


AZ/AZM 415-B30-07



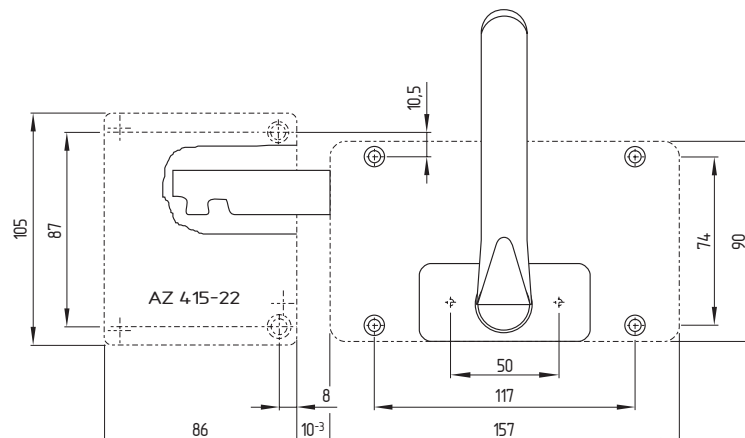
1.
1.2
1.2.3

Ex switchgear
Safety switches
Solenoid interlocks
Actuators



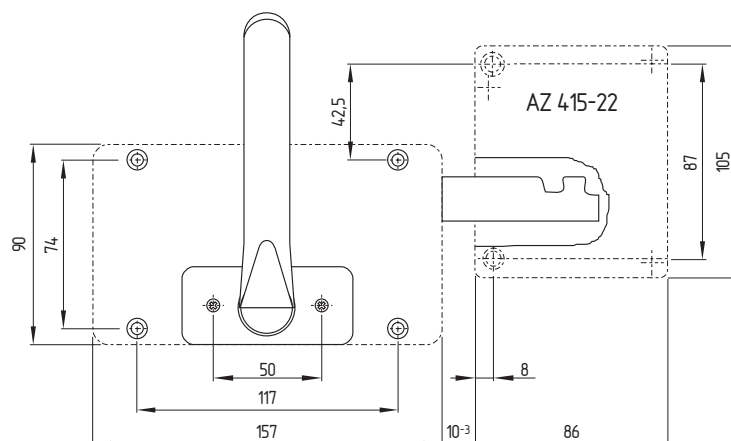
Actuators AZ/AZM 415-B30-01, -03 with emergency handle

- Outline drawing together with AZM 415
- Latching handle



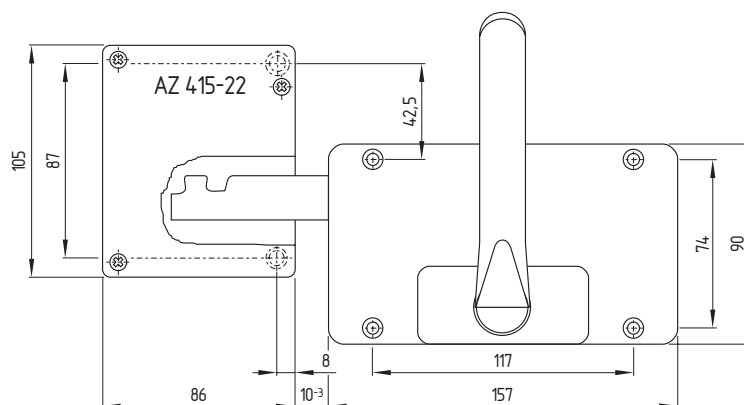
Actuators AZ/AZM 415-B30-02, -04 with emergency handle

- Outline drawing together with AZM 415
- Latching handle



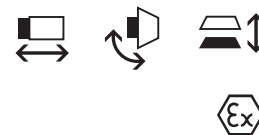
Actuators AZ/AZM 415-B30-05, -07 with emergency handle

- Outline drawing together with AZM 415
- Latching handle



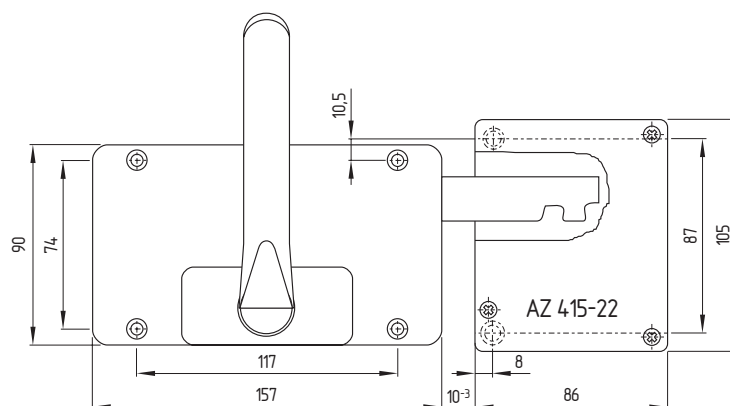
1.
1.2
1.2.3

Ex switchgear
Safety switches
Solenoid interlocks
Actuators



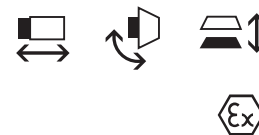
Actuators AZ/AZM 415-B30-06, -08 with emergency handle

- Outline drawing together with AZM 415
- Latching handle



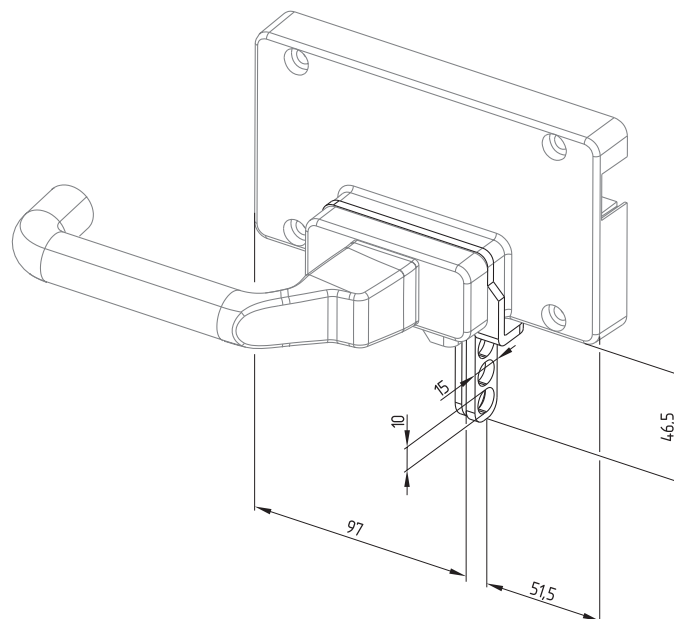
1.
1.2
1.2.4

Ex switchgear
Safety switches
Solenoid interlocks
Accessories



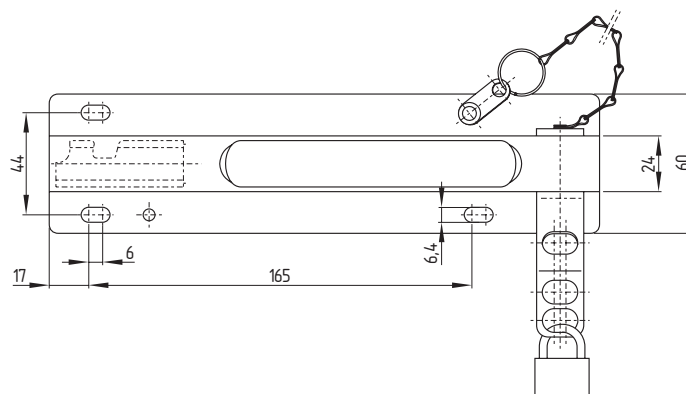
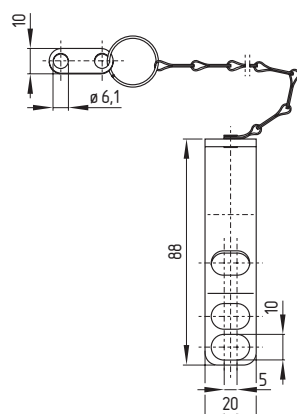
Lockout tag SZ 415-1/-2

- To prevent inadvertent closing, e.g. during maintenance
- For complex plant
- Prevents actuation of the switch
- Suitable for mounting inside and outside of the hazardous area
- SZ 415-1 for: AZ/AZM 415-B30-01
AZ/AZM 415-B30-03
AZ/AZM 415-B30-06
AZ/AZM 415-B30-08
- SZ 415-2 for: AZ/AZM 415-B30-02
AZ/AZM 415-B30-04
AZ/AZM 415-B30-05
AZ/AZM 415-B30-07
- Shown version SZ 415-1;
version SZ 415-2 mirror-image



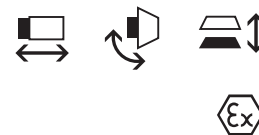
Lockout tag SZ 415-B4pS

- For actuator AZ/AZM 415-B4pS
- To prevent inadvertent closing, e.g. during maintenance
- For complex plant
- Prevents actuation of the switch
- With chain to fix on actuator
- Length of chain 500 mm



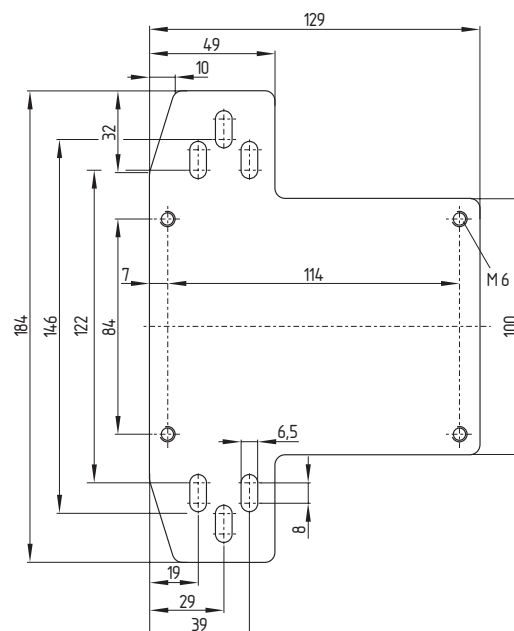
1.
1.2
1.2.4

Ex switchgear
Safety switches
Solenoid interlocks
Accessories



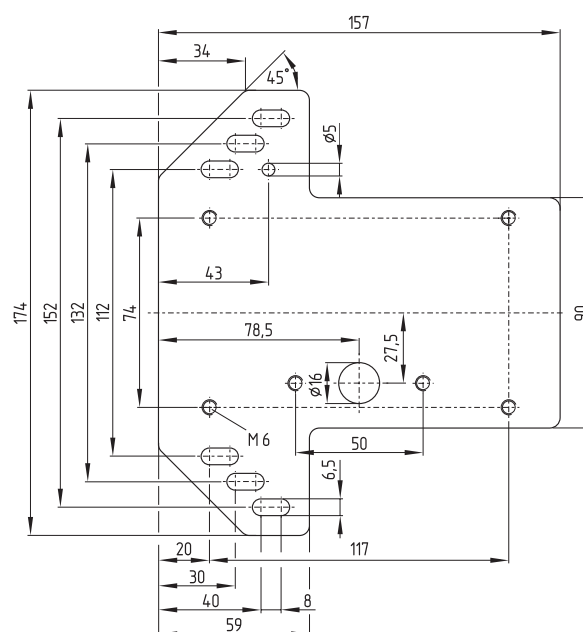
Mounting plate MP AZM 415-22

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



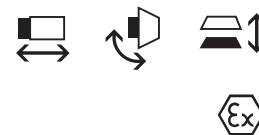
Mounting plate MP AZ/AZM 415-B30

- For simple mounting of a door handle of the AZ/AZM 415-B30 on profile systems, e.g. 40, 60 or 80 mm wide
- Thickness of plate 5 mm



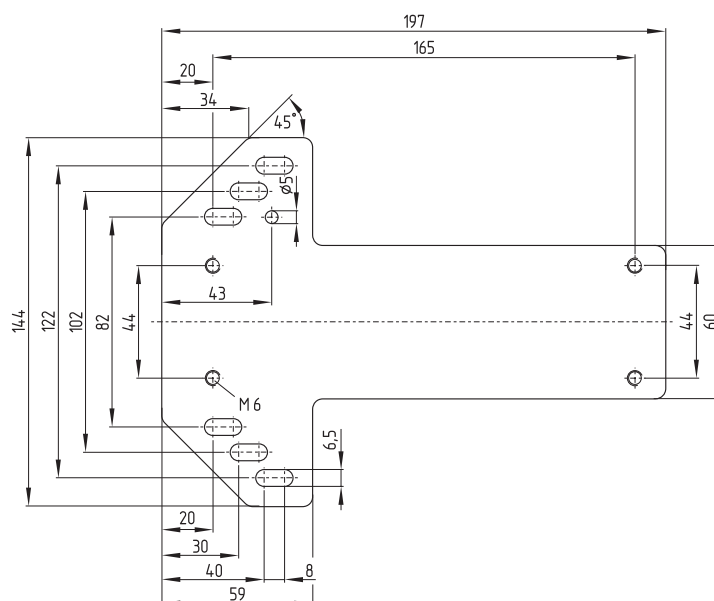
1.
1.2
1.2.4

Ex switchgear
Safety switches
Solenoid interlocks
Accessories



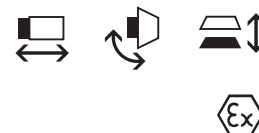
Mounting plate MP AZ/AZM 415-B4pS

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



1.
1.2
1.2.5

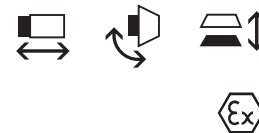
Ex switchgear
Safety switches
Solenoid interlocks
Technical data



	EEx AZM 415	EEx AZP 415
Standards:	IEC/EN 60947-5-1; EN 1088; EN 50014; EN 50018; EN 50019; EN 50028; EN 50281-1-1	
Ex marking:	II 2G EEx dem IIC T6, II 2D IP67-T80°C	II 2G EEx de IIC T6 II 2D IP67-T80°C
Certification:	DMT 02 ATEX E255 X	
Enclosure material:	Al die-cast, enamel finish	
Actuator and latching bolt:	Zinc-plated metal/aluminium	
Protection class:	IP 67 to IEC/EN 60529	
Contact material:	Silver	
Contact type:	Change-over contact with double break Zb, with galvanically separated contact bridges	
Switching system:	⊖ IEC 60947-5-1; slow action, NC contacts with positive break	
Termination:	M3 screw terminals, max. 2.5 mm ²	
Cable entry:	2 x M20 x 1.5 for cable diameter of 5 ... 9 mm	
Rated impulse		
withstand voltage U_{imp} :	4 kV	
Rated insulation voltage U_i :	250 V	
Thermal test current I_{the} :	6 A	
Utilisation category:	AC-15; DC-13	
Rated operating		
current/voltage I_e/U_e :	6 A/250 VAC; 40 mA/24 VDC	
Max. fuse rating:	6 A gL/gG D-fuse	
Magnet:	100 % ED	–
Release:	Solenoid	Pneumatic cylinder, max. 3 – 7 bar permitted
Power consumption:	max. 12 W	–
Ambient temperature:	–20 °C ... +55 °C	–20 °C ... +65 °C
Mechanical life:	> 1 million operations	
Holding force $F_{max.}$:	3500 N	
Holding force of		
integral ball latch:	0 ... 500 N (adjustable)	



1.	Ex switchgear
1.2	Safety switches
1.2.5	Solenoid interlocks
1.2.5	Technical data





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 mode of operation

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.

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.



Features
EEx 14

- Slow action $\ominus$: 2 contacts, type Zb,
- snap action: 2 contacts, type Zb or C
- Thermoplastic enclosure
- Pre-wired cable
- Double-insulated $\square$

EEx 13

- Slow action $\ominus$: 2 contacts, type Zb
- Thermoplastic enclosure
- Pre-wired cable
- Double-insulated $\square$

EEx 95

- To EN 50047
- Slow action $\ominus$: 2 contacts, type Zb
- Thermoplastic enclosure
- Wiring compartment

EEx 335/355

- To EN 50041/mounting dim. to EN 50041
- Slow action $\ominus$: 2 contacts, type Zb
- Metal enclosure
- Wiring compartment

EEx T 356

- Mounting dimensions to EN 50041
- Slow action $\ominus$: 2 contacts, type Zb
- Thermoplastic enclosure with metal cover
- Pre-wired cable

EEx/EExM 61

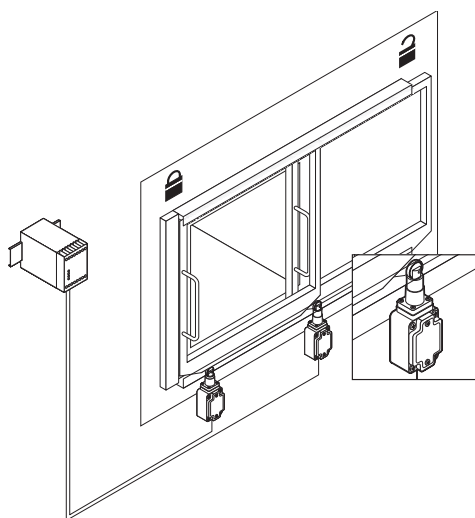
- Slow action: 2 contacts $\ominus$, type Zb
- Snap action: 1 contact, type C
- Metal housing
- Pre-wired cable

Note

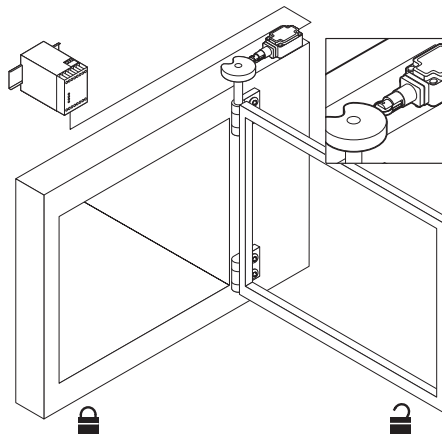
Technical data are shown in tabular form in chapter 1.3.8.

Application

On sliding doors



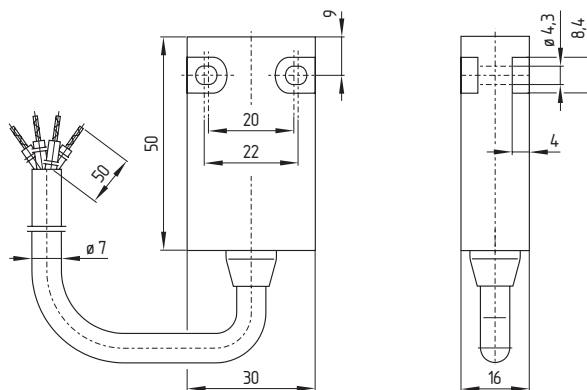
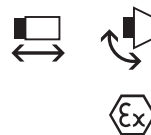
On hinged doors



1. Safety switches

1.3 Position switches with safety function

1.3.1 EEx/EEExM 14 range



Features

- Thermoplastic enclosure
- Double-insulated □
- II 2G EEx d IIC T6
II 2D IP65 T80°C
- Slow action ⊖,
change-over contact, double break,
suitable for safety applications in combination with positive linked actuator
- Snap action,
change-over contact, single break;
change-over contact, double break
- Available with overlapping contacts
- Suitable for in-line mounting
- Pre-wired cable
- IP 67

Info

- With overlapping contacts, ordering suffix 1Ö/1S UE
- With cable on side, ordering suffix -s

Note

The switch must be protected from mechanical damage.

Cable length

- Always specify cable length
- 1 metre long ordering suffix -1m
 - 2 metres long ordering suffix -2m
 - 5 metres long ordering suffix -5m
 - 10 metres long ordering suffix -10m
- Other lengths on request

Info

Version for equipment category 3D
(dust-Ex zone 22) available
Ordering suffix: -3D

Approvals

EC Type test certificate:
EEx 14: PTB 03 ATEX 1070 X
EEExM 14: PTB 03 ATEX 1069 X
EEExM 14 1Ö/1S: PTB 00 ATEX 1006 X

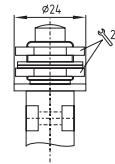
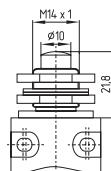
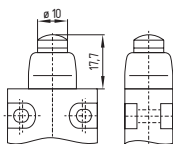
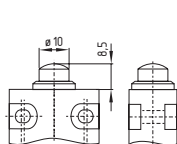
Actuators

Plunger

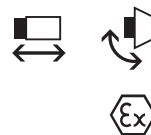
Plunger

with watertight collar W

with front mounting F



1. Ex switchgear
1.3 Safety switches
1.3.1 Position switches with safety function
EEEx/EEExM 14 range



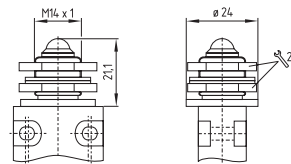
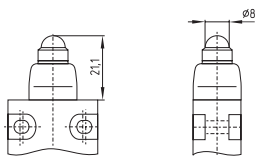
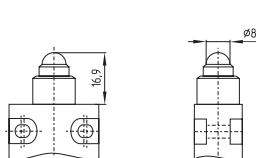
Actuators

Ball plunger

Ball plunger KU

with watertight collar WKU

with front mounting FKU

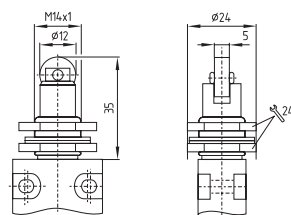
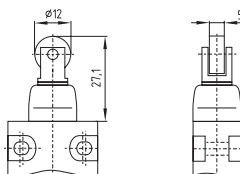
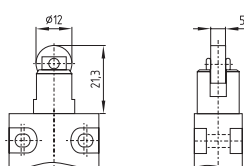


Roller plunger

Roller plunger R

with watertight collar WR

with front mounting FR

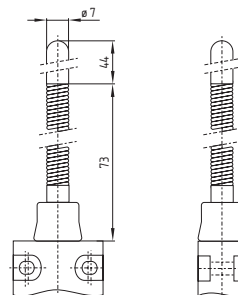
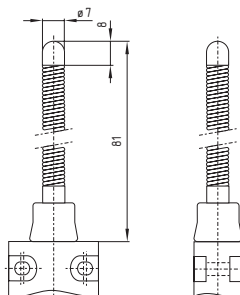
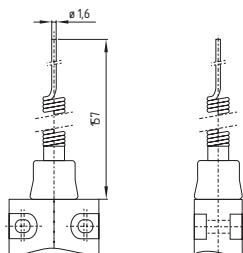


Spring rod

Long spring wire
(Cat's whisker) TL

with rounded steel tip TF

with plastic rod TK

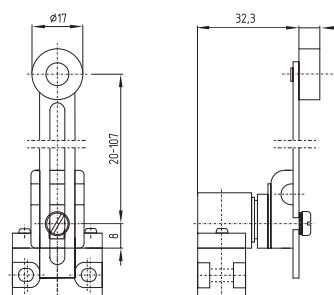
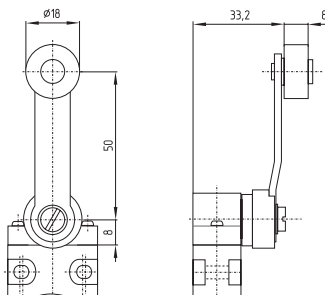
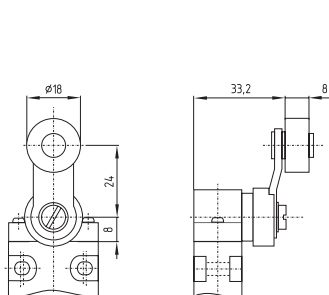


Roller lever

Roller lever D

Long roller lever DL

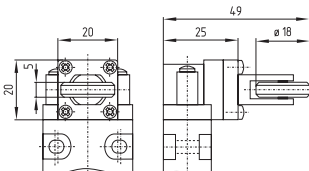
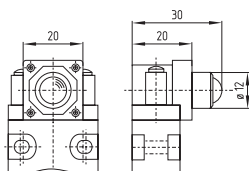
Adjustable-length roller lever DS



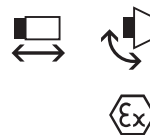
Vertical actuation

Ball plunger at front VKU

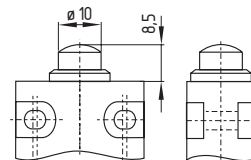
Roller plunger at front VR



1. Ex switchgear
 1.3 Safety switches
 1.3.1 Position switches with safety function
 1.3.1.1 EEx/EEExM 14 range



Plunger



Features

- Actuating speed with actuating angle 0° to switch axis 0.5 m/s
- **With slow action**
suitable for safety application

Ordering details

An EEx/EEExM 14 range position switch with plunger with snap action and change-over contact:
 EExM 14

Info

Version for equipment category 3D
 (dust-Ex zone 22) available
 Ordering suffix: -3D

Contacts/ Switch travel

Change-over contact

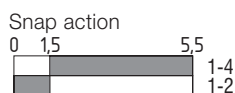
4 BK 1
2 BN BU

1 NO
1 NC

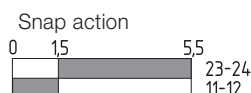
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BN 11 12 BU

1 NO
1 NC

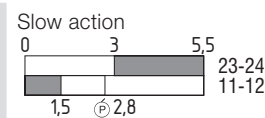
BK 23 24 BK
BN 11 12 BU



EExM 14



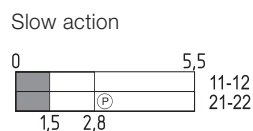
EExM 14 1Ö/1S



EEx 14

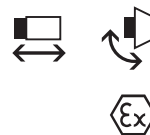
2 Öffner

BN 11 BU 12
BK 21 BK 22

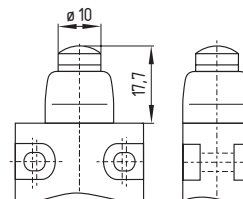


EEx 14 2Ö

1. Ex switchgear
 1.3 Safety switches
 1.3.1 Position switches with safety function
 1.3.1 EEx/EEExM 14 range



Plunger with watertight collar W



Features

- Actuating speed with actuating angle 0° to switch axis 0.5 m/s
- Collar to protect against the entry of dirt
- **With slow action suitable for safety application**

Ordering details

An EExM 14 range position switch with plunger with watertight collar W, snap action with one NO and one NC contact: EExM 14 W 1Ö/1S

Info

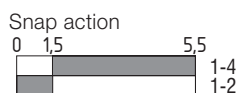
Version for equipment category 3D (dust-Ex zone 22) available
 Ordering suffix: -3D

Contacts/ Switch travel

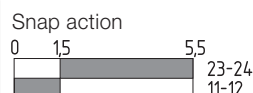
Change-over contact

**1 NO
1 NC**

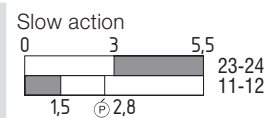
**1 NO
1 NC**



EExM 14 W

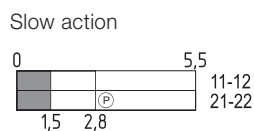


EExM 14 W 1Ö/1S



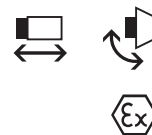
EEx 14 W

2 Öffner

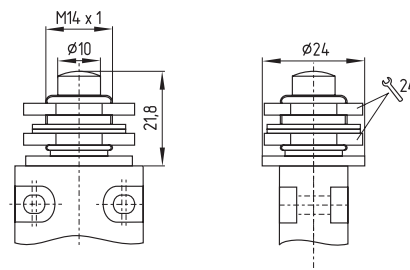


EEx 14 W 2Ö

1. Ex switchgear
 1.3 Safety switches
 1.3.1 Position switches with safety function
 1.3.1.1 EEx/EEExM 14 range



Plunger with front mounting F



Features

- Actuating speed with actuating angle 0° to switch axis 0.5 m/s
- **With slow action**
suitable for safety application

Ordering details

An EEx/EEExM 14 range position switch with plunger for front mounting F, slow action with one NO and one NC contact :
 EEx 14 F

Info

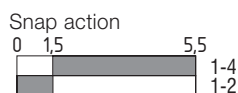
Version for equipment category 3D
 (dust-Ex zone 22) available
 Ordering suffix: -3D

Contacts/ Switch travel

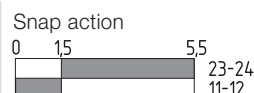
Change-over contact

1 NO
1 NC

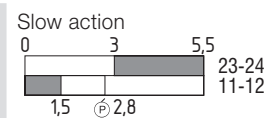
1 NO
1 NC



EEExM 14 F

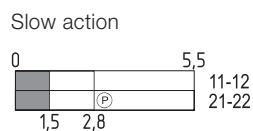


EEExM 14 F 1Ö/1S



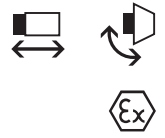
EEEx 14 F

2 Öffner

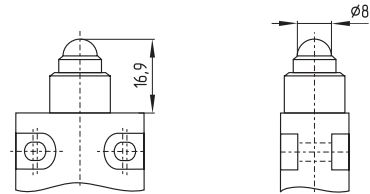


EEEx 14 F 2Ö

1. Ex switchgear
 1.3 Safety switches
 1.3.1 Position switches with safety function
 1.3.1.1 EEx/EEExM 14 range



Ball plunger KU



Features

- Actuating speed with actuating angle 20° to switch axis 0.5 m/s
- 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
- **With slow action**
suitable for safety application

Info

Version for equipment category 3D
 (dust-Ex zone 22) available
 Ordering suffix: -3D

Ordering details

An EEx/EEExM 14 range position switch with ball plunger KU, snap action and change-over contact:
 EEExM 14 KU

Contacts/ Switch travel

Change-over contact

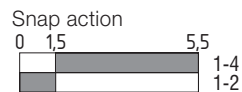
4 BK 1
2 BN BU

1 NO
1 NC

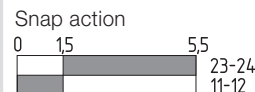
BK 23 24 BK
BN 11 12 BU

1 NO
1 NC

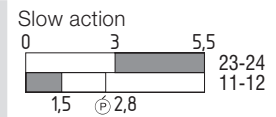
BK 23 24 BK
BN 11 12 BU



EEExM 14 KU



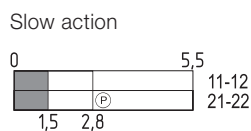
EEExM 14 KU 1Ö/1S



EEEx 14 KU

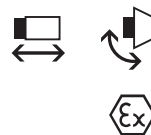
2 Öffner

BN 11 BU 12
BK 21 BK 22

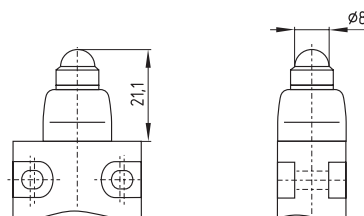


EEEx 14 KU 2Ö

1. Ex switchgear
1.3 Safety switches
1.3.1 Position switches with safety function
1.3.1 EEx/EEExM 14 and EEExM 14 range



Ball plunger with watertight collar WKU



Features

- Actuating speed with actuating angle 20° to switch axis 0.5 m/s
- 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 dirt
- **With slow action**
suitable for safety application

Info

Version for equipment category 3D
 (dust-Ex zone 22) available
 Ordering suffix: -3D

Ordering details

An EEExM 14 range position switch with ball plunger and watertight collar WKU, snap action, one NO and one NC contact: EEExM 14 WKU 1Ö/1S

**Contacts/
Switch travel**

Change-over contact

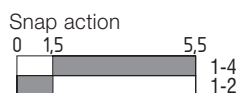
4 BK 1
2 BN BU

1 NO
1 NC

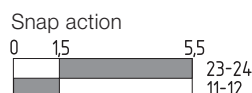
BK 23 24 BK
BN 11 12 BU

1 NO
1 NC

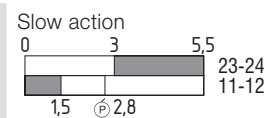
BK 23 24 BK
BN 11 12 BU



EEExM 14 WKU



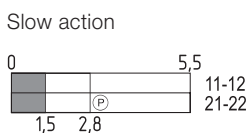
EEExM 14 WKU 1Ö/1S



EEEx 14 WKU

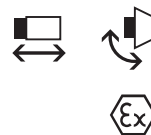
2 Öffner

BN 11 BU 12
BK 21 BK 22

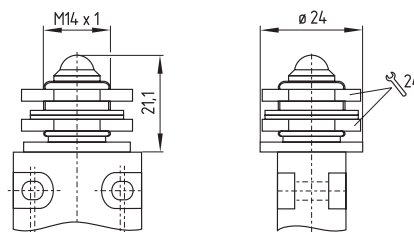


EEEx 14 WKU 2Ö

1. Ex switchgear
 1.3 Safety switches
 1.3.1 Position switches with safety function
 1.3.1.1 EEx/EEExM 14 range



Ball plunger for front mounting FKU



Features

- Actuating speed with actuating angle 20° to switch axis 0.5 m/s
- 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
- **With slow action**
suitable for safety application

Info

Version for equipment category 3D
 (dust-Ex zone 22) available
 Ordering suffix: -3D

Ordering details

An EEx/EEExM 14 range position switch with ball plunger for front mounting FKU, slow action with one NO and one NC contact:
 EEx 14 FKU

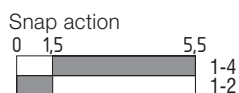
Contacts/ Switch travel

Change-over contact

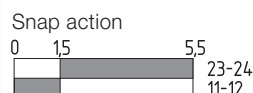
4 BK 1
2 BN BU

1 NO BK 23 24 BK
1 NC BN 11 12 BU

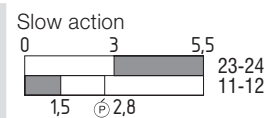
1 NO BK 23 24 BK
1 NC BN 11 12 BU



EEExM 14 FKU



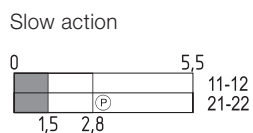
EEExM 14 FKU 1Ö/1S



EEx 14 FKU

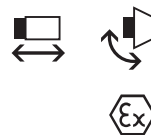
2 Öffner

BN 11 BU 12
BK 21 BK 22

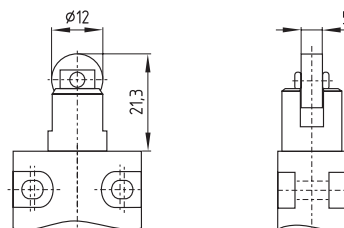


EEx 14 FKU 2Ö

1. Ex switchgear
 1.3 Safety switches
 1.3.1 Position switches with safety function
 1.3.1 EEx/EEExM 14 range



Roller plunger R



Features

- Actuating speed with actuating angle 30° to switch axis 0.5 m/s
- Metal roller
- Available with roller turned 90°
- **With slow action suitable for safety application**

Ordering details

An EExM 14 range position switch with roller plunger R, snap action with one NO and one NC contact:
 EExM 14 R 1Ö/1S

Info

Version for equipment category 3D
 (dust-Ex zone 22) available
 Ordering suffix: -3D

Contacts/ Switch travel

Change-over contact

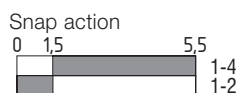
4 BK 1
2 BN BU

**1 NO
1 NC**

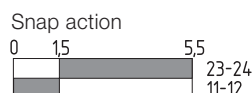
BK 23 24 BK
BN 11 12 BU

**1 NO
1 NC**

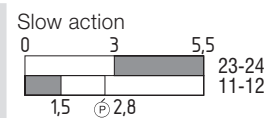
BK 23 24 BK
BN 11 12 BU



EExM 14 R



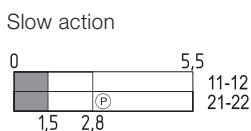
EExM 14 R 1Ö/1S



EEx 14 R

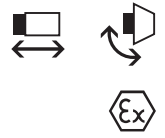
2 Öffner

BN 11 BU 12
BK 21 BK 22

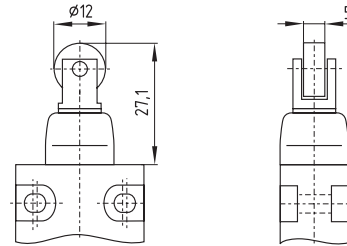


EEx 14 R 2Ö

1. Ex switchgear
 1.3 Safety switches
 1.3.1 Position switches with safety function
 1.3.1 EEx/EEExM 14 range



Roller plunger with watertight collar WR



Features

- Actuating speed with actuating angle 25° to switch axis 0.5 m/s
- Metal roller
- Available with roller turned 90°
- Collar to protect against the entry of dirt
- **With slow action**
suitable for safety application

Ordering details

An EEx/EEExM 14 range position switch with roller plunger and watertight collar WR, snap action and change-over contact:
 EExM 14 WR

Info

Version for equipment category 3D
 (dust-Ex zone 22) available
 Ordering suffix: -3D

Contacts/ Switch travel

Change-over contact

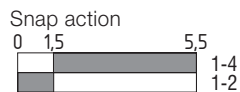
4 BK 1
2 BN BU

1 NO
1 NC

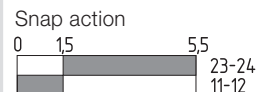
BK 23 24 BK
BN 11 12 BU

1 NO
1 NC

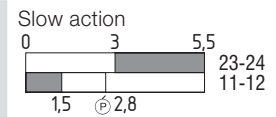
BK 23 24 BK
BN 11 12 BU



EExM 14 WR



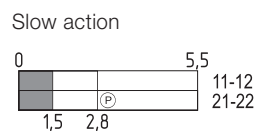
EExM 14 WR 1Ö/1S



EEx 14 WR

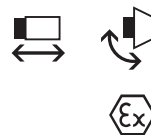
2 Öffner

BN 11 BU 12
BK 21 BK 22

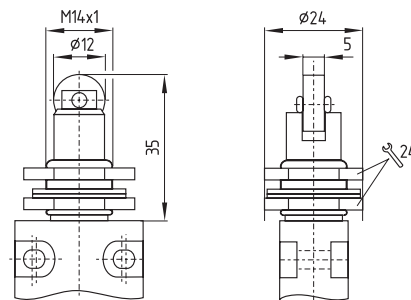


EEx 14 WR 2Ö

1. Ex switchgear
1.3 Safety switches
1.3.1 Position switches with safety function
1.3.1 EEx/EEExM 14 range



Roller plunger for front mounting FR



Features

- Actuating speed with actuating angle 25° to switch axis 0.5 m/s
- Metal roller
- Available with roller turned 90°
- **With slow action**
suitable for safety application

Ordering details

An EEx/EEExM 14 range position switch with roller plunger for front mounting FR, snap action and change-over contact:
 EExM 14 FR

Info

Version for equipment category 3D
 (dust-Ex zone 22) available
 Ordering suffix: -3D

Contacts/ Switch travel

Change-over contact

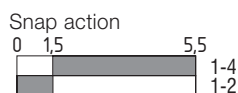
4 BK 1
2 BN BU

1 NO
1 NC

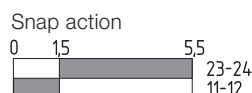
BK 23 24 BK
BN 11 12 BU

1 NO
1 NC

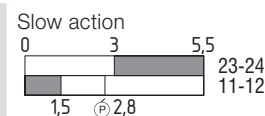
BK 23 24 BK
BN 11 12 BU



EExM 14 FR



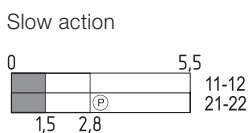
EExM 14 FR 1Ö/1S



EEx 14 FR

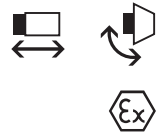
2 Öffner

BN 11 BU 12
BK 21 BK 22

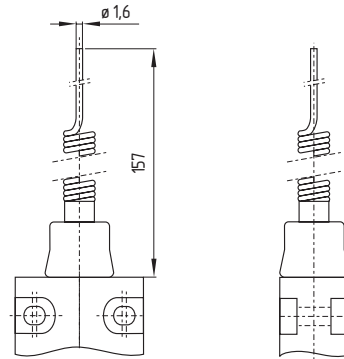


EEx 14 FR 2Ö

1. Ex switchgear
 1.3 Safety switches
 1.3.1 Position switches with safety function
 1.3.1.1 EEx/EEExM 14 range



Long spring wire (Cat's whisker) TL



Features

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

Info

Version for equipment category 3D (dust-Ex zone 22) available
 Ordering suffix: -3D

Ordering details

An EEx/EEExM 14 range position switch with long spring wire TL, snap action and change-over contact:
 EExM 14 TL

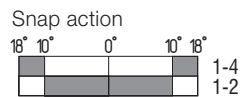
Contacts/ Switch travel

Change-over contact

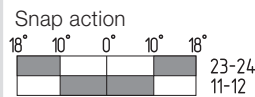
4 BK 1 BU
 2 BN

1 NO BK 23 24 BK
1 NC BN 11 12 BU

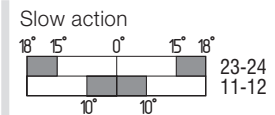
1 NO BK 23 24 BK
1 NC BN 11 12 BU



EExM 14 TL



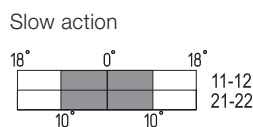
EExM 14 TL 1Ö/1S



EEx 14 TL

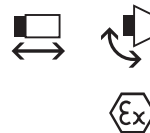
2 Öffner

BN 11 BU 12
 BK 21 BK 22

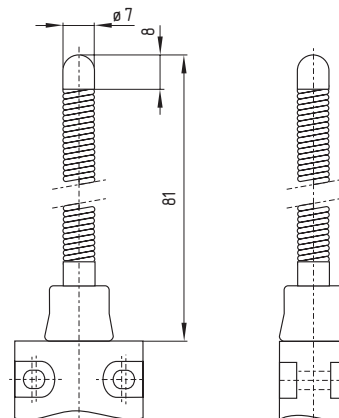


EEx 14 TL 2Ö

1. Ex switchgear
 1.3 Safety switches
 1.3.1 Position switches with safety function
 1.3.1 EEx/EEExM 14 range



Spring rod with rounded steel tip TF



Features

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

Ordering details

An EEx/EEExM 14 range position switch with spring rod TF, slow action with one NO and one NC contact:
 EEx 14 TF

Info

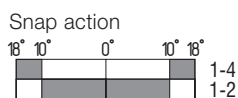
Version for equipment category 3D
 (dust-Ex zone 22) available
 Ordering suffix: -3D

Contacts/ Switch travel

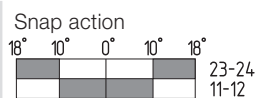
Change-over contact

**1 NO
1 NC**

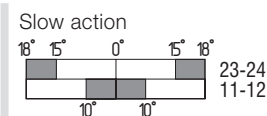
**1 NO
1 NC**



EEExM 14 TL

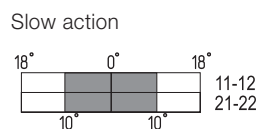


EEExM 14 TL 1Ö/1S



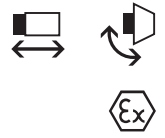
EEEx 14 TL

2 Öffner

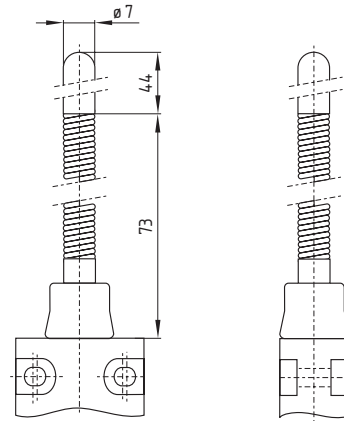


EEEx 14 TF 2Ö

1. Ex switchgear
 1.3 Safety switches
 1.3.1 Position switches with safety function
 1.3.1.1 EEx/EEExM 14 range



Spring rod with plastic rod TK



Features

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

Ordering details

An EEx/EEExM 14 range position switch with spring rod and plastic rod TK, slow action with one NO and one NC contact: EEx 14 TK

Info

Version for equipment category 3D
 (dust-Ex zone 22) available
 Ordering suffix: -3D

Contacts/ Switch travel

Change-over contact

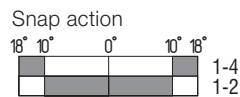
4 BK 1
2 BN BU

1 NO
1 NC

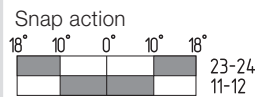
BK 23 24 BK
BN 11 12 BU

1 NO
1 NC

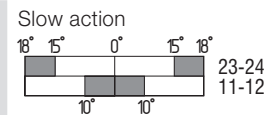
BK 23 24 BK
BN 11 12 BU



EExM 14 TK



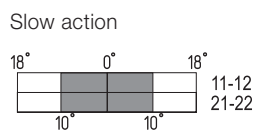
EExM 14 TK 1Ö/1S



EEx 14 TK

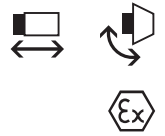
2 Öffner

BN 11 BU 12
BK 21 BK 22

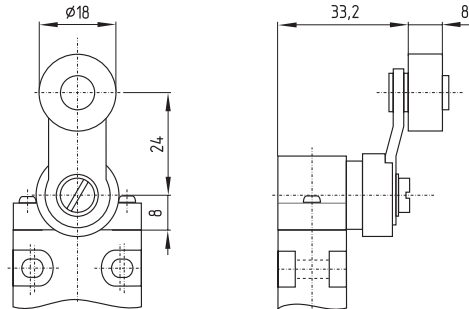


EEx 14 TF 2Ö

1. Ex switchgear
 1.3 Safety switches
 1.3.1 Position switches with safety function
 1.3.1.1 EEx/EEExM 14 range



Roller lever D



Features

- Actuating speed with actuating angle 45° to switch axis 0.5 m/s
- Wear-resistant plastic roller
- Lever can be repositioned 10° steps clockwise or counter-clockwise
- Actuator can be transposed by 180°
- **With slow action**
suitable for safety applications

Info

Version for equipment category 3D
 (dust-Ex zone 22) available
 Ordering suffix: -3D

Ordering details

An EEx/EEExM 14 range position switch with roller lever D, snap action and change-over contact:
 EExM 14 D

Info

- Metal roller available

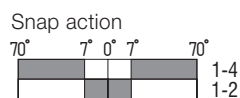
Contacts/ Switch travel

Change-over contact

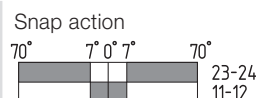
4 BK 1
2 BN BU

1 NO BK 23 24 BK
1 NC BN 11 12 BU

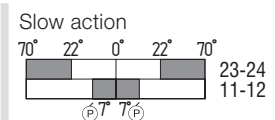
1 NO BK 23 24 BK
1 NC BN 11 12 BU



EExM 14 D



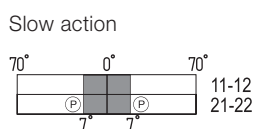
EExM 14 D 10/1S



EEx 14 D

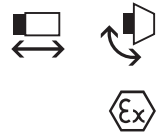
2 Öffner

BN 11 BU 12
BK 21 BK 22

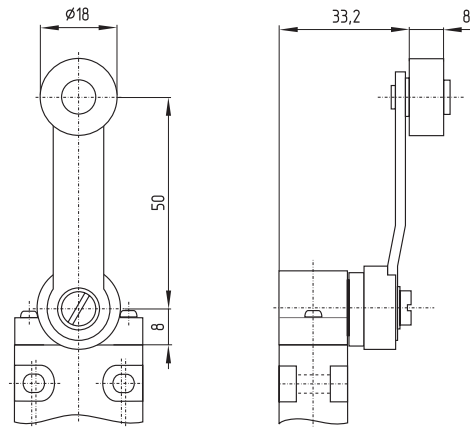


EEx 14 D 2Ö

1. Ex switchgear
 1.3 Safety switches
 1.3.1 Position switches with safety function
 1.3.1 EEx/EEExM 14 range



Long roller lever DL



Features

- Actuating speed with actuating angle 45° to switch axis 0.5 m/s
- Wear-resistant plastic roller
- Lever can be repositioned 10° steps clockwise or counter-clockwise
- Actuator can be transposed by 180°
- **With slow action suitable for safety applications**

Info

Version for equipment category 3D (dust-Ex zone 22) available
 Ordering suffix: -3D

Ordering details

An EEExM 14 range position switch with long roller lever DL, snap action, one NO and one NC contact:
 EEExM 14 DL 1Ö/1S

Info

- Metal roller available

Contacts/ Switch travel

Change-over contact

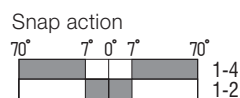
4 BK 1
2 BN BU

1 NO
1 NC

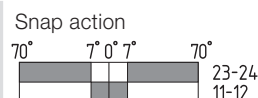
BK 23 24 BK
BN 11 12 BU

1 NO
1 NC

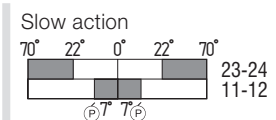
BK 23 24 BK
BN 11 12 BU



EEExM 14 DL



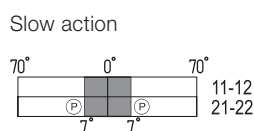
EEExM 14 DL 1Ö/1S



EEEx 14 DL

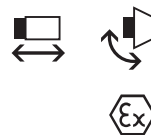
2 Öffner

BN 11 BU 12
BK 21 BK 22

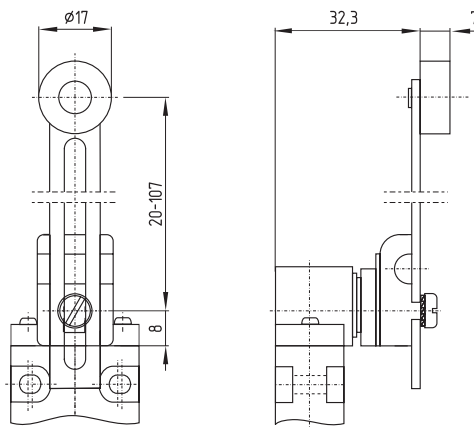


EEEx 14 DL 2Ö

1. Ex switchgear
 1.3 Safety switches
 1.3.1 Position switches with safety function
 1.3.1 EEx/EEExM 14 range



Adjustable-length roller lever DS



Features

- Actuating speed with actuating angle 45° to switch axis 0.5 m/s
- Wear-resistant plastic roller
- **Only for positioning duties**
- Lever can be repositioned 10° steps clockwise or counter-clockwise
- Actuator can be transposed by 180°

Info

- Metal roller available

Info

Version for equipment category 3D
 (dust-Ex zone 22) available
 Ordering suffix: -3D

Ordering details

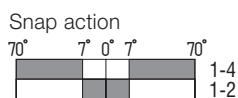
An EEx/EEExM 14 range position switch with adjustable-length roller lever DS, slow action with one NO and one NC contact: EEx 14 DS

Contacts/ Switch travel

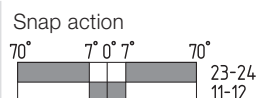
Change-over contact

**1 NO
1 NC**

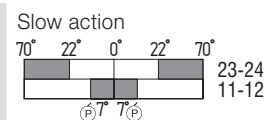
**1 NO
1 NC**



EExM 14 DS

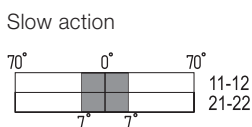


EExM 14 DS 10°/1S



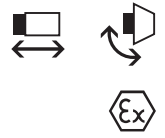
EEx 14 DS

2 Öffner

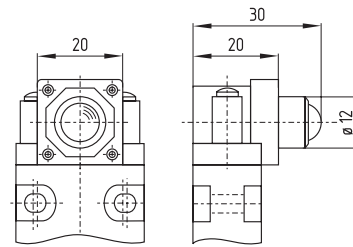


EEx 14 DS 2Ö

1. Ex switchgear
 1.3 Safety switches
 1.3.1 Position switches with safety function
 1.3.1.1 EEx/EEExM 14 range



Ball plunger at front VKU



Features

- Actuation from any direction
- Actuator head with captive stainless steel ball actuator
- **With slow action**
suitable for safety application

Info

Version for equipment category 3D
 (dust-Ex zone 22) available
 Ordering suffix: -3D

Ordering details

An EEx/EEExM 14 range position switch with ball plunger at front VKU, slow action with one NO and one NC contact: EEx 14 VKU

Contacts/ Switch travel

Change-over contact

4 BK 1 BU
2 BN

1 NO
1 NC

BK 23 24 BK
BN 11 12 BU

1 NO
1 NC

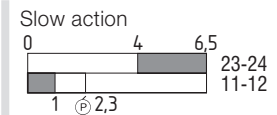
BK 23 24 BK
BN 11 12 BU



EEExM 14 VKU



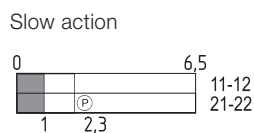
EEExM 14 VKU 1Ö/1S



EEx 14 VKU

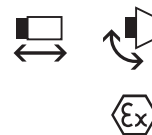
2 Öffner

BN 11 12 BU 12
BK 21 22 BK 22

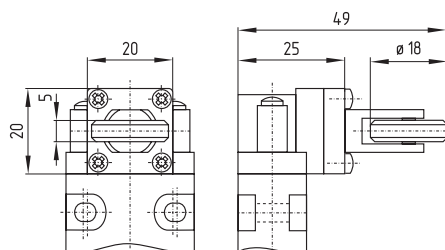


EEx 14 VKU 2Ö

1. Ex switchgear
 1.3 Safety switches
 1.3.1 Position switches with safety function
 1.3.1.1 EEx/EEExM 14 range



Roller plunger at front VR



Features

- Actuator can be transposed by 90°
- Wear-resistant plastic roller
- **With slow action**
suitable for safety application

Info

Version for equipment category 3D
 (dust-Ex zone 22) available
 Ordering suffix: -3D

Ordering details

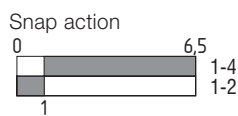
An EEx/EEExM 14 range position switch with roller plunger at front VR, snap action, one NO and one NC contact: EExM 14 VR 1Ö/1S

Contacts/ Switch travel

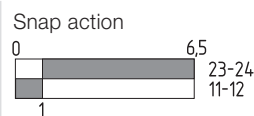
Change-over contact

1 NO
1 NC

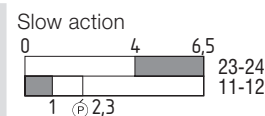
1 NO
1 NC



EExM 14 VR

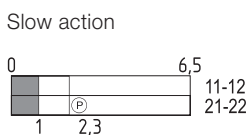


EExM 14 VR 1Ö/1S



EEx 14 VR

2 Öffner

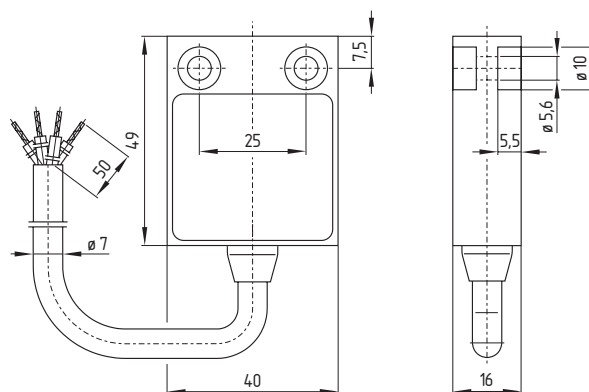
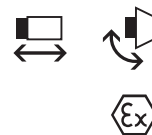


EEx 14 VR 2Ö

- 1.** Ex switchgear
- 1.3** Safety switches
- 1.3.1** Position switches with safety function
- 1.3.1** EEx/EEExM 14 range



1. Ex switchgear
1.3 Safety switches
1.3.2 Position switches with safety function
EEx 13 range



Features

- Thermoplastic enclosure
- Double-insulated □
-  II 2G EEx d IIC T6
II 2D IP65 T80°C
- Slow action , 1 NO and 1 NC contact, double break
- Available with overlapping contacts
- Suitable for in-line mounting
- Pre-wired cable
- IP 67

Info

- With M 16 x 1.5 insert for cable protection hose: below, ordering suffix -03
- Special cables on request

Approvals

EC Type test certificate:
PTB 03 ATEX 1068 X

Info

Version for equipment category 3D
(dust-Ex zone 22) available
Ordering suffix: -3D

Cable length

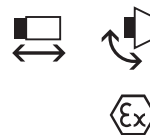
Always specify cable length

- 1 metre long ordering suffix -1m
- 2 metres long ordering suffix -2m
- 5 metres long ordering suffix -5m
- 10 metres long ordering suffix -10m

Other lengths on request

1.
1.3
1.3.2

Ex switchgear
Safety switches
Position switches with safety function
EEx 13 range



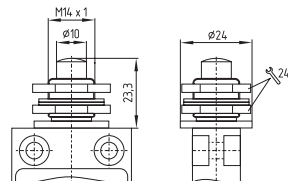
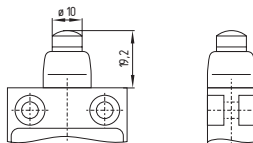
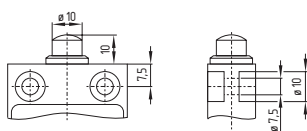
Actuators

Plunger

Plunger

with watertight collar W

with front mounting F

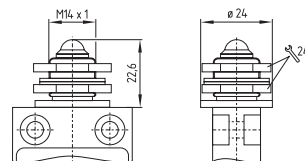
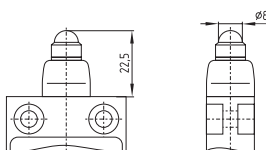
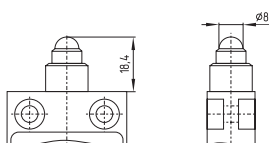


Ball plunger

Ball plunger KU

with watertight collar WKU

with front mounting FKU

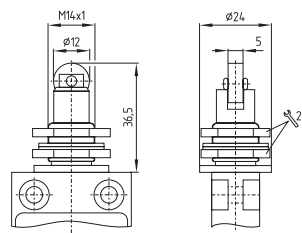
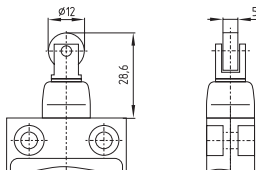
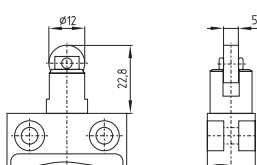


Roller plunger

Roller plunger R

with watertight collar WR

with front mounting FR

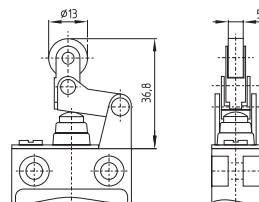
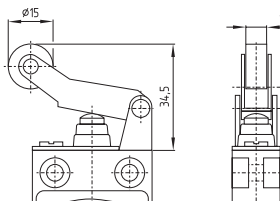
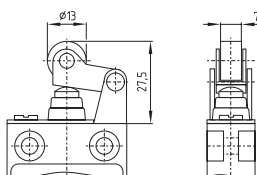


Offset roller lever

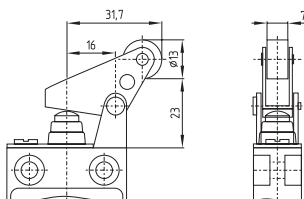
Offset roller lever
with watertight collar WH

Long offset roller lever
with watertight collar WHL

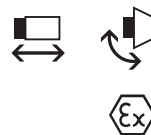
Rocking offset roller lever
with watertight collar WHK



"Parallel" offset roller lever
with watertight collar WPH



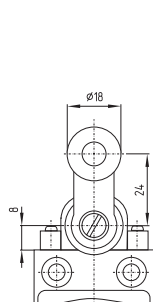
1. Ex switchgear
1.3 Safety switches
1.3.2 Position switches with safety function
EEx 13 range



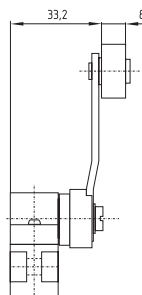
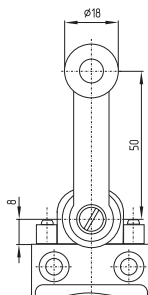
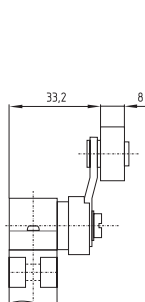
Actuators

Roller lever

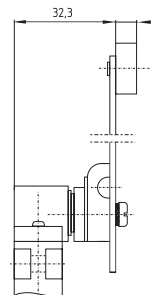
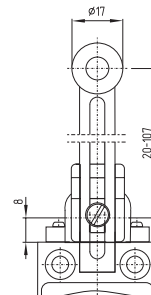
Roller lever D



Long roller lever DL

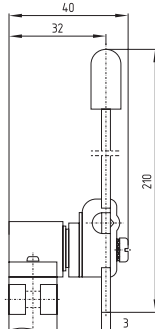
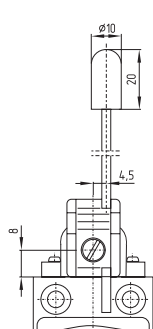


Adjustable-length roller lever DS



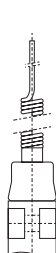
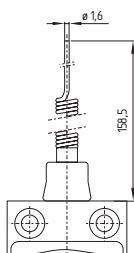
Wire lever

Wire lever DD

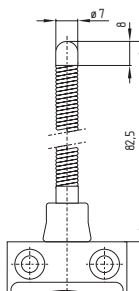


Spring rod

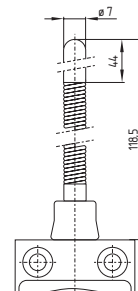
Long spring wire
(Cat's whisker) TL



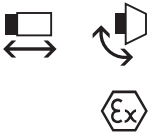
with rounded steel tip TF



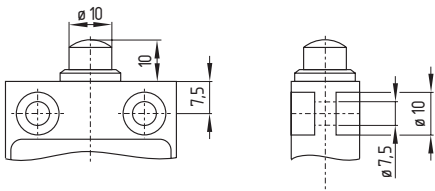
with plastic rod TK



1. Ex switchgear
1.3 Safety switches
1.3.2 Position switches with safety function
1.3.2 EEx 13 range



Plunger



- Features**
- Actuating speed with actuating angle 0° to switch axis 0.5 m/s
 - **Suitable for safety application**

Info

Version for equipment category 3D
(dust-Ex zone 22) available
Ordering suffix: -3D

Contacts/ Switch travel	1 NO	BK 23 — 24 BK
	1 NC	BN 11 — 12 BU

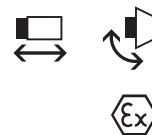


EEx 13 10/1S

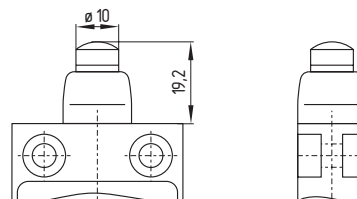
Ordering details

An EEx 13 range position switch with plunger, slow action with one NO and one NC contact: EEx 13 10/1S

1. Ex switchgear
1.3 Safety switches
1.3.2 Position switches with safety function
EEx 13 range



Plunger with watertight collar W



Features

- Actuating speed with actuating angle 0° to switch axis 0.5 m/s
- Collar to protect against the entry of dirt
- **Suitable for safety application**

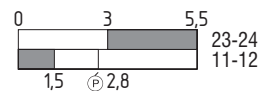
Info

Version for equipment category 3D
 (dust-Ex zone 22) available
 Ordering suffix: -3D

Contacts/ Switch travel

1 NO BK 23 — 24 BK
1 NC BN 11 — 12 BU

Slow action



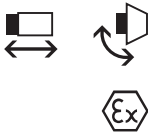
EEx 13 W 1Ö/1S

Ordering details

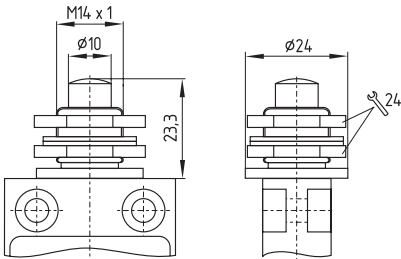
An EEx 13 range position switch with plunger with watertight collar W, slow action with one NO and one NC contact:
 EEx 13 W 1Ö/1S

1.
1.3
1.3.2

Ex switchgear
Safety switches
Position switches with safety function
EEx 13 range



Plunger with front mounting F



- Features**
- Actuating speed with actuating angle 0° to switch axis 0.5 m/s
 - **Suitable for safety application**

Info Version for equipment category 3D
(dust-Ex zone 22) available
Ordering suffix: -3D

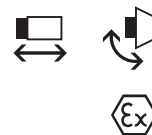
Contacts/ Switch travel	1 NO	BK 23 — 24 BK
	1 NC	BN 11 — 12 BU



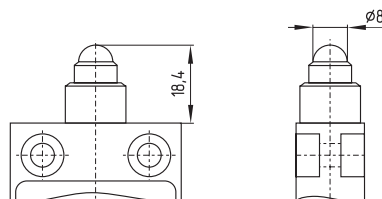
EEx 13 F 10/1S

Ordering details An EEx 13 range position switch with plunger and front mounting F, slow action with one NO and one NC contact:
EEx 13 F 10/1S

1. Ex switchgear
 1.3 Safety switches
 1.3.2 Position switches with safety function
 1.3.2 EEx 13 range



Ball plunger KU



Features

- Actuating speed with actuating angle 20° to switch axis 0.5 m/s
- 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
- **Suitable for safety application**

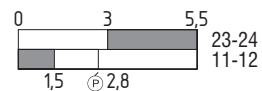
Info

Version for equipment category 3D
 (dust-Ex zone 22) available
 Ordering suffix: -3D

Contacts/ Switch travel

1 NO BK 23 — 24 BK
 1 NC BN 11 — 12 BU

Slow action



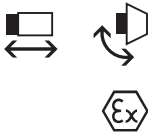
EEx 13 KU 10/1S

Ordering details

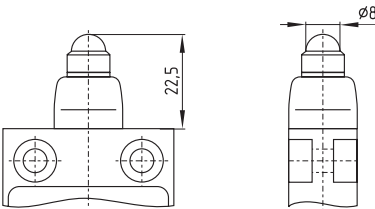
An EEx 13 range position switch with ball plunger KU, slow action with one NO and one NC contact: EEx 13 KU 10/1S

1.
1.3
1.3.2

Ex switchgear
Safety switches
Position switches with safety function
ExEx 13 range



Ball plunger with watertight collar WKU



Features

- Actuating speed with actuating angle 15° to switch axis 0.5 m/s
- 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 dirt
- **Suitable for safety application**

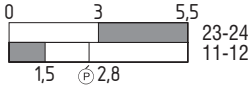
Info

Version for equipment category 3D
(dust-Ex zone 22) available
Ordering suffix: -3D

Contacts/
Switch travel

1 NO BK 23 — 24 BK
1 NC BN 11 — 12 BU

Slow action

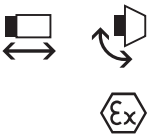


EEx 13 WKU 1Ö/1S

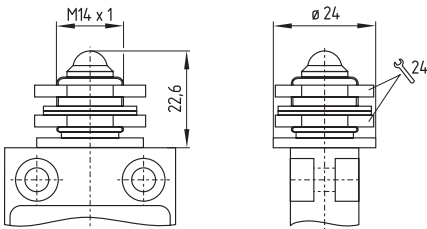
Ordering
details

An EEx 13 range position switch with ball plunger and watertight collar WKU, slow action with one NO and one NC contact: EEx 13 WKU 1Ö/1S

1. Ex switchgear
1.3 Safety switches
1.3.2 Position switches with safety function
1.3.2 EEx 13 range



Ball plunger with front mounting FKU



Features

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

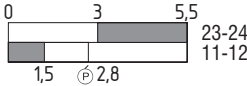
Info

Version for equipment category 3D
(dust-Ex zone 22) available
Ordering suffix: -3D

Contacts/
Switch travel

1 NO BK 23 — 24 BK
1 NC BN 11 — 12 BU

Slow action



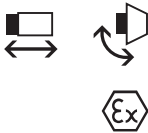
EEx 13 FKU 10/1S

Ordering
details

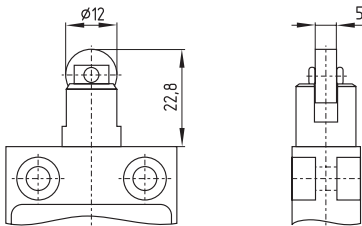
An EEx 13 range position switch with ball plunger with front mounting FKU, slow action with one NO and one NC contact:
EEx 13 FKU 10/1S

1.
1.3
1.3.2

Ex switchgear
Safety switches
Position switches with safety function
EEx 13 range



Roller plunger R



Features

- Actuating speed with actuating angle 30° to switch axis 0.5 m/s
- Metal roller
- Available with roller turned 90°
- **Suitable for safety application**

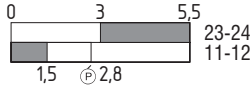
Info

Version for equipment category 3D
(dust-Ex zone 22) available
Ordering suffix: -3D

Contacts/
Switch travel

1 NO BK 23 — 24 BK
1 NC BN 11 — 12 BU

Slow action

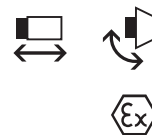


EEx 13 R 1Ö/1S

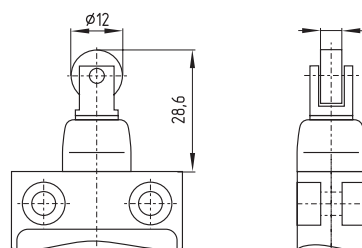
Ordering
details

An EEx 13 range position switch with roller plunger R,slow
action one NO and one NC contact: EEx 13 R 1Ö/1S

1. Ex switchgear
1.3 Safety switches
1.3.2 Position switches with safety function
1.3.2 EEx 13 range



Roller plunger with watertight collar WR



Features

- Actuating speed with actuating angle 25° to switch axis 0.5 m/s
- Metal roller
- Available with roller turned 90°
- Collar to protect against the entry of dirt
- **Suitable for safety application**

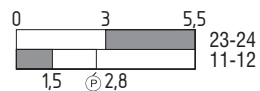
Info

Version for equipment category 3D
 (dust-Ex zone 22) available
 Ordering suffix: -3D

Contacts/ Switch travel

1 NO BK 23 — 24 BK
1 NC BN 11 — 12 BU

Slow action

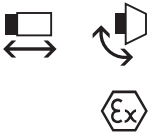


EEx 13 WR 1Ö/1S

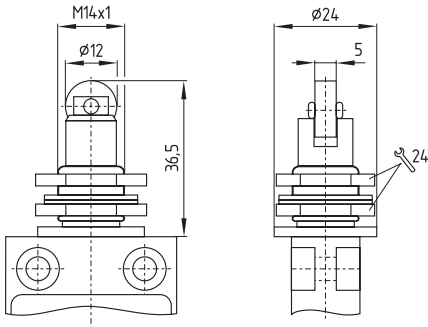
Ordering details

An EEx 13 range position switch with roller plunger and watertight collar WR, slow action with one NO and one NC contact: EEx 13 WR 1Ö/1S

1. Ex switchgear
1.3 Safety switches
1.3.2 Position switches with safety function
1.3.2 EEx 13 range



Roller plunger for front mounting FR



- Features**
- Actuating speed with actuating angle 25° to switch axis 0.5 m/s
 - Metal roller
 - Available with roller turned 90°
 - **Suitable for safety application**

Info

Version for equipment category 3D
(dust-Ex zone 22) available
Ordering suffix: -3D

Contacts/ Switch travel	1 NO	BK 23 — 24 BK
	1 NC	BN 11 — 12 BU

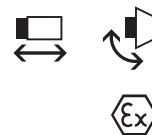


EEx 13 FR 1Ö/1S

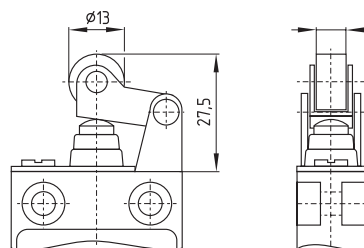
Ordering details

An EEx 13 range position switch with roller plunger for front mounting FR, slow action with one NO and one NC contact:
EEx 13 FR 1Ö/1S

1. Ex switchgear
 1.3 Safety switches
 1.3.2 Position switches with safety function
 1.3.2 EEx 13 range



Offset roller lever with watertight collar WH

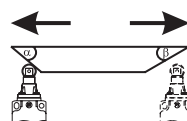


Features

- Actuating speed 0.5 m/s with an actuating angle of $\alpha = 40^\circ$ and $\beta = 25^\circ$
- Metal roller
- Can be supplied with actuator turned 180°
- Collar over plunger to protect against ingress of dirt
- **Suitable for safety application**

Legend

α : Actuating angle from right of switch axis
 β : Actuating angle from left of switch axis referring to lever position as shown in illustration



Info

Version for equipment category 3D (dust-Ex zone 22) available
 Ordering suffix: -3D

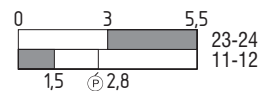
Note

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

Contacts/ Switch travel

1 NO BK 23 — 24 BK
 1 NC BN 11 — 12 BU

Slow action



EEx 13 WH 1Ö/1S

Info

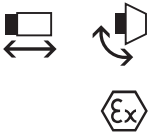
- Plastic roller available

Ordering details

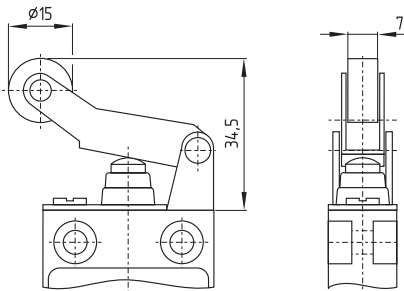
An EEx 13 range position switch with offset roller lever with watertight collar WH, slow action with one NO and one NC contact in EEx version: EEx 13 WH 1Ö/1S

1.
1.3
1.3.2

Ex switchgear
Safety switches
Position switches with safety function
Ex 13 range



Long offset roller lever with watertight collar WHL

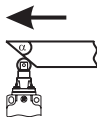


Features

- Actuating speed 0.5 m/s with an actuating angle of $\alpha = 40^\circ$
- Metal roller
- Can be supplied with actuator turned 180°
- Collar over plunger to protect against ingress of dirt
- **Suitable for safety application**

Legend

α : Actuating angle from right of switch axis referring to the lever position as shown in illustration



Info

Version for equipment category 3D (dust-Ex zone 22) available
Ordering suffix: -3D

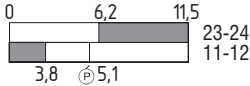
Note

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

Contacts/
Switch travel

1 NO BK 23 — 24 BK
1 NC BN 11 — 12 BU

Slow action



EEx 13 WHL 1Ö/1S

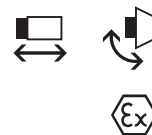
Info

- Plastic roller available

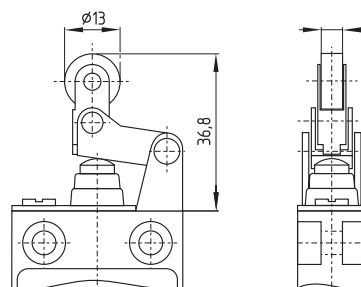
Ordering
details

An EEx 13 range position switch with long offset roller lever with watertight collar WHL, slow action with one NO and one NC contact: EEx 13 WHL 1Ö/1S

1. Ex switchgear
 1.3 Safety switches
 1.3.2 Position switches with safety function
 1.3.2 EEx 13 range



Rocking offset roller lever with watertight collar WHK

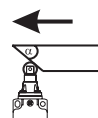


Features

- Actuating speed 0.5 m/s with an actuating angle of $\alpha = 40^\circ$
- Actuation only possible from one side (R.H.S. in illustration)
- Free movement of actuator from other side
- Metal roller
- Can be supplied with actuator turned 180°
- Collar over plunger to protect against ingress of dirt
- **Suitable for safety application**

Legend

α : Actuating angle from right of switch axis referring to lever position as shown in illustration



Info

- Plastic roller available

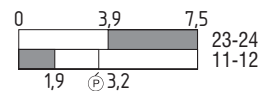
Info

Version for equipment category 3D (dust-Ex zone 22) available
 Ordering suffix: -3D

Contacts/ Switch travel

1 NO BK 23 — 24 BK
 1 NC BN 11 — 12 BU

Slow action

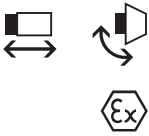


EEx 13 WHK 1Ö/1S

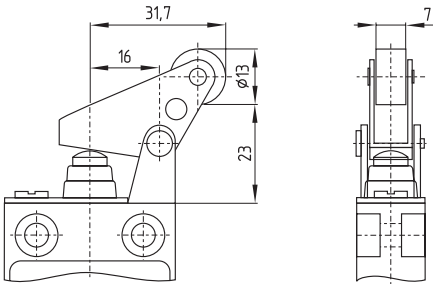
Ordering details

An EEx 13 range position switch with rocking offset roller lever with watertight collar WHK, slow action with one NO and one NC contact: EEx 13 WHK 1Ö/1S

1. Ex switchgear
1.3 Safety switches
1.3.2 Position switches with safety function
1.3.2 EEx 13 range



“Parallel” offset roller lever with watertight collar WPH



- Features**
- Actuating speed 0.5 m/s with an actuating angle of $\alpha = 30^\circ$
 - Actuation parallel to axis of switch plunger only from below
 - Metal roller
 - Can be supplied with actuator turned 180°
 - Collar over plunger to protect against ingress of dirt
 - **Suitable for safety application**
- Info**
- Plastic roller available

- Legend**
- α : Actuating angle from below
-

- Info**
- Version for equipment category 3D (dust-Ex zone 22) available
Ordering suffix: -3D

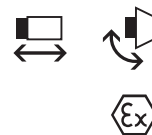
Contacts/ Switch travel	1 NO	BK 23 — 24 BK
	1 NC	BN 11 — 12 BU



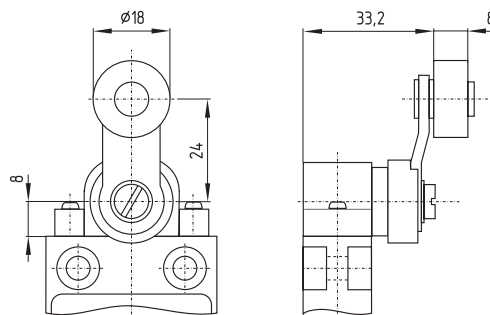
EEx 13 WPH 1Ö/1S

- Ordering details**
- An EEx 13 range position switch with "parallel" offset roller lever with watertight collar WPH, slow action with one NO and one NC contact: EEx 13 WPH 1Ö/1S

1. Ex switchgear
1.3 Safety switches
1.3.2 Position switches with safety function
1.3.2 EEx 13 range



Roller lever D



Features

- Actuating speed with actuating angle 45° to switch axis 0.5 m/s
- Wear-resistant plastic roller
- Lever can be repositioned 10° steps clockwise or counter-clockwise
- Actuator can be transposed by 180°
- **Suitable for safety application**

Info

Version for equipment category 3D
 (dust-Ex zone 22) available
 Ordering suffix: -3D

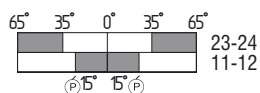
Info

- Metal roller available

Contacts/ Switch travel

1 NO BK 23 — 24 BK
1 NC BN 11 — 12 BU

Slow action



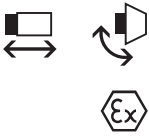
EEx 13 D 10/1S

Ordering details

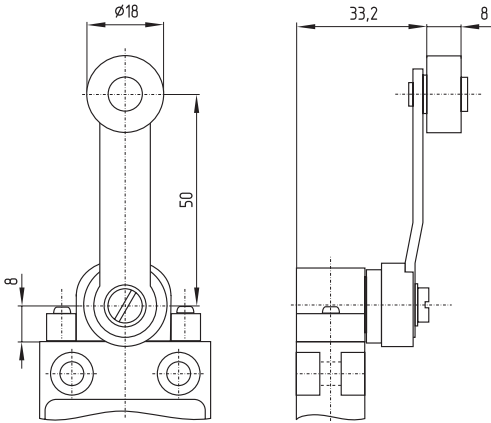
An EEx13 range position switch with roller lever D, slow action
 with one NO and one NC contact: EEx 13 D 10/1S

1.
1.3
1.3.2

Ex switchgear
Safety switches
Position switches with safety function
EEx 13 range



Long roller lever DL



Features

- Actuating speed with actuating angle 45° to switch axis 0.5 m/s
- Wear-resistant plastic roller
- Lever can be repositioned 10° steps clockwise or counter-clockwise
- Actuator can be transposed by 180°
- **Suitable for safety application**

Info

Version for equipment category 3D
(dust-Ex zone 22) available
Ordering suffix: -3D

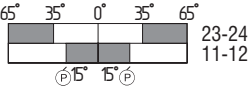
Info

- Metal roller available

Contacts/
Switch travel

1 NO BK 23 — 24 BK
1 NC BN 11 — 12 BU

Slow action

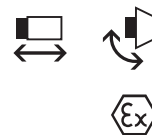


EEx 13 DL 10/1S

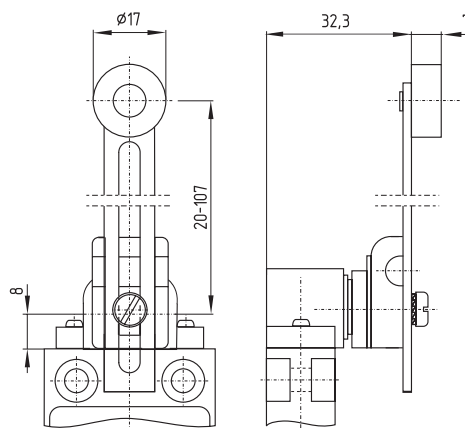
Ordering
details

An EEx 13 range position switch with long roller lever DL, slow action with one NO and one NC contact: EEx 13 DL 10/1S

1. Ex switchgear
 1.3 Safety switches
 1.3.2 Position switches with safety function
 1.3.2 EEx 13 range



Adjustable-length roller lever DS



Features

- Actuating speed with actuating angle 45° to switch axis 0.5 m/s
- Wear-resistant plastic roller
- Lever can be repositioned 10° steps clockwise or counter-clockwise
- Actuator can be transposed by 180°
- **Only for positioning duties**

Info

Version for equipment category 3D
 (dust-Ex zone 22) available
 Ordering suffix: -3D

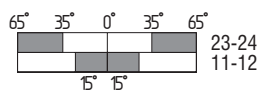
Info

- Metal roller available

Contacts/ Switch travel

1 NO BK 23 — 24 BK
 1 NC BN 11 — 12 BU

Slow action



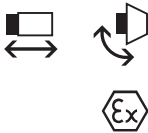
EEx 13 DS 1Ö/1S

Ordering details

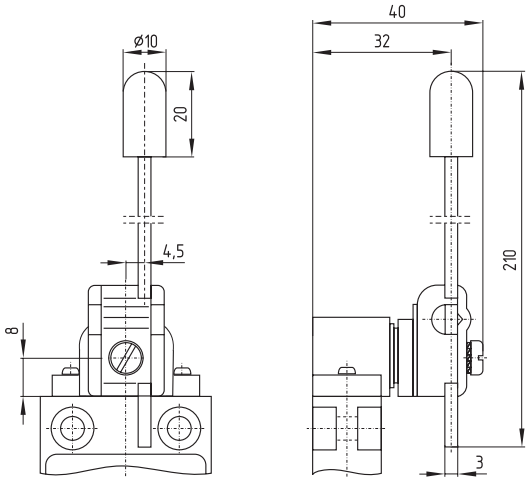
An EEx 13 range position switch with adjustable-length roller lever DS, slow action with one NO and one NC contact:
 EEx 13 DS 1Ö/1S

1.
1.3
1.3.2

Ex switchgear
Safety switches
Position switches with safety function
EEx 13 range



Wire lever DD



Features

- Wear-resistant plastic tip
- Lever can be repositioned 10° steps clockwise or counter-clockwise
- Actuator can be transposed by 180°
- **Only for positioning duties**

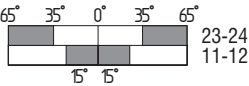
Info

Version for equipment category 3D
(dust-Ex zone 22) available
Ordering suffix: -3D

Contacts/
Switch travel

1 NO BK 23 — 24 BK
1 NC BN 11 — 12 BU

Slow action

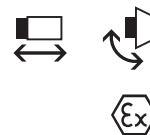


EEx 13 DD 10/1S

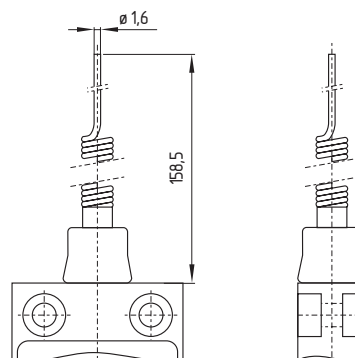
Ordering
details

An EEx 13 range position switch with wire lever DD, slow action with one NO and one NC contact: EEx 13 DD 10/1S

1. Ex switchgear
 1.3 Safety switches
 1.3.2 Position switches with safety function
 1.3.2 EEx 13 range



Long spring wire (Cat's whisker) TL



Features

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

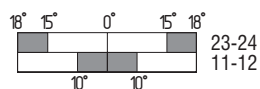
Info

Version for equipment category 3D (dust-Ex zone 22) available
 Ordering suffix: -3D

Contacts/ Switch travel

1 NO BK 23 — 24 BK
 1 NC BN 11 — 12 BU

Slow action



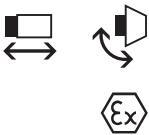
EEx 13 TL 1Ö/1S

Ordering details

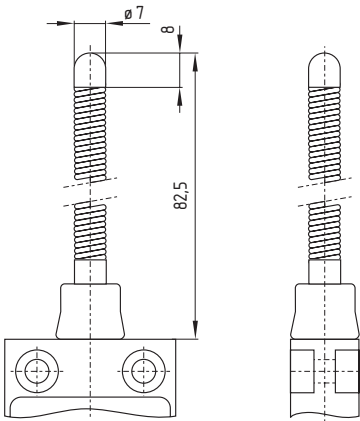
An EEx 13 range position switch with long spring wire TL, slow action with one NO and one NC contact: EEx 13 TL 1Ö/1S

1.
1.3
1.3.2

Ex switchgear
Safety switches
Position switches with safety function
ExEx 13 range



Spring rod with rounded steel tip TF



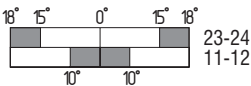
- Features**
- With rounded steel tip
 - Spring rod can be actuated from any direction
 - Elasticity of the spring allows for deflection above the max. switching angle of 18°
 - **Only for positioning duties**

Info

Version for equipment category 3D
(dust-Ex zone 22) available
Ordering suffix: -3D

Contacts/ Switch travel	1 NO	BK 23 — 24 BK
	1 NC	BN 11 — 12 BU

Slow action

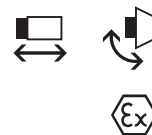


EEx 13 TF 1Ö/1S

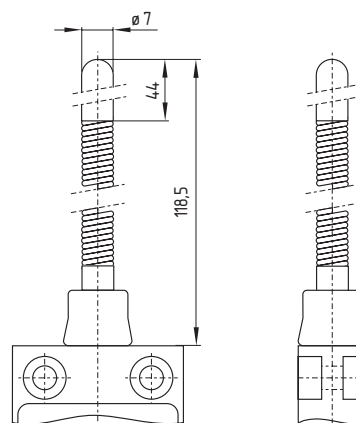
Ordering details

An EEx 13 range position switch with spring rod and rounded steel tip TF, slow action with one NO and one NC contact:
EEx 13 TF 1Ö/1S

1. Ex switchgear
1.3 Safety switches
1.3.2 Position switches with safety function
1.3.2 EEx 13 range



Spring rod with plastic rod TK



Features

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

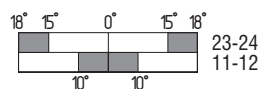
Info

Version for equipment category 3D
 (dust-Ex zone 22) available
 Ordering suffix: -3D

Contacts/ Switch travel

1 NO BK 23 — 24 BK
1 NC BN 11 — 12 BU

Slow action



EEx 13 TK 10/1S

Ordering details

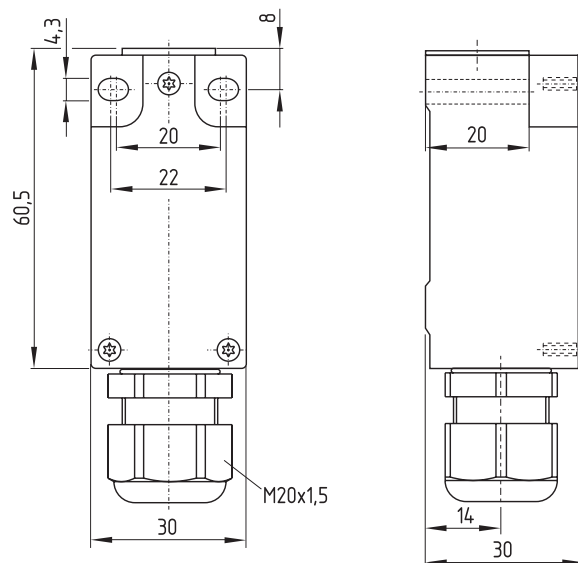
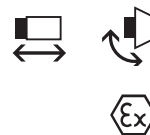
An EEx 13 range position switch with spring rod and plastic rod TK, slow action with one NO and one NC contact:
 EEx 13 TK 10/1S

- 1.** Ex switchgear
- 1.3** Safety switches
- 1.3.2** Position switches with safety function
- 1.3.2** EEx 13 range



1.
1.3
1.3.3

Ex switchgear
Safety switches
Position switches with safety function
EEx 95 range



Features

- Thermoplastic enclosure
- II 2G EEx de IIC T6
II 2D IP67 T80°C
- To EN 50047
- Transversely slotted mounting holes
- Double-insulated
- Slow action available with overlapping contacts
- Wide range of alternative actuators
- Actuator heads can be repositioned in steps 4 x 90°
- M20 x 1.5 cable entry
- Good resistance to oil and petroleum spirit

Approvals

EC Type test certificate:
DMT 01 ATEX E 118

Info

Version for equipment category 3D
(dust-Ex zone 22) available
Ordering suffix: -3D

Info

- Enclosure with vertically slotted mounting holes, ordering suffix -LL

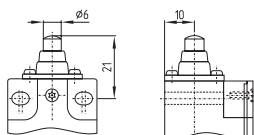
Ordering details

- Position switch with safety function series EEx 95 with plunger W with slow action with overlapping contacts and one NO and one NC contact:
EEx 95 W UE

Actuators

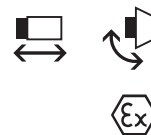
Plunger

Plunger W



1.
1.3
1.3.3

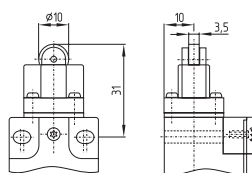
Ex switchgear
Safety switches
Position switches with safety function
EEx 95 range



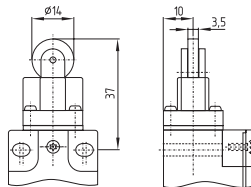
Actuators

Roller plunger

Roller plunger R

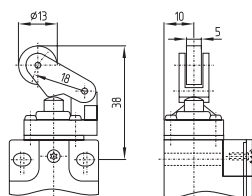


Long roller plunger RL

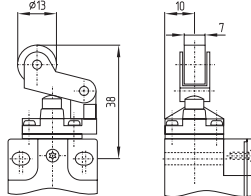


Offset roller lever

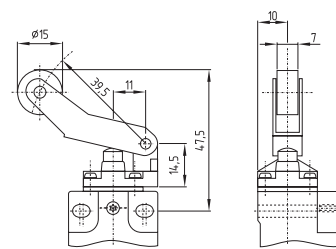
Offset roller lever WH



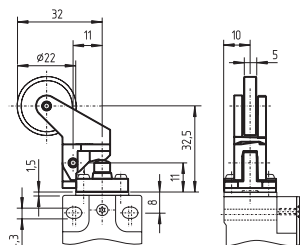
Offset metal roller lever WHM



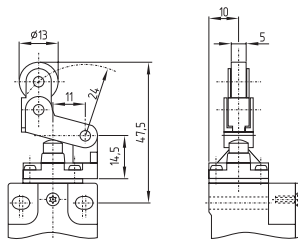
Long offset metal roller lever WHLM



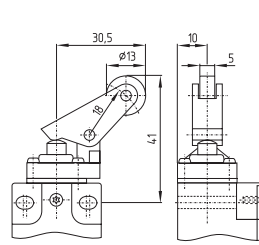
Thermoplastic roller lever 4K



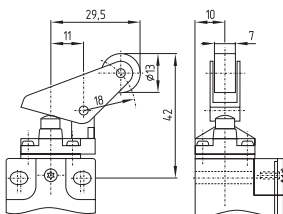
Rocking offset roller lever with single direction actuation WHKM



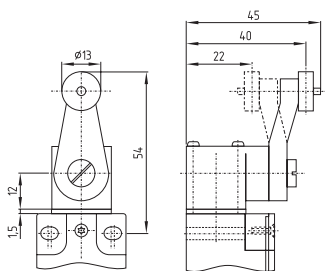
"Parallel" offset roller lever WPH



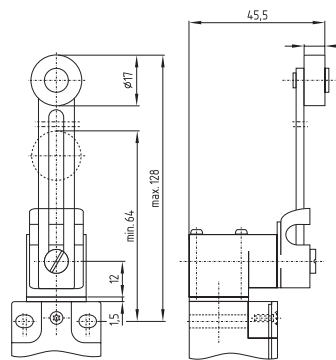
"Parallel" offset metal roller lever WPHM



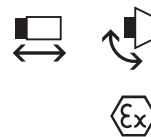
Roller lever D



Adjustable-length roller lever DS



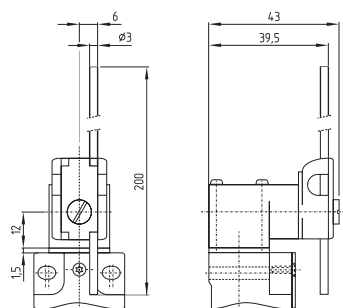
1. Ex switchgear
1.3 Safety switches
1.3.3 Position switches with safety function
1.3.3 EEx 95 range



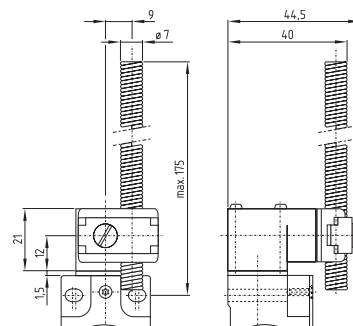
Actuators

Rod lever

Rod lever DD

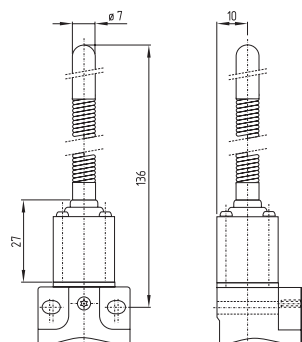


Spring-rod lever DF

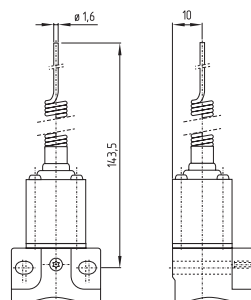


Spring rod

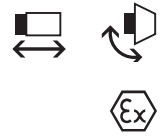
Spring rod TK



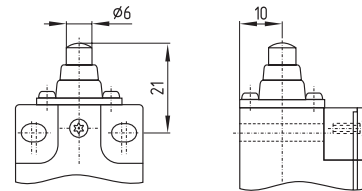
Long spring wire
(Cat's whisker) TL



1. Ex switchgear
 1.3 Safety switches
 1.3.3 Position switches with safety function
 1.3.3 EEx 95 range



Plunger W



Features

- Actuator type B to EN 50047
- Plunger with watertight collar

Info

Version for equipment category 3D
 (dust-Ex zone 22) available
 Ordering suffix: -3D

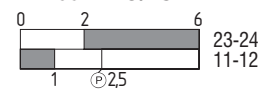
Contacts/ Switch travel

1 NO 23-24
 1 NC 11-12

2 NC 11-12
 21-22

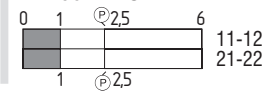
Slow action

EEx 95 W 1Ö/1S



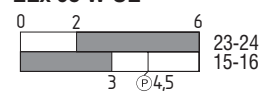
1 NO 23-24
 1 NC 15-16

EEx 95 W 2Ö



Slow action
 overlapping contacts

EEx 95 W UE

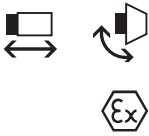


Ordering details

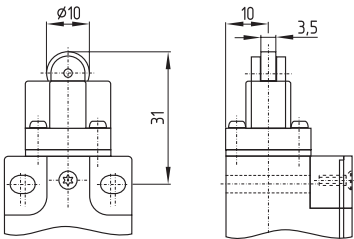
An EEx 95 range position switch with plunger with watertight collar W, slow action with one NO and one NC contact:
 EEx 95 W 1Ö/1S

1.
1.3
1.3.3

Ex switchgear
Safety switches
Position switches with safety function
EEx 95 range



Roller plunger R



Features

- Actuator type C to EN 50047
- Wear-resistant thermoplastic roller

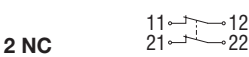
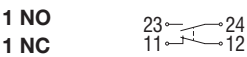
Info

- Metal roller available on enquiry

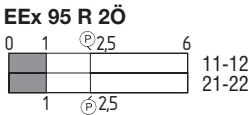
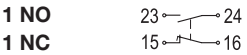
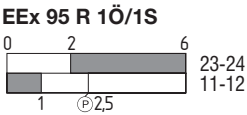
Info

Version for equipment category 3D
(dust-Ex zone 22) available
Ordering suffix: -3D

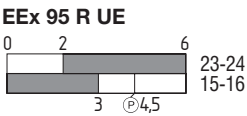
**Contacts/
Switch travel**



Slow action



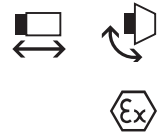
Slow action
overlapping contacts



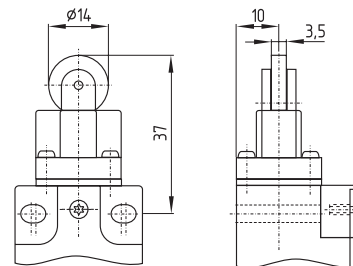
Ordering details

An EEx 95 range position switch with roller plunger R, slow action with one NO and one NC contact:
EEx 95 R 1Ö/1S

1. Ex switchgear
1.3 Safety switches
1.3.3 Position switches with safety function
EEEx 95 range



Long roller plunger RL



Features • Wear-resistant thermoplastic roller

Info • Metal roller available on enquiry

Info Version for equipment category 3D
(dust-Ex zone 22) available
Ordering suffix: -3D

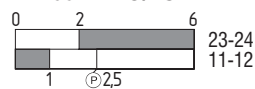
**Contacts/
Switch travel**

1 NO 23 → 24
1 NC 11 → 12

2 NC 11 → 12
 21 → 22

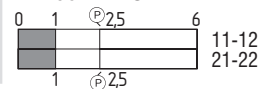
Slow action

EEEx 95 RL 1Ö/1S



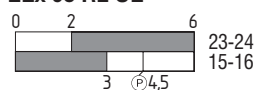
1 NO 23 → 24
1 NC 15 → 16

EEEx 95 RL 2Ö



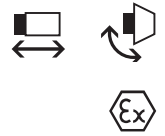
Slow action
overlapping contacts

EEEx 95 RL UE

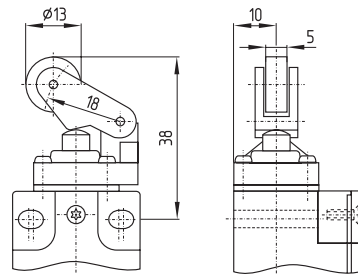


Ordering details An EEx 95 range position switch with long roller plunger RL,
slow action with two NC contacts:
EEEx 95 RL 2Ö

1. Ex switchgear
 1.3 Safety switches
 1.3.3 Position switches with safety function
 1.3.3 EEx 95 range



Offset roller lever WH



Features

- Actuating speed 0.5 m/s with an actuating angle of $\alpha = 40^\circ$ and $\beta = 25^\circ$
- Actuator type E to EN 50047
- Plunger with watertight collar
- Wear-resistant thermoplastic roller
- Actuator heads can be repositioned in steps $4 \times 90^\circ$

Info

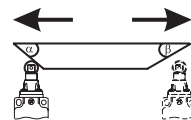
Version for equipment category 3D (dust-Ex zone 22) available
 Ordering suffix: -3D

Info

- Metal roller available on enquiry

Legend

α : Actuating angle from right of switch axis
 β : Actuating angle from left of switch axis referring to lever position as shown in illustration



Note

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

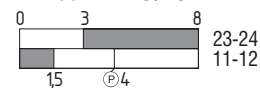
Contacts/ Switch travel

1 NO 23-24
 1 NC 11-12

2 NC 11-12
 21-22

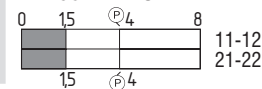
Slow action

EEx 95 WH 1Ö/1S



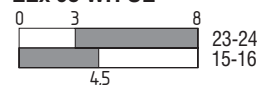
1 NO 23-24
 1 NC 15-16

EEx 95 WH 2Ö



Slow action
 overlapping contacts

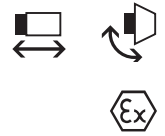
EEx 95 WH UE



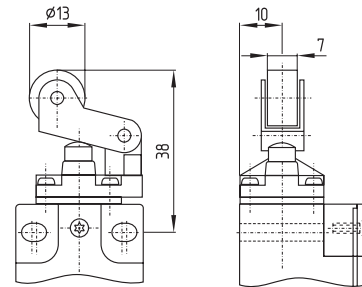
Ordering details

An EEx 95 range position switch with offset roller lever WH, slow action with two NC contacts:
 EEx 95 WH 2Ö

1. Ex switchgear
1.3 Safety switches
1.3.3 Position switches with safety function
EEEx 95 range



Offset metal roller lever WHM

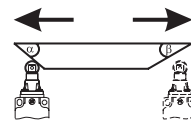


Features

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

Legend

α : Actuating angle from right of switch axis
 β : Actuating angle from left of switch axis
referring to lever position as shown in illustration



Info

Version for equipment category 3D
(dust-Ex zone 22) available
Ordering suffix: -3D

Info

- Metal roller available on enquiry

Note

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

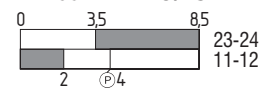
Contacts/ Switch travel

1 NO 23 → 24
1 NC 11 → 12

2 NC 11 → 12
21 → 22

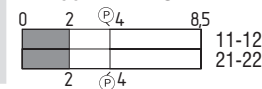
Slow action

EEEx 95 WHM 1Ö/1S



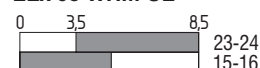
1 NO 23 → 24
1 NC 15 → 16

EEEx 95 WHM 2Ö



Slow action
overlapping contacts

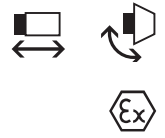
EEEx 95 WHM UE



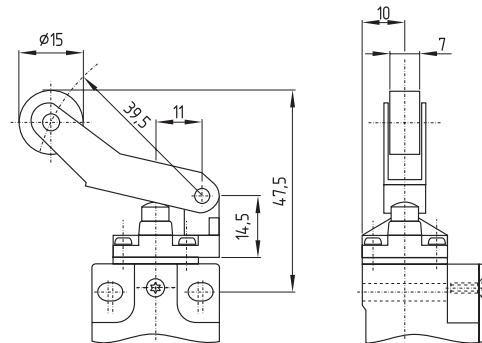
Ordering details

An EEx 95 range position switch with offset metal roller lever WHM, slow action with one NO and one NC contact and overlapping contacts: EEx 95 WHM UE

1. Ex switchgear
 1.3 Safety switches
 1.3.3 Position switches with safety function
 1.3.3 EEx 95 range



Long offset metal roller lever WHLM



Features

- Actuating speed 0.5 m/s with an actuating angle of $\alpha = 40^\circ$
- Plunger with watertight collar
- Wear-resistant thermoplastic roller
- Actuator heads can be repositioned in steps $4 \times 90^\circ$

Info

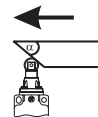
Version for equipment category 3D (dust-Ex zone 22) available
 Ordering suffix: -3D

Info

- Metal roller available on enquiry

Legend

α : Actuating angle from right of switch axis referring to the lever position as shown in illustration



Note

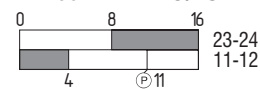
Actuation from the left should be avoided, since this reduces the mechanical life of the position switch.

Contacts/ Switch travel

1 NO	23	24	2 NC	11	12
1 NC	11	12	21	22	

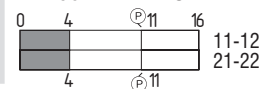
Slow action

EEx 95 WHLM 1Ö/1S



1 NO	23	24
1 NC	15	16

EEx 95 WHLM 2Ö



Slow action
overlapping contacts

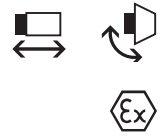
EEx 95 WHLM UE



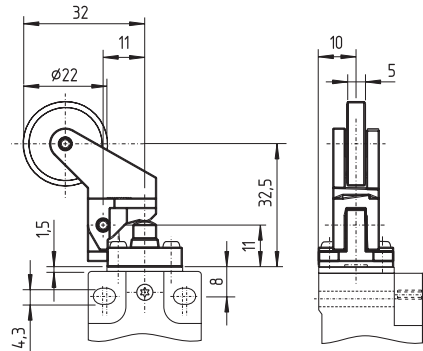
Ordering details

An EEx 95 range position switch with long offset metal roller lever WHLM, slow action with one NO and one NC contact and overlapping contacts: EEx 95 WHLM UE

1. Ex switchgear
1.3 Safety switches
1.3.3 Position switches with safety function
1.3.3 EEx 95 range



Thermoplastic roller lever 4K

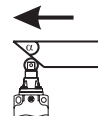


Features

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

Legend

α : Actuating angle from left of switch axis



Info

Version for equipment category 3D
 (dust-Ex zone 22) available
 Ordering suffix: -3D

Info

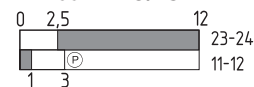
- Metal roller available on enquiry

Contacts/ Switch travel

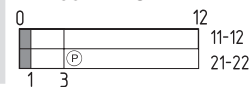
1 NO	23 — 24	2 NC	11 — 12
1 NC	11 — 12		21 — 22

Slow action

EEx 95 4K 1Ö/1S



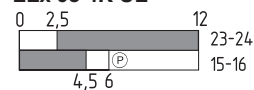
EEx 95 4K 2Ö



1 NO	23 — 24
1 NC	15 — 16

Slow action
overlapping contacts

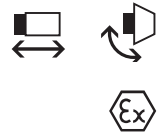
EEx 95 4K UE



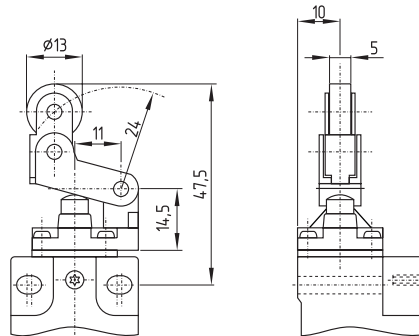
Ordering details

An EEx 95 range position switch with thermoplastic roller lever 4K, slow action with one NO and one NC contact and overlapping contacts: EEx 95 4K UE

1. Ex switchgear
 1.3 Safety switches
 1.3.3 Position switches with safety function
 1.3.3 EEx 95 range



Rocking offset roller lever with single direction of actuation WHKM

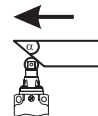


Features

- Only for positioning duties
- Plunger with watertight collar
- Wear-resistant thermoplastic roller
- Actuator heads can be repositioned in steps 4 x 90°
- Actuation only possible from one side
- Free movement of actuator from other side

Legend

α : Actuating angle from right of switch axis referring to lever position as shown in illustration



Info

- Metal roller available on enquiry

Info

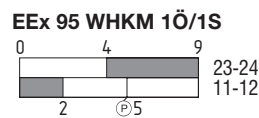
Version for equipment category 3D
 (dust-Ex zone 22) available
 Ordering suffix: -3D

Contacts/ Switch travel

1 NO 23-24
 1 NC 11-12

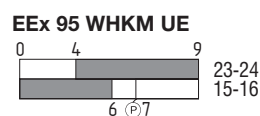
2 NC 11-12
 21-22

Slow action



1 NO 23-24
 1 NC 15-16

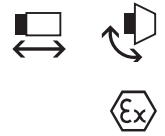
Slow action
 overlapping contacts



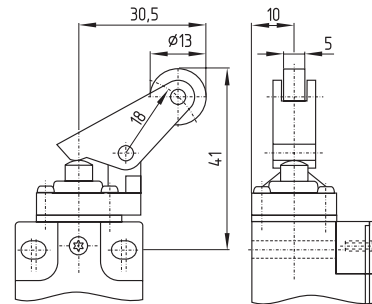
Ordering details

An EEx 95 range position switch with rocking offset roller lever WHKM, slow action with two NC contacts: EEx 95 WHKM 2Ö

1. Ex switchgear
1.3 Safety switches
1.3.3 Position switches with safety function
EEEx 95 range



“Parallel” offset roller lever WPH



Features

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

Legend

α : Actuating angle from below



Info

- Metal roller available on enquiry

Info

Version for equipment category 3D
 (dust-Ex zone 22) available
 Ordering suffix: -3D

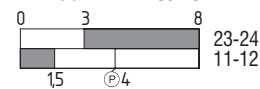
**Contacts/
Switch travel**

1 NO 23 → 24
1 NC 11 → 12

2 NC 11 → 12
 21 → 22

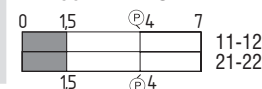
Slow action

EEEx 95 WPH 1Ö/1S



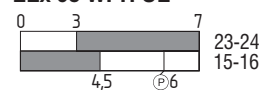
1 NO 23 → 24
1 NC 15 → 16

EEEx 95 WPH 2Ö



Slow action
 overlapping contacts

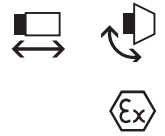
EEEx 95 WPH UE



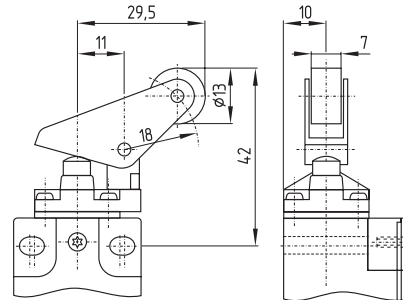
**Ordering
details**

An EEx 95 range position switch with parallel offset roller lever WPH, slow action with two NC contacts: EEx 95 WPH 2Ö

1. Ex switchgear
 1.3 Safety switches
 1.3.3 Position switches with safety function
 1.3.3 EEx 95 range



“Parallel” offset metal roller lever WPHM



Features

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

Legend

α : Actuating angle from below



Info

- Metal roller available on enquiry

Info

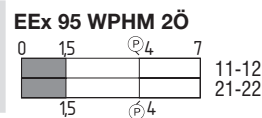
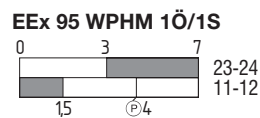
Version for equipment category 3D (dust-Ex zone 22) available
 Ordering suffix: -3D

Contacts/
Switch travel

1 NO 23-24
 1 NC 11-12

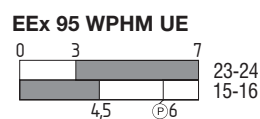
2 NC 11-12
 21-22

Slow action



1 NO 23-24
 1 NC 15-16

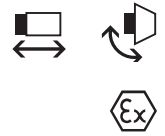
Slow action
overlapping contacts



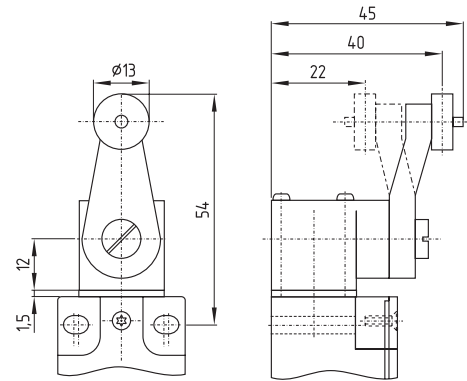
Ordering
details

An EEx 95 range position switch with parallel offset metal roller lever WPHM, slow action with two NC contacts:
 EEx 95 WPHM 2Ö

1. Ex switchgear
 1.3 Safety switches
 1.3.3 Position switches with safety function
 1.3.3 EEx 95 range



Roller lever D



Features

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

Info

- Metal roller available on enquiry

Info

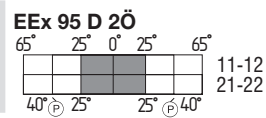
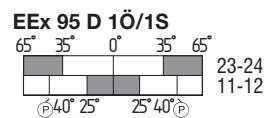
Version for equipment category 3D
 (dust-Ex zone 22) available
 Ordering suffix: -3D

Contacts/ Switch travel

1 NO 23 → 24
 1 NC 11 → 12

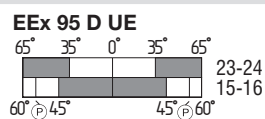
2 NC 11 → 12
 21 → 22

Slow action



1 NO 23 → 24
 1 NC 15 → 16

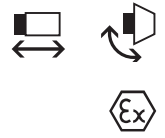
Slow action
 overlapping contacts



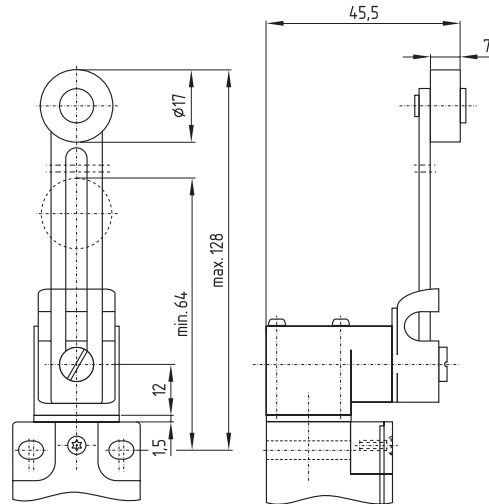
Ordering details

An EEx 95 range position switch with roller lever D, slow action
 with two NC contacts: EEx 95 D 2Ö

1. Ex switchgear
 1.3 Safety switches
 1.3.3 Position switches with safety function
 1.3.3.3 EEx 95 range



Adjustable-length roller lever DS



Features

- Lever angle adjustable in 10° steps
- **Only for positioning duties**
- Length of roller lever adjustable
- Wear-resistant thermoplastic roller
- Actuator heads can be repositioned in steps 4 x 90°

Info

Version for equipment category 3D
 (dust-Ex zone 22) available
 Ordering suffix: -3D

Info

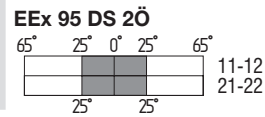
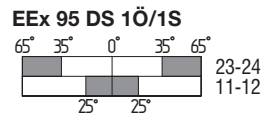
- Metal roller available on enquiry

Contacts/ Switch travel

1 NO 23-24
 1 NC 11-12

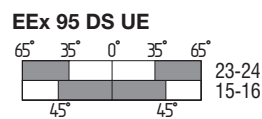
2 NC 11-12
 21-22

Slow action



1 NO 23-24
 1 NC 15-16

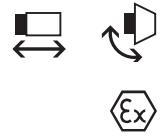
Slow action overlapping contacts



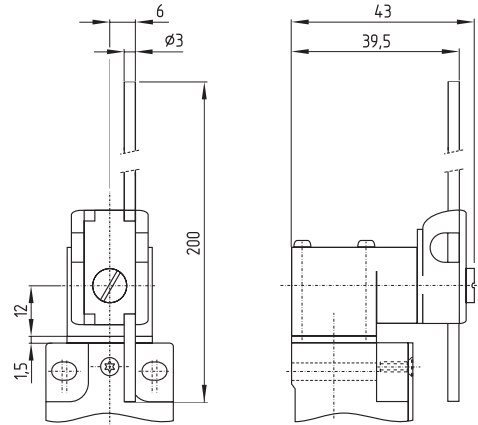
Ordering details

An EEx 95 range position switch with adjustable-length roller lever DS, slow action with one NO and one NC contact:
 EEx 95 DS 1Ö/1S

1. Ex switchgear
 1.3 Safety switches
 1.3.3 Position switches with safety function
 1.3.3 EEx 95 range



Rod lever DD



Features

- Lever angle adjustable in 10° steps
- **Only for positioning duties**
- Actuator heads can be repositioned in steps 4 x 90°

Info

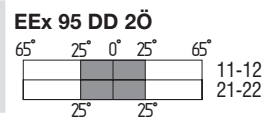
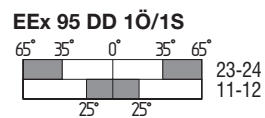
Version for equipment category 3D
 (dust-Ex zone 22) available
 Ordering suffix: -3D

Contacts/ Switch travel

1 NO 23 → 24
 1 NC 11 → 12

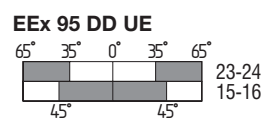
2 NC 11 → 12
 21 → 22

Slow action



1 NO 23 → 24
 1 NC 15 → 16

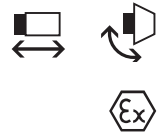
Slow action
 overlapping contacts



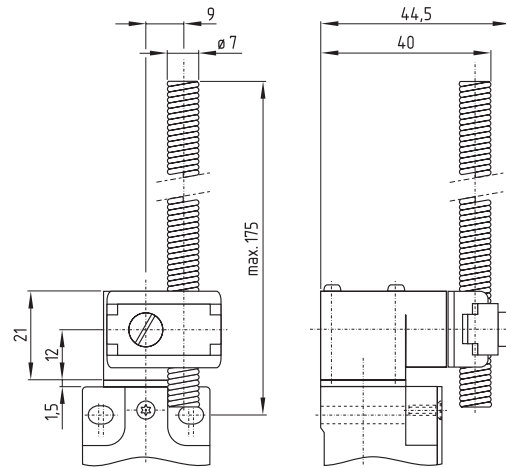
Ordering details

An EEx 95 range position switch with plunger with rod lever DD, slow action with one NO and one NC contact:
 EEx 95 DD 1Ö/1S

1. Ex switchgear
 1.3 Safety switches
 1.3.3 Position switches with safety function
 1.3.3 EEx 95 range



Spring-rod lever DF



Features

- Lever angle adjustable in 10° steps
- **Only for positioning duties**
- Actuator heads can be repositioned in steps 4 x 90°

Info

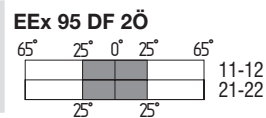
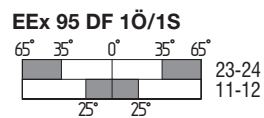
Version for equipment category 3D
 (dust-Ex zone 22) available
 Ordering suffix: -3D

Contacts/ Switch travel

1 NO 23-24
 1 NC 11-12

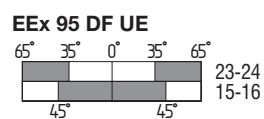
2 NC 11-12
 21-22

Slow action



1 NO 23-24
 1 NC 15-16

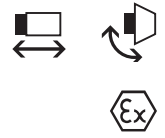
Slow action
 overlapping contacts



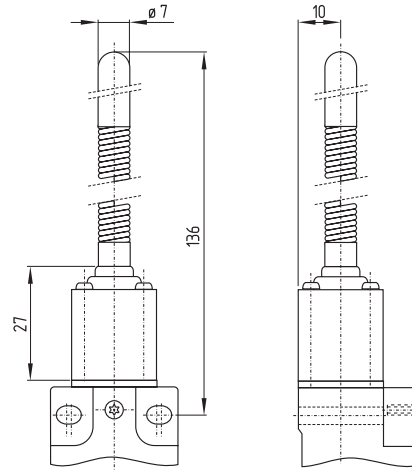
Ordering details

An EEx 95 range position switch with spring-rod lever DF,
 slow action with one NO and one NC contact:
 EEx 95 DF 1Ö/1S

1. Ex switchgear
1.3 Safety switches
1.3.3 Position switches with safety function
1.3.3 EEx 95 range



Spring rod TK



Features

- Only for positioning duties
- Wear-resistant thermoplastic tip
- Spring rod can be actuated from any direction

Info

Version for equipment category 3D
(dust-Ex zone 22) available
Ordering suffix: -3D

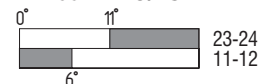
Contacts/ Switch travel

1 NO 23 — 24
1 NC 11 — 12

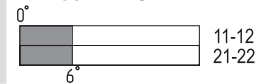
2 NC 11 — 12
 21 — 22

Slow action

EEx 95 TK 1Ö/1S

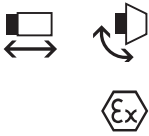


EEx 95 TK 2Ö

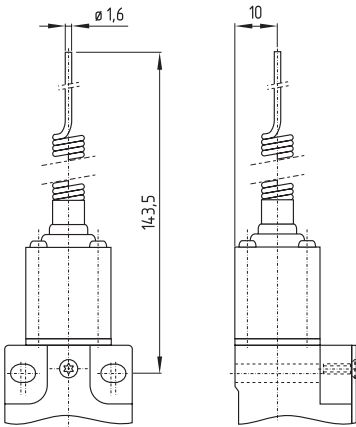


1.
1.3
1.3.3

Ex switchgear
Safety switches
Position switches with safety function
Ex 95 range



Long spring wire (Cat's whisker) TL



- Features
- Only for positioning duties
 - Spring rod can be actuated from any direction

Info

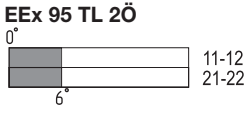
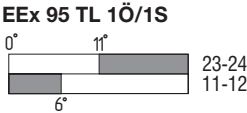
Version for equipment category 3D
(dust-Ex zone 22) available
Ordering suffix: -3D

Contacts/
Switch travel

1 NO 23-24
1 NC 11-12

2 NC 11-12
21-22

Slow action

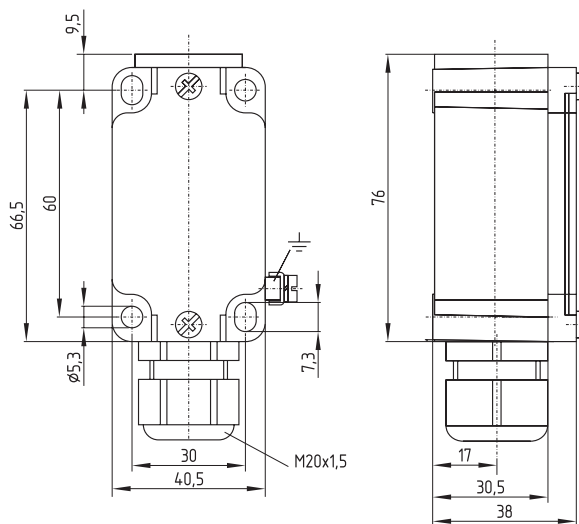


- 1.** Ex switchgear
- 1.3** Safety switches
- 1.3.3** Position switches with safety function
- 1.3.3** EEx 95 range



1.
1.3
1.3.4

Ex switchgear
Safety switches
Position switches with safety function
EEx 335 range



Features

- Metal enclosure
- II 2G EEx de IIC T6
II 2D IP65 T80°C
- To EN 50041
- Slow action available with 2 positive break NC contacts to EN 60947-5-1
- Slow action available with overlapping contacts
- Wiring compartment
- Wide range of alternative actuators
- Actuator heads can be repositioned in steps 4 x 90°
- Angle of roller lever adjustable in 10° steps
- Good resistance to oil and petroleum spirit

Info

Version for equipment category 3D
(dust-Ex zone 22) available
Ordering suffix: -3D

Info

- Metal rollers on enquiry

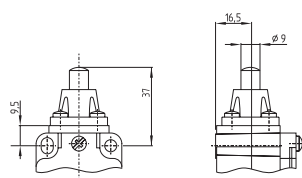
Approvals

EC Type Test Certificate: DMT 01 ATEX E 178

Actuators

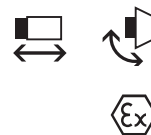
Plunger

Plunger S



1.
1.3
1.3.4

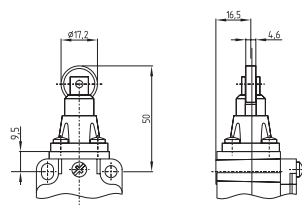
Ex switchgear
Safety switches
Position switches with safety function
Exx 335 range



Actuators

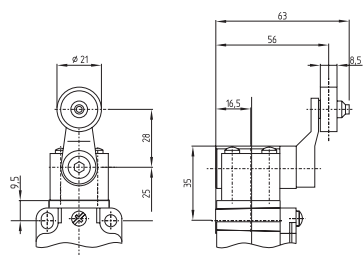
Roller
plunger

Roller plunger R

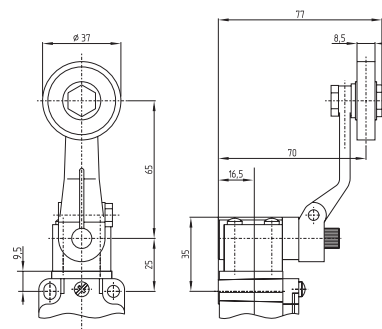


Roller lever

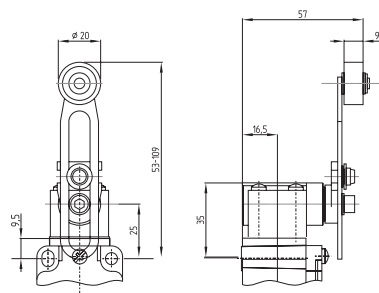
Roller lever 4VH



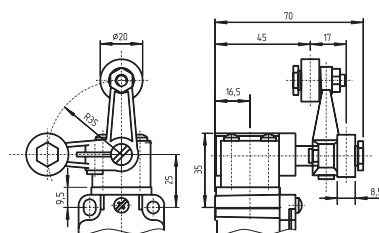
Roller lever 4V3H



Adjustable-length roller lever 4V7H

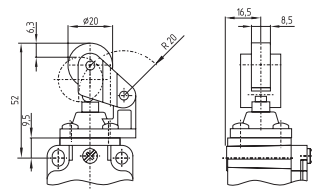


Forked roller lever with latching head 3V4D

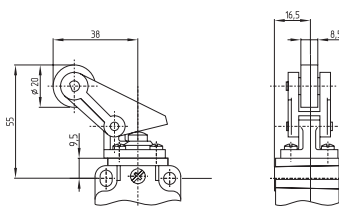


Offset roller
lever

Offset roller lever 1K



Offset angled roller lever 3K

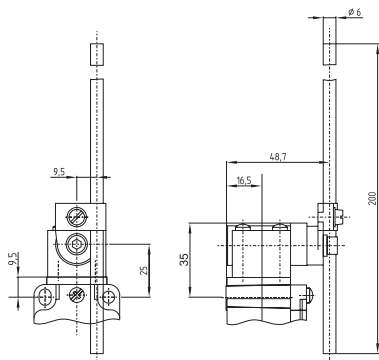


1. Ex switchgear
1.3 Safety switches
1.3.4 Position switches with safety function
Ex 335 range

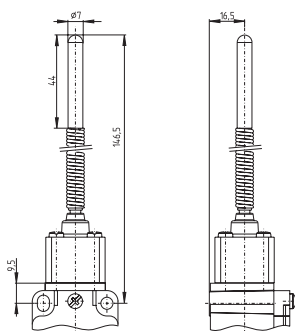


Actuators

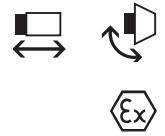
Rod lever Rod lever 4V10H



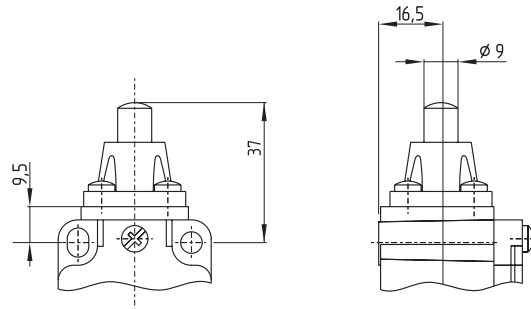
Spring rod Spring rod with plastic rod TK



1. Ex switchgear
1.3 Safety switches
1.3.4 Position switches with safety function
EEx 335 range



Plunger S



Features

- Actuator type B to EN 50041
- Actuating speed with actuating angle 0° to switch axis max. 0.5 m/s

Info

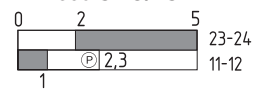
Version for equipment category 3D
 (dust-Ex zone 22) available
 Ordering suffix: -3D

Contacts/ Switch travel

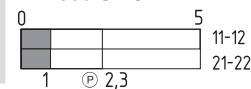
1 NO	23 → 24	2 NC	11 → 12
1 NC	11 → 12		21 → 22

Slow action

EEx 335 S 1Ö/1S



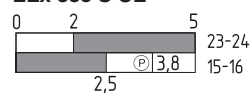
EEx 335 S 2Ö



1 NO	23 → 24
1 NC	15 → 16

Slow action
overlapping contacts

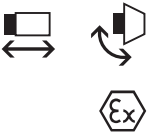
EEx 335 S UE



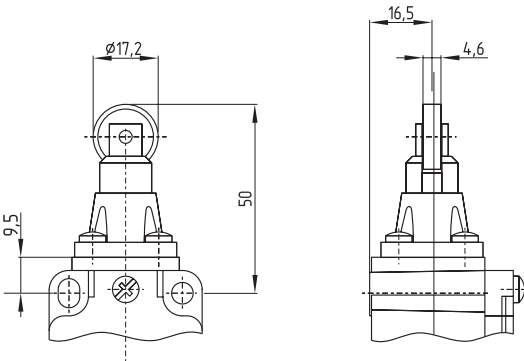
Ordering details

An EEx 335 range position switch with plunger S, slow action
 with one NO and one NC contact:
 EEx 335 S 1Ö/1S

1. Ex switchgear
1.3 Safety switches
1.3.4 Position switches with safety function
1.3.4 EEx 335 range



Roller plunger R

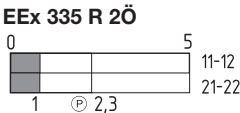
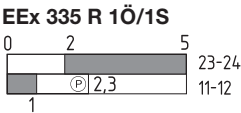


- Features**
- Actuator type C to EN 50041
 - Actuating speed with actuating angle 30° to switch axis max. 0.5 m/s

Info Version for equipment category 3D (dust-Ex zone 22) available
Ordering suffix: -3D

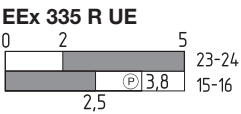
Contacts/ Switch travel	1 NO	23 → 24	2 NC	11 → 12
	1 NC	11 → 12		21 → 22

Slow action



1 NO	23 → 24
1 NC	15 → 16

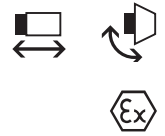
Slow action
overlapping contacts



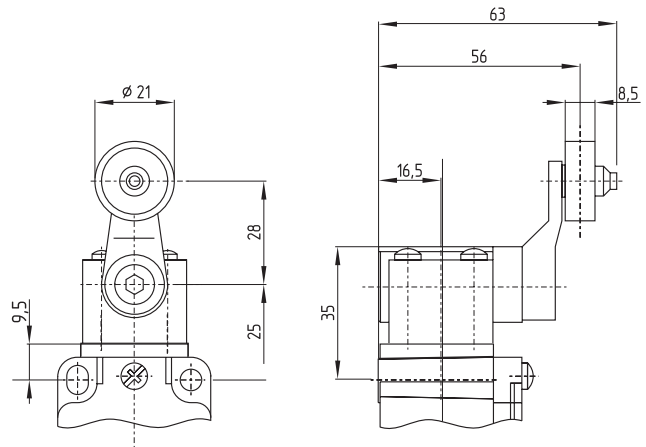
Ordering details An EEx 335 range position switch with roller plunger R, slow action with one NO and one NC contact:
EEx 335 R 1Ö/1S

1.
1.3
1.3.4

Ex switchgear
Safety switches
Position switches with safety function
EEx 335 range



Roller lever 4VH



Features

- Actuator type A to EN 50041
- Actuating speed with actuating angle 30° to switch axis max. 2.5 m/s

Info

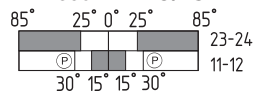
Version for equipment category 3D
(dust-Ex zone 22) available
Ordering suffix: -3D

**Contacts/
Switch travel**

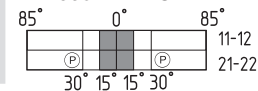
1 NO		23 → 24
1 NC		11 → 12
2 NC		11 → 12 21 → 22

Slow action

EEx 335 4VH 1Ö/1S



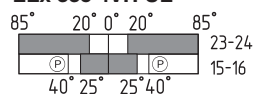
EEx 335 4VH 2Ö



1 NO		23 → 24
1 NC		15 → 16

Slow action
overlapping contacts

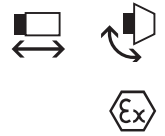
EEx 335 4VH UE



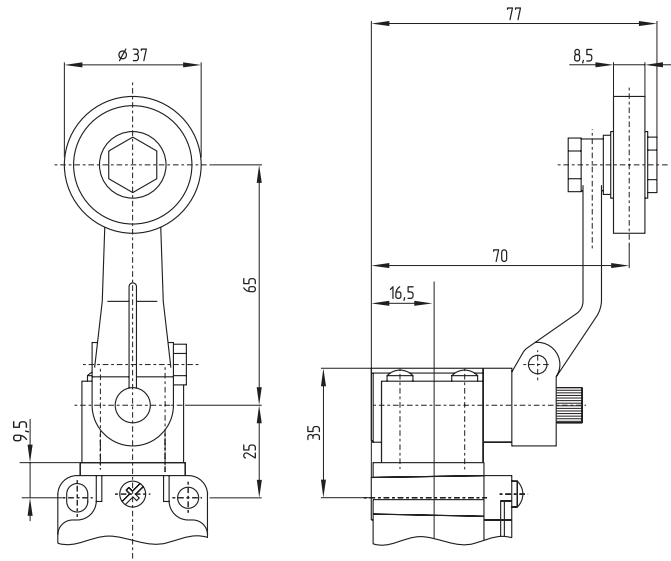
**Ordering
details**

An EEx 335 range position switch with roller lever 4VH, slow action with one NO and one NC contact:
EEx 335 4VH 1Ö/1S

1. Ex switchgear
1.3 Safety switches
1.3.4 Position switches with safety function
EEEx 335 range



Roller lever 4V3H



Features

- Actuator type A to EN 50041
- Actuating speed with actuating angle 30° to switch axis max. 2.5 m/s

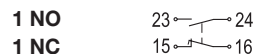
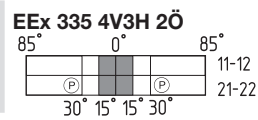
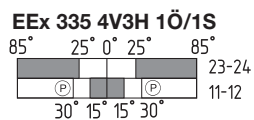
Info

Version for equipment category 3D
(dust-Ex zone 22) available
Ordering suffix: -3D

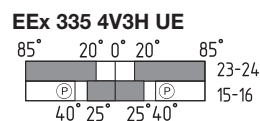
**Contacts/
Switch travel**



Slow action



Slow action
overlapping contacts

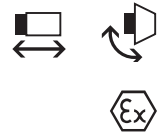


**Ordering
details**

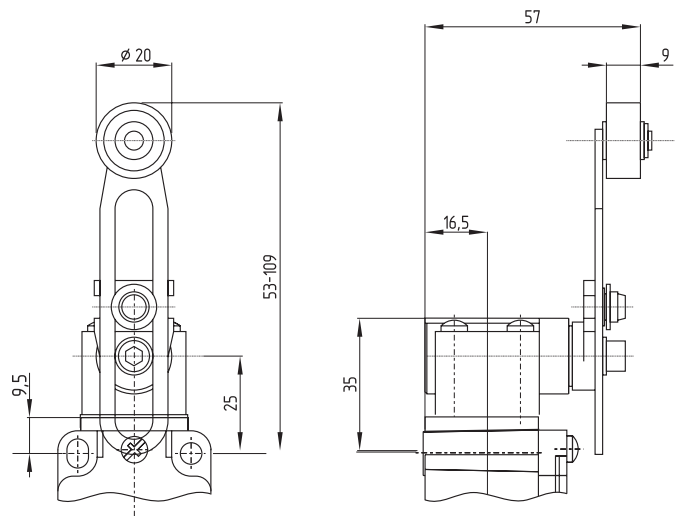
An EEEx 335 range position switch with roller lever 4V3H,
slow action with two NC contacts:
EEEx 335 4V3H 2Ö

1.
1.3
1.3.4

Ex switchgear
Safety switches
Position switches with safety function
Ex 335 range



Adjustable-length roller lever 4V7H



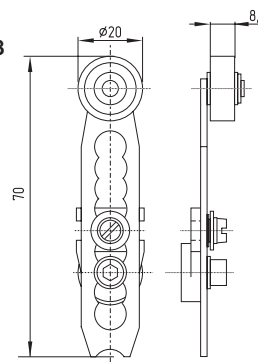
Features

- Applicable for positioning duties
- **For safety duties ☹, positive break, ordering suffix -2138**
- Actuating speed with actuating angle 30° to switch axis max. 2.5 m/s

Info

Version for equipment category 3D (dust-Ex zone 22) available
Ordering suffix: -3D

Ordering suffix -2138



Note

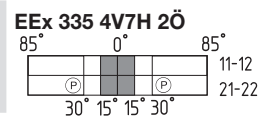
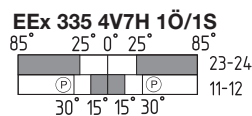
Positive break angle ☹ only valid with ordering suffix -2138

Contacts/ Switch travel

1 NO 23 → 24
1 NC 11 → 12

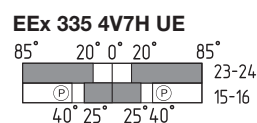
2 NC 11 → 12
21 → 22

Slow action



1 NO 23 → 24
1 NC 15 → 16

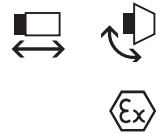
Slow action
overlapping contacts



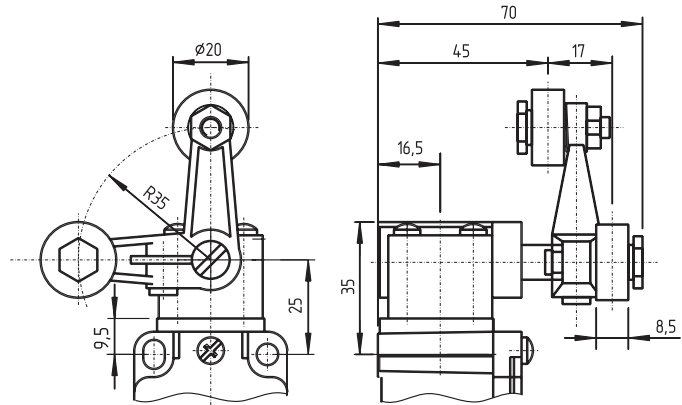
Ordering details

An EEEx 335 range position switch with adjustable-length roller lever 4V7H, slow action with two NC contacts:
EEEx 335 4V7H 2Ö

1. Ex switchgear
 1.3 Safety switches
 1.3.4 Position switches with safety function
 1.3.4 EEx 335 range



Forked roller lever 3V4D



Features

- Only for positioning duties
- Actuating speed with actuating angle 30° to switch axis max. 2.5 m/s

Info

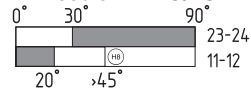
Version for equipment category 3D
 (dust-Ex zone 22) available
 Ordering suffix: -3D

Contacts/ Switch travel

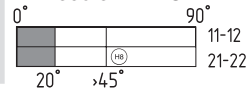
1 NO	23 → 24	2 NC	11 → 12
1 NC	11 → 12		21 → 22

Slow action

EEx 335 3V4D 1Ö/1S



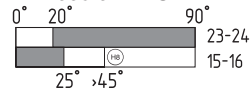
EEx 335 3V4D 2Ö



1 NO	23 → 24
1 NC	15 → 16

Slow action
overlapping contacts

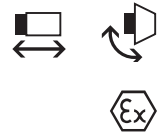
EEx 335 3V4D UE



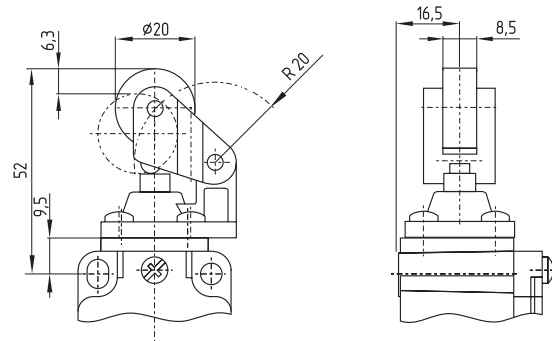
Ordering details

An EEx 335 range position switch with forked roller lever 3V4D, slow action with one NO and one NC contact:
 EEx 335 3V4D 1Ö/1S

1. Ex switchgear
1.3 Safety switches
1.3.4 Position switches with safety function
EEEx 335 range



Offset roller lever 1K



Features

- Actuating speed with actuating angle 30° to switch axis max. 0.5 m/s

Info

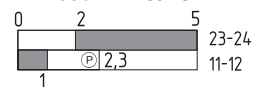
Version for equipment category 3D
 (dust-Ex zone 22) available
 Ordering suffix: -3D

Contacts/ Switch travel

1 NO	23 → 24	2 NC	11 → 12
1 NC	11 → 12		21 → 22

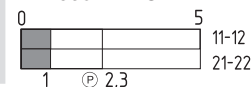
Slow action

EEEx 335 1K 1Ö/1S



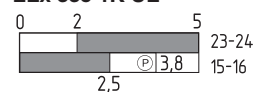
1 NO	23 → 24
1 NC	15 → 16

EEEx 335 1K 2Ö



Slow action
overlapping contacts

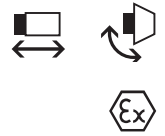
EEEx 335 1K UE



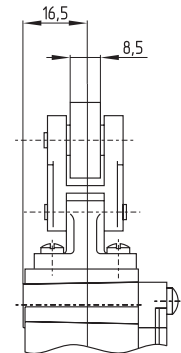
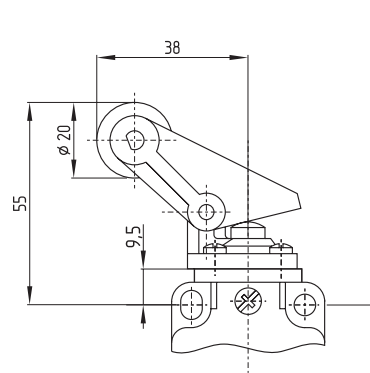
Ordering details

An EEEx 335 range position switch with offset roller lever 1K,
 slow action with two NC contacts:
 EEEx 335 1K 2Ö

1. Ex switchgear
 1.3 Safety switches
 1.3.4 Position switches with safety function
 1.3.4 EEx 335 range



Offset angled roller lever 3K



Features

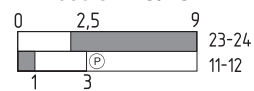
- Actuating speed with actuating angle 30° to switch axis max. 0.5 m/s
- Actuation parallel to axis of switch from below

Contacts/ Switch travel

1 NO	23 → 24	2 NC	11 → 12
1 NC	11 → 12		21 → 22

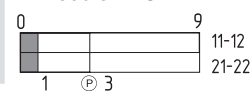
Slow action

EEx 335 3K 1Ö/1S



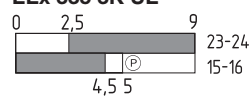
1 NO	23 → 24
1 NC	15 → 16

EEx 335 3K 2Ö



Slow action
overlapping contacts

EEx 335 3K UE

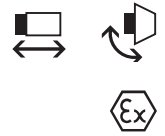


Ordering details

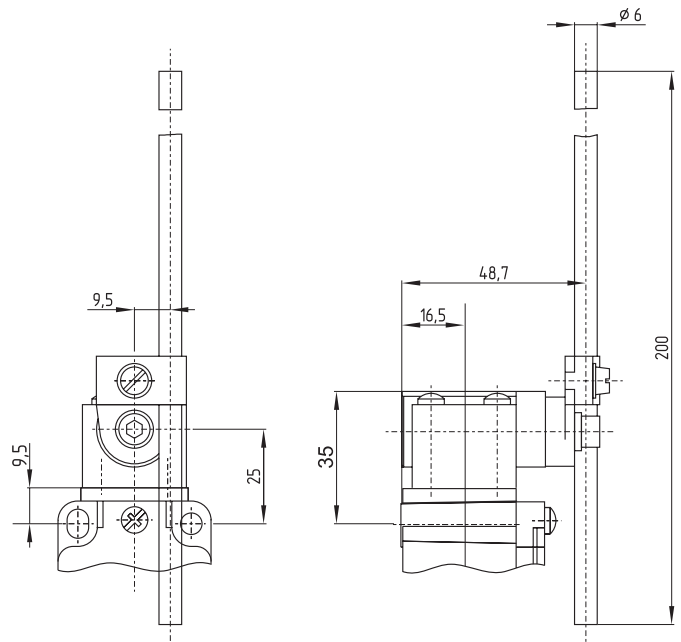
An EEx 335 range position switch with offset angled roller lever 3K , slow action with one NO and one NC contact and overlapping contacts:
 EEx 335 3K UE

1.
1.3
1.3.4

Ex switchgear
Safety switches
Position switches with safety function
Ex 335 range



Rod lever 4V10H



Features

- Actuator type D to EN 50041
- **Only for positioning duties**
- Plastic rod
- Actuating speed with actuating angle 30° to switch axis max. 2.5 m/s

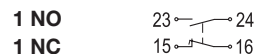
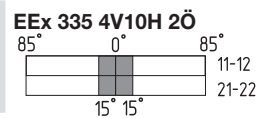
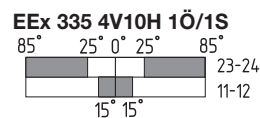
Info

Version for equipment category 3D
(dust-Ex zone 22) available
Ordering suffix: -3D

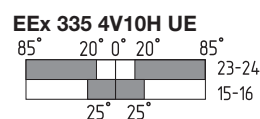
Contacts/
Switch travel



Slow action



Slow action
overlapping contacts

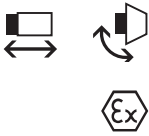


Ordering
details

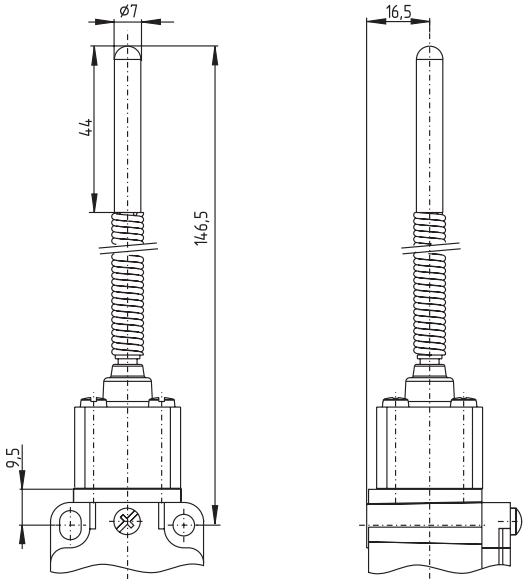
An EEx 335 range position switch with rod lever 4V10H,
slow action with two NC contacts:
EEx 335 4V10H 2Ö

1.
1.3
1.3.4

Ex switchgear
Safety switches
Position switches with safety function
ExEx 335 range



Spring rod TK



- Features**
- Only for positioning duties
 - Wear-resistant thermoplastic tip
 - Spring rod can be actuated from any direction

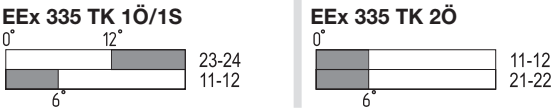
Info

Version for equipment category 3D
(dust-Ex zone 22) available
Ordering suffix: -3D

**Contacts/
Switch travel**

1 NO		2 NC	
1 NC			

Slow action



Ordering details

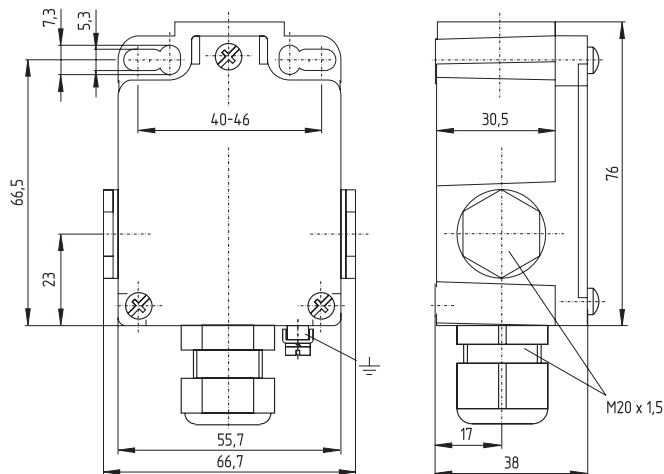
An EEx 335 range position switch with spring rod TK, slow action with two NC contacts:
EEx 335 TK 2Ö

- 1.** Ex switchgear
- 1.3** Safety switches
- 1.3.4** Position switches with safety function
- 1.3.4** EEx 335 range



1.
1.3
1.3.5

Ex switchgear
Safety switches
Position switches with safety function
EEx 355 range



Features

- Metal enclosure
- II 2G EEx de IIC T6
II 2D IP67 T80°C
- Slow action available with 2 positive break NC contacts to EN 60947-5-1
- Fixings to EN 50041
- Slow action available with 2 positive break NC contacts
- Slow action available with overlapping contacts
- Wiring compartment
- Wide range of alternative actuators
- Actuator heads can be repositioned in steps 4 x 90°
- Angle of roller lever adjustable in 10° steps
- 2 cable entries from side
- Good resistance to oil and petroleum spirit

Info

Version for equipment category 3D
 (dust-Ex zone 22) available
 Ordering suffix: -3D

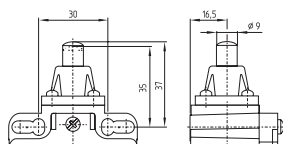
Approvals

EC Type Test Certificate: BVS 04 ATEX E 126

Actuators

Plunger

Plunger S



1.
1.3
1.3.5

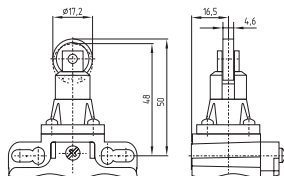
Ex switchgear
Safety switches
Position switches with safety function
EEx 355 range



Actuators

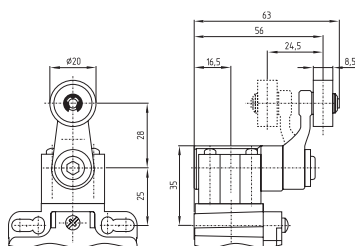
Roller plunger

Roller plunger R

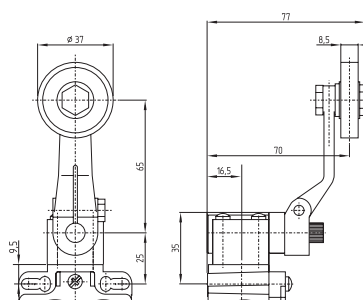


Roller lever

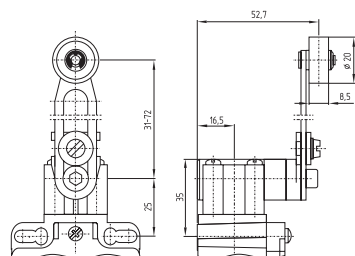
Roller lever 4VH



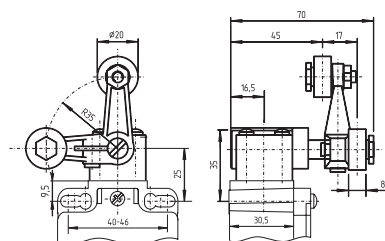
Long roller lever 4V3H



Adjustable-length roller lever 4V7H

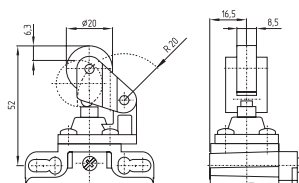


Forked roller lever with latching head 3V4D

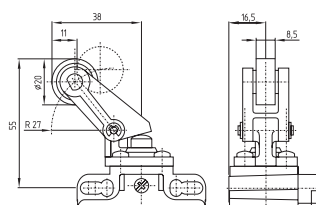


Offset roller lever

Offset roller lever 1K



Offset angled roller lever 3K

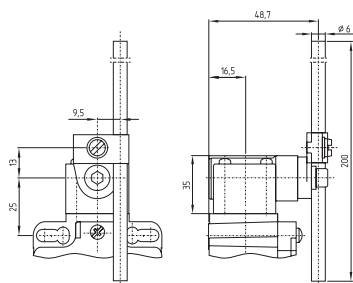


1. Ex switchgear
1.3 Safety switches
1.3.5 Position switches with safety function
1.3.5 EEx 355 range

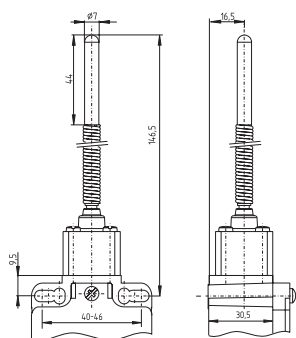


Actuators

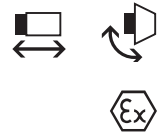
Rod lever Rod lever 4V10H



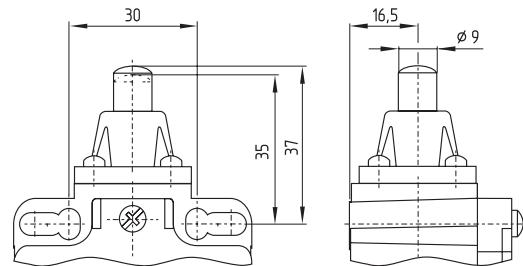
Spring rod Spring rod with plastic rod TK



1. Ex switchgear
1.3 Safety switches
1.3.5 Position switches with safety function
EEx 355 range



Plunger S



Features

- Actuator type B to EN 50041
- Actuating speed with actuating angle 0° to switch axis max. 0.5 m/s

Info

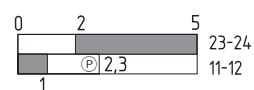
Version for equipment category 3D
 (dust-Ex zone 22) available
 Ordering suffix: -3D

Contacts/ Switch travel

1 NO	23 → 24	2 NC	11 → 12
1 NC	11 → 12		21 → 22

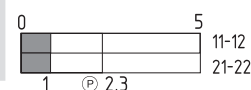
Slow action

EEx 355 S 1Ö/1S



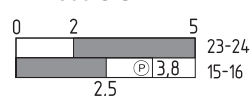
1 NO	23 → 24
1 NC	15 → 16

EEx 355 S 2Ö



Slow action
 overlapping contacts

EEx 355 S UE

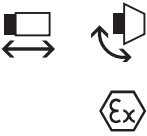


Ordering details

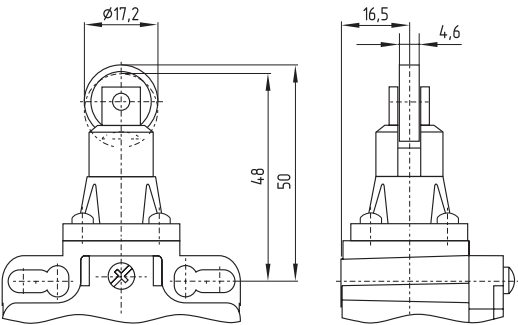
An EEx 355 range position switch with plunger S, slow action
 with one NO and one NC contact:
 EEx 355 S 1Ö/1S

1.
1.3
1.3.5

Ex switchgear
Safety switches
Position switches with safety function
Ex 355 range



Roller plunger R



- Features**
- Actuator type C to EN 50041
 - Actuating speed with actuating angle 30° to switch axis max. 0.5 m/s

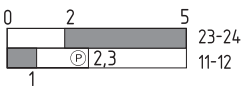
Info

Version for equipment category 3D (dust-Ex zone 22) available
Ordering suffix: -3D

Contacts/ Switch travel	1 NO	23→24	2 NC	11→12
	1 NC	11→12		21→22

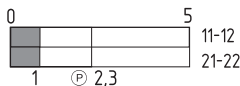
Slow action

EEx 355 R 1Ö/1S



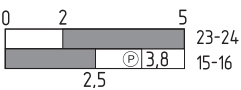
1 NO	23→24
1 NC	15→16

EEx 355 R 2Ö



Slow action
overlapping contacts

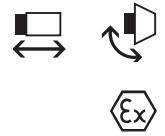
EEx 355 R UE



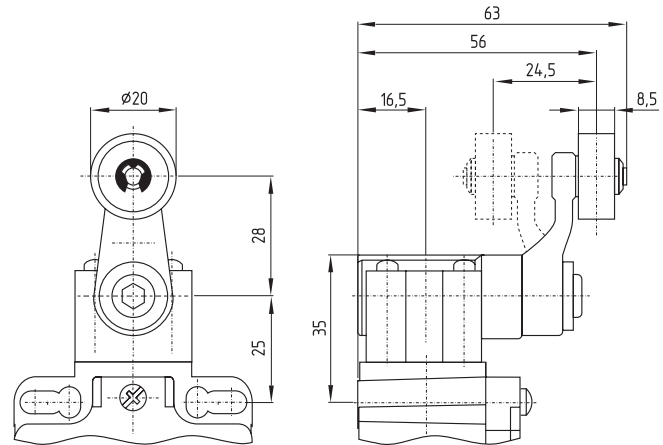
Ordering details

An EEx 355 range position switch with roller plunger R, slow action with one NO and one NC contact:
EEx 355 R 1Ö/1S

1. Ex switchgear
1.3 Safety switches
1.3.5 Position switches with safety function
EEEx 355 range



Roller lever 4VH



Features

- Actuator type A to EN 50041
- Actuating speed with actuating angle 30° to switch axis max. 2.5 m/s

Info

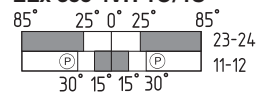
Version for equipment category 3D
 (dust-Ex zone 22) available
 Ordering suffix: -3D

Contacts/ Switch travel

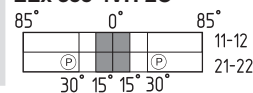
1 NO	23 → 24	2 NC	11 → 12
1 NC	11 → 12		21 → 22

Slow action

EEEx 355 4VH 1Ö/1S



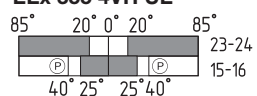
EEEx 355 4VH 2Ö



1 NO	23 → 24
1 NC	15 → 16

Slow action
overlapping contacts

EEEx 355 4VH UE

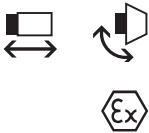


Ordering details

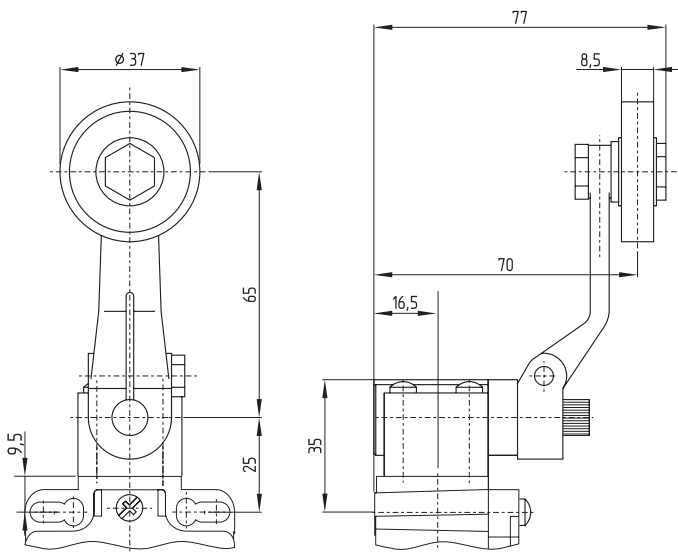
An EEx 355 range position switch with roller lever 4VH, slow action with one NO and one NC contact:
 EEx 355 4VH 1Ö/1S

1.
1.3
1.3.5

Ex switchgear
Safety switches
Position switches with safety function
EEx 355 range



Roller lever 4V3H



Features

- Actuator type A to EN 50041
- Actuating speed with actuating angle 30° to switch axis max. 2.5 m/s

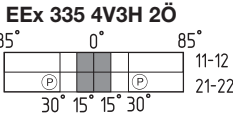
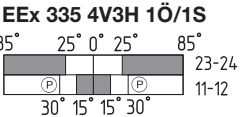
Info

Version for equipment category 3D
(dust-Ex zone 22) available
Ordering suffix: -3D

Contacts/
Switch travel

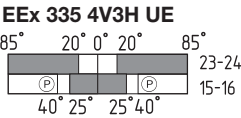
1 NO	23	24	2 NC	11	12
1 NC	11	12		21	22

Slow action



1 NO	23	24
1 NC	15	16

Slow action
overlapping contacts

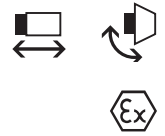


Ordering
details

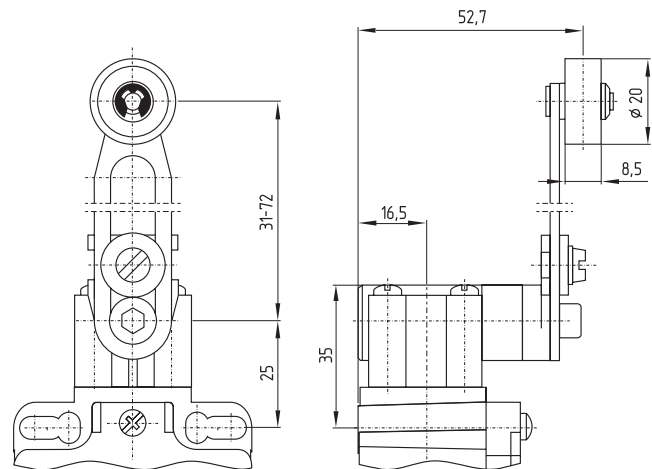
An EEx 335 range position switch with roller lever 4V3H,
slow action with two NC contacts:
EEx 335 4V3H 2Ö

1.
1.3
1.3.5

Ex switchgear
Safety switches
Position switches with safety function
Ex 355 range



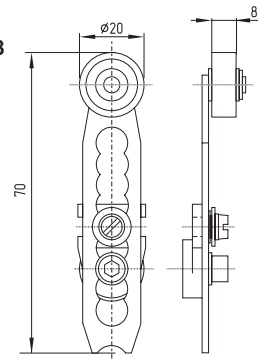
Adjustable-length roller lever 4V7H



Features

- Applicable for positioning duties
- **For safety duties ☹, positive break, ordering suffix -2138**
- Actuating speed with actuating angle 30° to switch axis max. 2.5 m/s

Ordering
suffix -2138



Note

Positive break angle ☹ only valid with ordering suffix -2138

Info

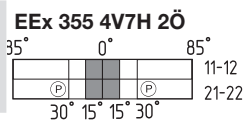
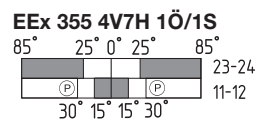
Version for equipment category 3D
(dust-Ex zone 22) available
Ordering suffix: -3D

Contacts/
Switch travel

1 NO 23 → 24
1 NC 11 → 12

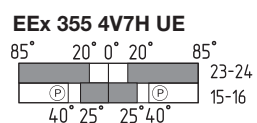
2 NC 11 → 12
21 → 22

Slow action



1 NO 23 → 24
1 NC 15 → 16

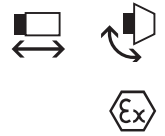
Slow action
overlapping contacts



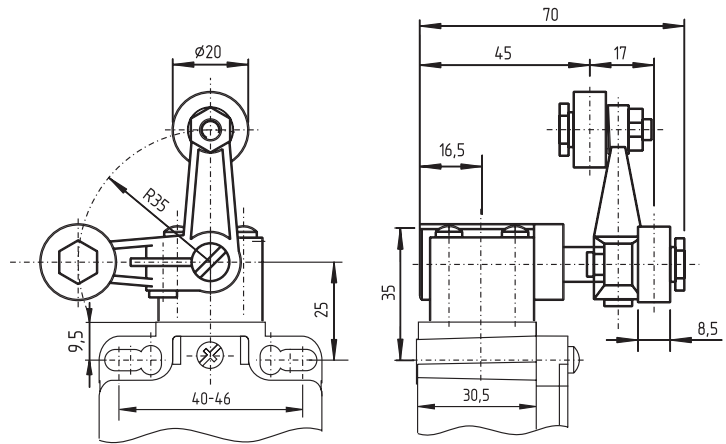
Ordering
details

An EEx 355 range position switch with adjustable-length roller lever 4V7H, slow action with two NC contacts:
EEx 355 4V7H 2Ö

1. Ex switchgear
 1.3 Safety switches
 1.3.5 Position switches with safety function
 1.3.5 EEx 355 range



Forked roller lever 3V4D



Features

- Only for positioning duties
- Actuating speed with actuating angle 30° to switch axis max. 2.5 m/s

Info

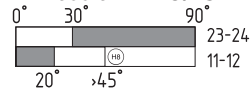
Version for equipment category 3D
 (dust-Ex zone 22) available
 Ordering suffix: -3D

Contacts/ Switch travel

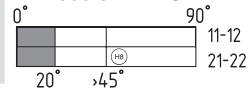
1 NO	23-24	2 NC	11-12
1 NC	11-12		21-22

Slow action

EEx 355 3V4D 1Ö/1S



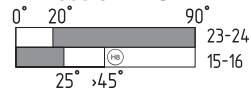
EEx 355 3V4D 2Ö



1 NO	23-24
1 NC	15-16

Slow action
overlapping contacts

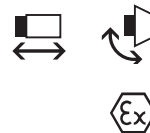
EEx 355 3V4D UE



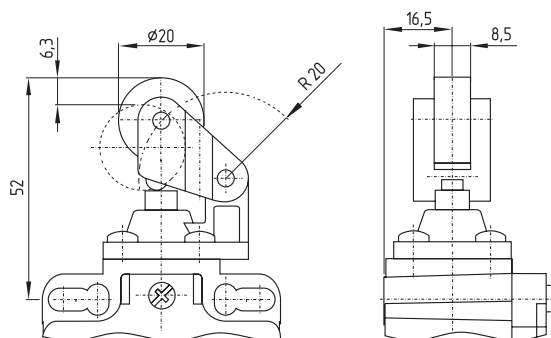
Ordering details

An EEx 355 range position switch with forked roller lever 3V4D, slow action with one NO and one NC contact:
 EEx 355 3V4D 1Ö/1S

1. Ex switchgear
1.3 Safety switches
1.3.5 Position switches with safety function
EEEx 355 range



Offset roller lever 1K



Features

- Actuating speed with actuating angle 30° to switch axis max. 0.5 m/s

Info

Version for equipment category 3D
 (dust-Ex zone 22) available
 Ordering suffix: -3D

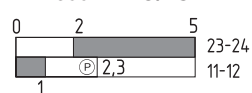
Contacts/ Switch travel

1 NO 23 → 24
1 NC 11 → 12

2 NC 11 → 12
 21 → 22

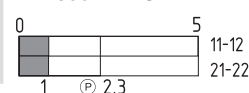
Slow action

EEEx 355 1K 1Ö/1S



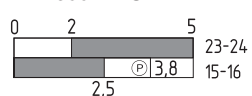
1 NO 23 → 24
1 NC 15 → 16

EEEx 355 1K 2Ö



Slow action
 overlapping contacts

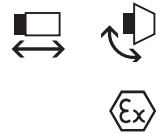
EEEx 355 1K UE



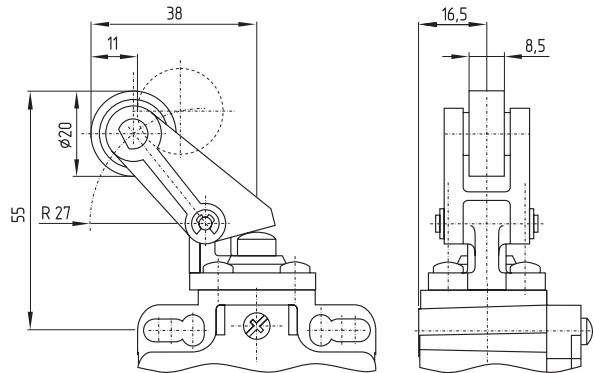
Ordering details

An EEx 355 range position switch with offset roller lever 1K,
 slow action with two NC contacts:
 EEx 355 1K 2Ö

1. Ex switchgear
1.3 Safety switches
1.3.5 Position switches with safety function
EEEx 355 range



Offset angled roller lever 3K



Features

- Actuating speed with actuating angle 30° to switch axis max. 0.5 m/s
- Actuation parallel to axis of switch from below

Info

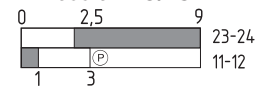
Version for equipment category 3D
(dust-Ex zone 22) available
Ordering suffix: -3D

Contacts/ Switch travel

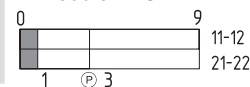
1 NO		23-24
1 NC		11-12
2 NC		11-12 21-22

Slow action

EEEx 355 3K 1Ö/1S



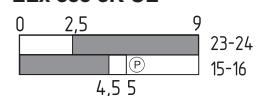
EEEx 355 3K 2Ö



1 NO		23-24
1 NC		15-16

Slow action
overlapping contacts

EEEx 355 3K UE

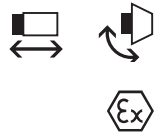


Ordering details

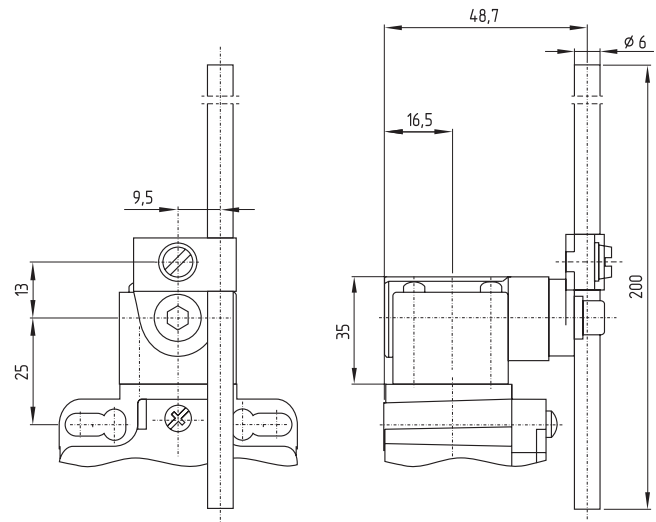
An EEx 355 range position switch with offset angled roller lever 3K , slow action with one NO and one NC contact and overlapping contacts:
EEEx 355 3K UE

1.
1.3
1.3.5

Ex switchgear
Safety switches
Position switches with safety function
EEx 355 range



Rod lever 4V10H



Features

- Actuator type D to EN 50041
- **Only for positioning duties**
- Plastic rod

Info

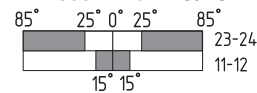
Version for equipment category 3D
(dust-Ex zone 22) available
Ordering suffix: -3D

Contacts/
Switch travel

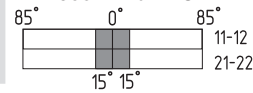
1 NO	23	24	2 NC	11	12
1 NC	11	12	21	22	

Slow action

EEx 355 4V10H 1Ö/1S



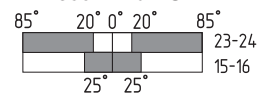
EEx 355 4V10H 2Ö



1 NO	23	24
1 NC	15	16

Slow action
overlapping contacts

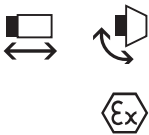
EEx 355 4V10H UE



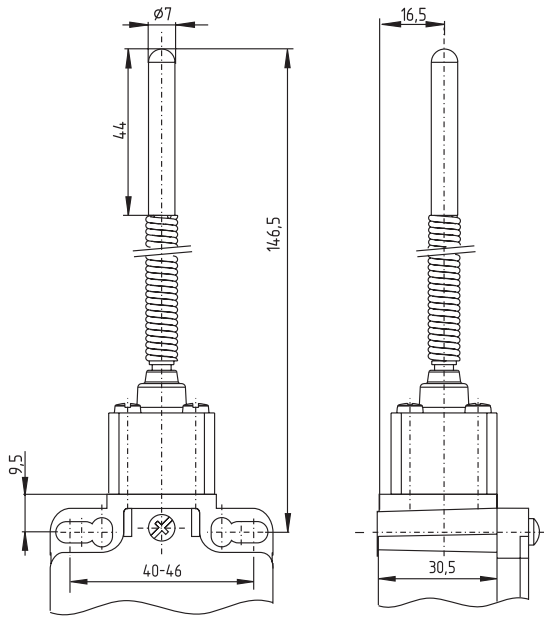
Ordering
details

An EEx 355 range position switch with rod lever 4V10H,
slow action with two NC contacts:
EEx 355 4V10H 2Ö

1. Ex switchgear
1.3 Safety switches
1.3.5 Position switches with safety function
1.3.5 EEx 355 range



Spring rod TK



- Features**
- Only for positioning duties
 - Wear-resistant thermoplastic tip
 - Spring rod can be actuated from any direction

Info

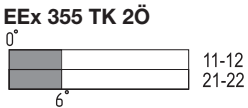
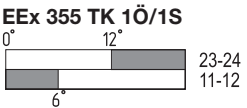
Version for equipment category 3D
(dust-Ex zone 22) available
Ordering suffix: -3D

**Contacts/
Switch travel**

1 NO 23-24
1 NC 11-12

2 NC 11-12
21-22

Slow action



Ordering details

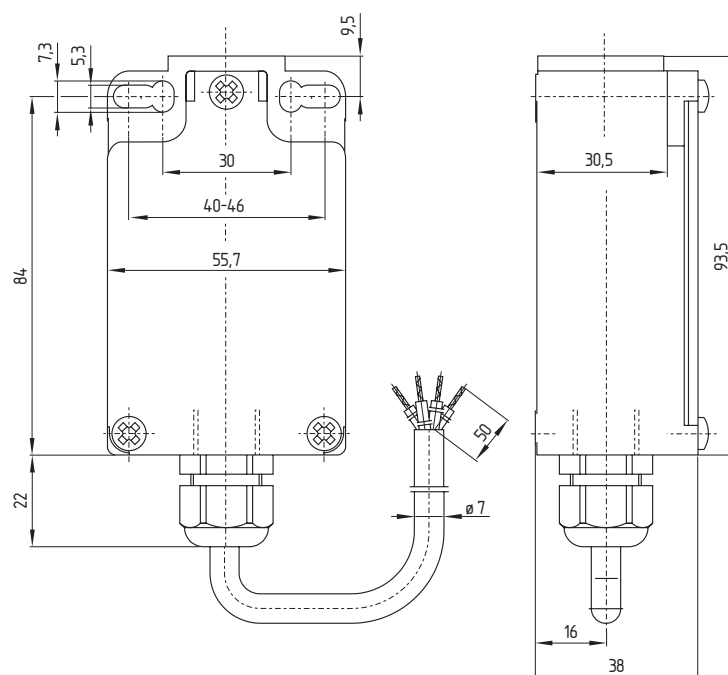
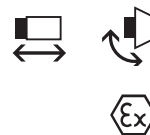
An EEx 355 range position switch with spring rod TK, slow action with two NC contacts:
EEx 355 TK 2Ö

1.	Ex switchgear
1.3	Safety switches
1.3.5	Position switches with safety function
1.3.5	EEx 355 range



1.
1.3
1.3.6

Ex switchgear
Safety switches
Position switches with safety function
EEx T 356 range



Features

- Thermoplastic enclosure with metal cover
- Double-insulated □
- Mounting dimensions and switching points to EN 50041
- Ⓜ II 2G EEx d IIC T6
II 2D IP65 T80°C
- Slow action with 1 NO and 1 positive break NC contact
- Actuator heads can be repositioned in steps 4 x 90°
- Angle of roller lever adjustable in 10° steps
- Good resistance to oil and petroleum spirit
- Pre-wired cable available in various lengths

Info

- Metal rollers on enquiry

Cable length

2 metres long ordering suffix -2m
5 metres long ordering suffix -5m
Please state cable length in orders

Ordering details

Position switch with safety function
series EEx T 356 with roller lever H with
slow action with one NO and one NC
contact and 5 m cable:
EEx T4VH 356 1Ö/1S-5m

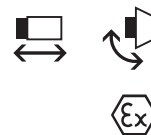
Approvals

EC Type Test Certificate: DMT 01 ATEX E 178*

*referring to the switch insert

1.
1.3
1.3.6

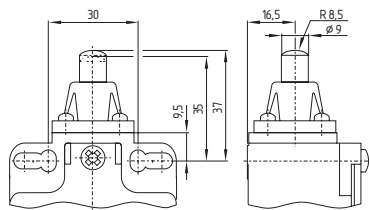
Ex switchgear
Safety switches
Position switches with safety function
EEx T 356 range



Actuators

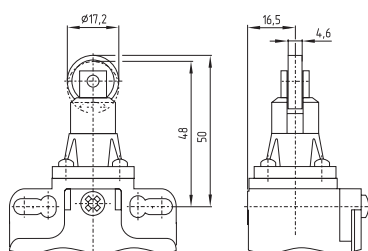
Plunger

Plunger S



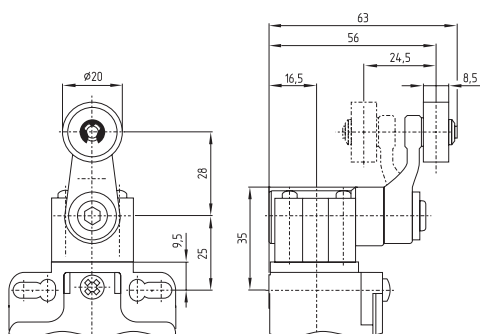
Roller plunger

Roller plunger R

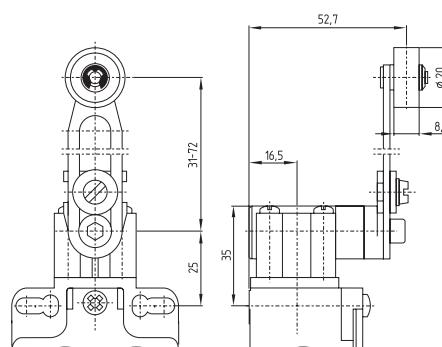


Roller lever

Roller lever 4VH

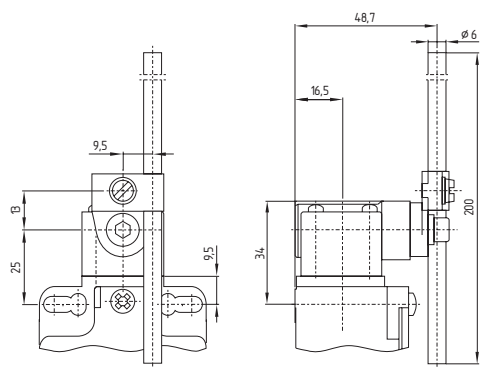


Adjustable-length roller lever 4V7H



Rod lever

Rod lever 4V10H



1.

1.3

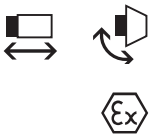
1.3.6

Ex switchgear

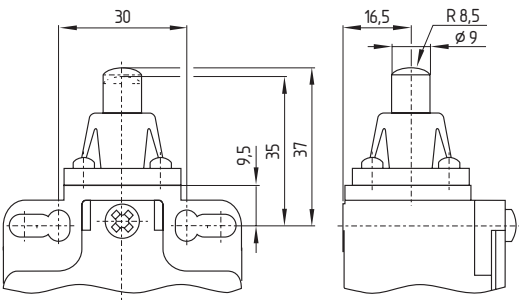
Safety switches

Position switches with safety function

EEx T 356 range



Plunger S

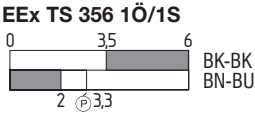


Features

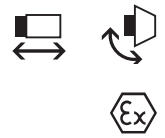
- Actuating force: Min. 15 N

Contacts/ Switch travel	1 NO	BK 23 — 24 BK
	1 NC	BN 11 — 12 BU

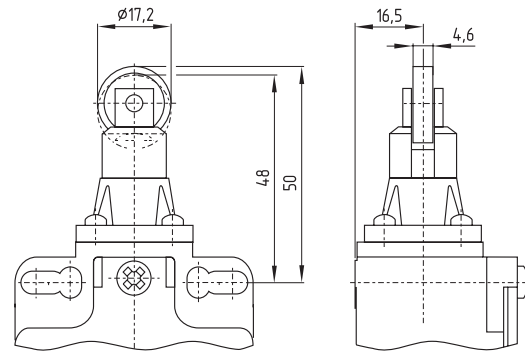
Slow action



1. Ex switchgear
1.3 Safety switches
1.3.6 Position switches with safety function
1.3.6 EEx T 356 range



Roller plunger R



Features

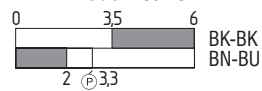
- Thermoplastic roller
- Actuating force: Min. 15 N

Contacts/ Switch travel

1 NO BK 23 — 24 BK
1 NC BN 11 — 12 BU

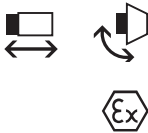
Slow action

EEx TR 356 1Ö/1S

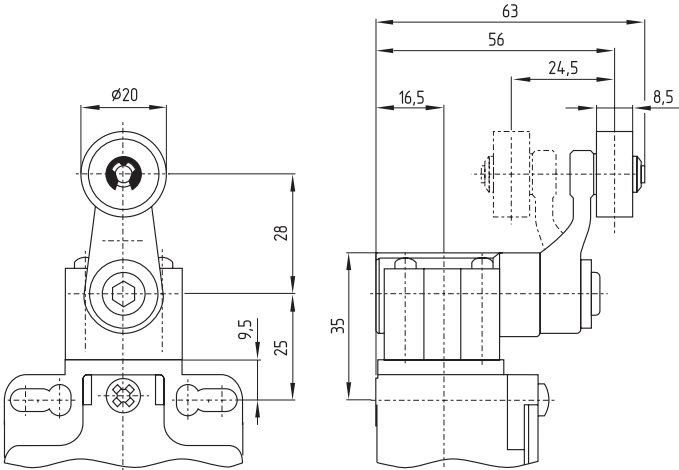


1.
1.3
1.3.6

Ex switchgear
Safety switches
Position switches with safety function
EEx T 356 range



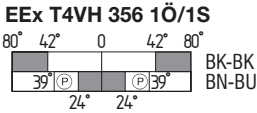
Roller lever H



- Features**
- Thermoplastic roller
 - Actuating torque: Min. 27.5 Ncm

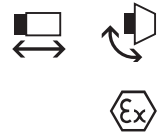
Contacts/ Switch travel	1 NO	BK 23 — 24 BK
	1 NC	BN 11 — 12 BU

Slow action

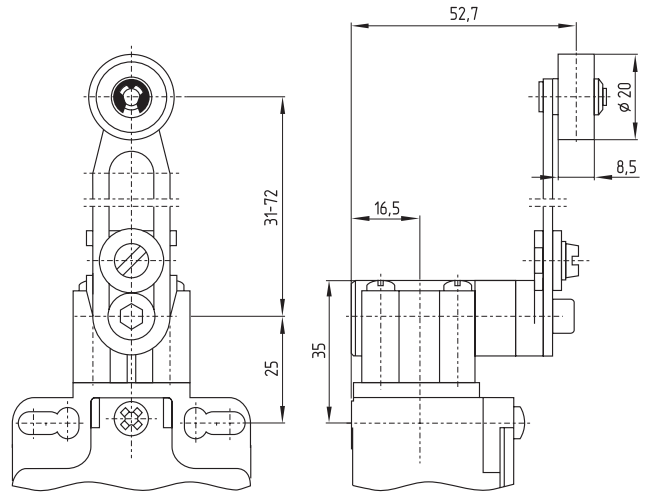


1.
1.3
1.3.6

Ex switchgear
Safety switches
Position switches with safety function
ExEx T 356 range



Adjustable-length roller lever 7H



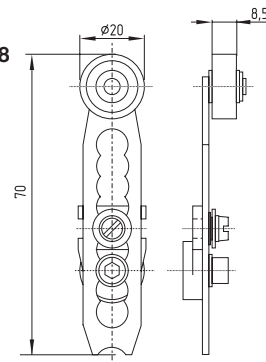
Features

- Thermoplastic roller
- Applicable for positioning duties
- **For safety duties $\ominus$, positive break, ordering suffix -2138**
- Actuating torque: Min. 27.5 Ncm

Note

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

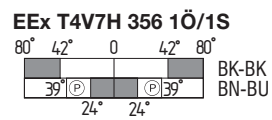
Ordering
suffix -2138



Contacts/
Switch travel

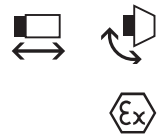
1 NO BK 23 24 BK
1 NC BN 11 12 BU

Slow action

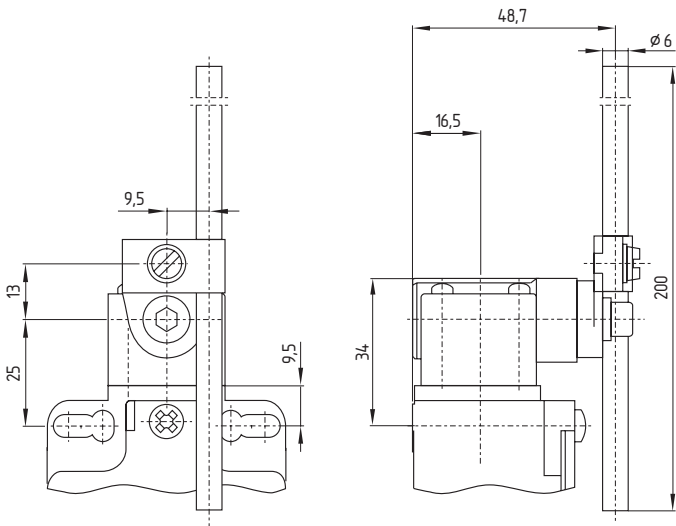


1.
1.3
1.3.6

Ex switchgear
Safety switches
Position switches with safety function
Exx T 356 range



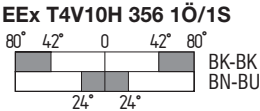
Rod lever 10H



- Features
- Thermoplastic rod
 - **Only for positioning duties**
 - Actuating torque: Min. 27.5 Ncm

Contacts/	1 NO	BK 23	24 BK
Switch travel	1 NC	BN 11	12 BU

Slow action

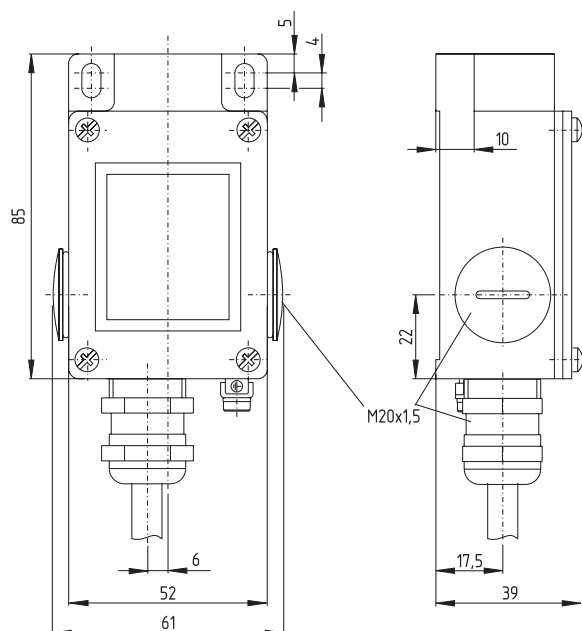


- 1.** Ex switchgear
- 1.3** Safety switches
- 1.3.6** Position switches with safety function
- 1.3.6** EEx T 356 range



1.
1.3
1.3.7

Ex switchgear
Safety switches
Position switches with safety function
EEx/EEExM 61 range



Features

- Metal enclosure
- II 2G EEx d IIC T6
II 2D IP65 T80°C
- Slow action ,
1 NC and 1 NO contact, double break
- Snap action,
change-over contact, single break,
only for positioning duties
- Available with overlapping contacts
- Pre-wired cable 3 m long
- IP 65
- Actuator head can be repositioned
in steps 4 x 90°
- Switch insert EEx 12/EEEx 13

Cable
length

- Other lengths on enquiry

Approvals

EC Type Test Certificate:
EEx 61: PTB 03 ATEX 1068 X*
EEExM 61: PTB 03 ATEX 1067 X*

*referring to the switch insert

1.
1.3
1.3.7

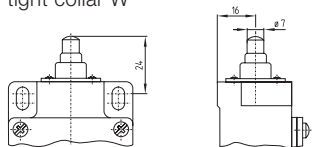
Ex switchgear
Safety switches
Position switches with safety function
EEx/EEExM 61 range



Actuators

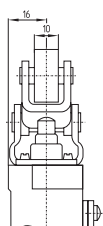
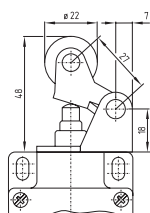
Plunger

Plunger with water-tight collar W

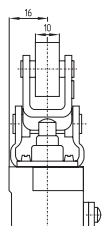
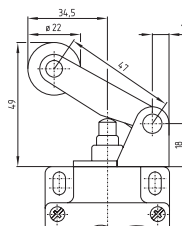


Offset roller lever

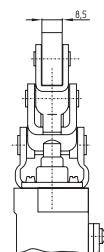
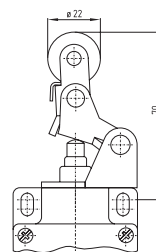
Offset roller lever with watertight collar WH



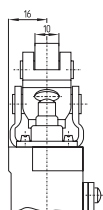
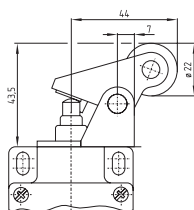
Long offset roller lever with watertight collar WHL



Rocking offset roller lever with watertight collar WHK

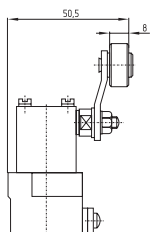
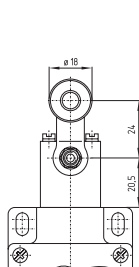


"Parallel" offset roller lever with watertight collar WPH

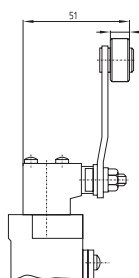
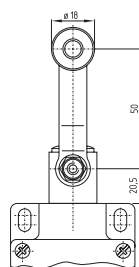


Roller lever

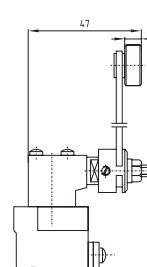
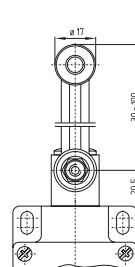
Roller lever D



Long roller lever DL



Adjustable-length roller lever DS



1.

1.3

1.3.7

Ex switchgear

Safety switches

Position switches with safety function

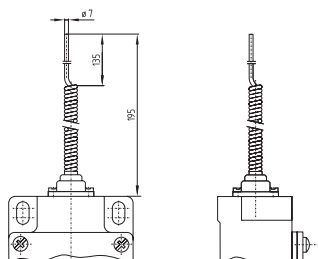
EEx/EEExM 61 range



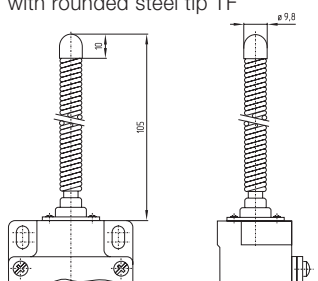
Actuators

Spring rod

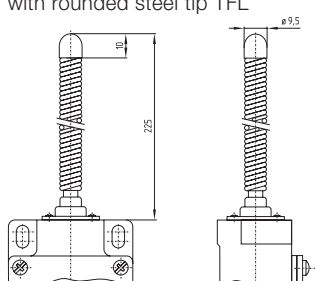
Long spring wire
(Cat's whisker) TL



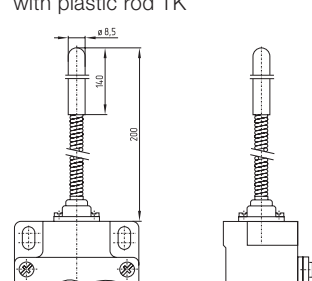
Spring rod
with rounded steel tip TF



Long spring rod
with rounded steel tip TFL



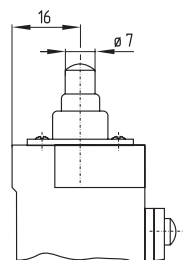
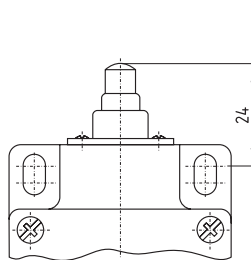
Spring rod
with plastic rod TK



1. Ex switchgear
1.3 Safety switches
1.3.7 Position switches with safety function
EEEx/EEExM 61 range



Plunger with watertight collar W



Features

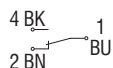
- Actuating speed with actuating angle 15° to switch axis 0.5 m/s
- Exact repeatability of switching point
- Collar to protect against the entry of dirt

Note

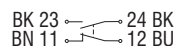
Actuation from the side of the plunger should be avoided, since this appreciably reduces the mechanical life of the position switch.

Contacts/ Switch travel

Change- over contact



1 NO
1 NC

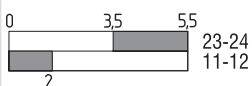


Snap action



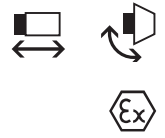
EEExM 61 W

Slow action

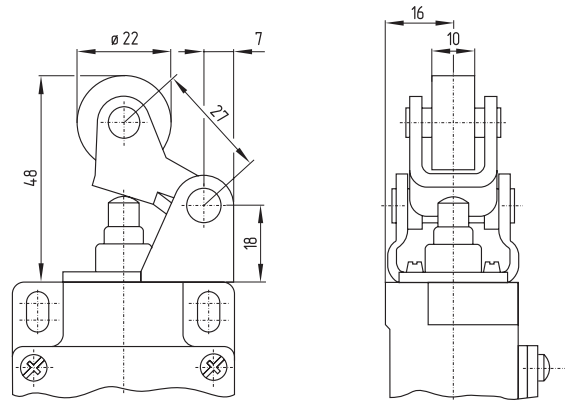


EEEx 61 W 1Ö/1S

1. Ex switchgear
1.3 Safety switches
1.3.7 Position switches with safety function
EEEx/EEExM 61 range



Offset roller lever with watertight collar WH

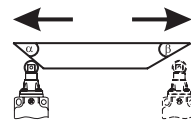


Features

- Actuating speed 0.5 m/s with an actuating angle of $\alpha = 40^\circ$ and $\beta = 25^\circ$
- Plastic roller
- Actuator head can be repositioned in steps $4 \times 90^\circ$
- Collar to protect against the entry of dirt

Legend

α : Actuating angle from right of switch axis
 β : Actuating angle from left of switch axis
 referring to lever position as shown in illustration



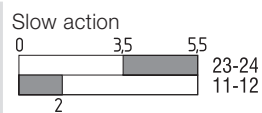
Note

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

Contacts/ Switch travel	Change- over contact	4 BK	1	1 NO	BK 23	24 BK
		2 BN	BU			
				1 NC	BN 11	12 BU



EEExM 61 WH

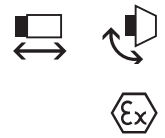


EEEx 61 WH 1Ö/1S

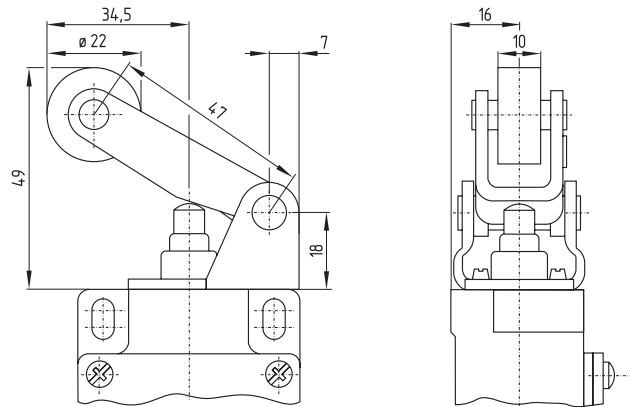
Info

- Metal roller available

1. Ex switchgear
1.3 Safety switches
1.3.7 Position switches with safety function
EEEx/EEExM 61 range



Long offset roller lever with watertight collar WHL

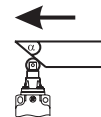


Features

- Actuating speed 0.5 m/s with an actuating angle of $\alpha = 40^\circ$
- Plastic roller
- Actuator head can be repositioned in steps $4 \times 90^\circ$
- Collar to protect against the entry of dirt

Legend

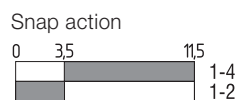
α : Actuating angle from right of switch axis referring to lever position as shown in illustration



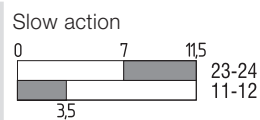
Note

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

Switch travel/ Contacts	Change-over contact		1 NO 1 NC	
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EEExM 61 WHL

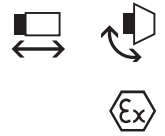


EEEx 61 WHL 1Ö/1S

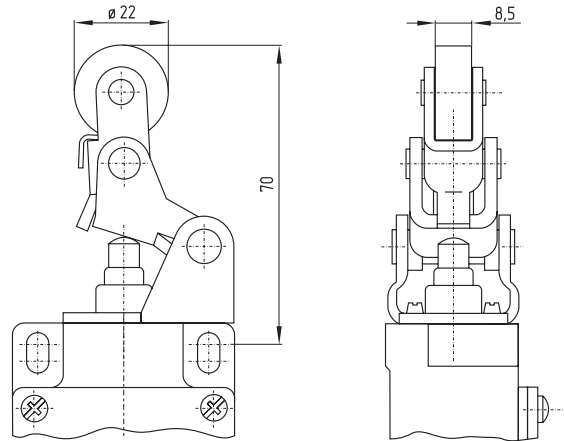
Info

- Metal roller available

1. Ex switchgear
1.3 Safety switches
1.3.7 Position switches with safety function
EEEx/EEExM 61 range



Rocking offset roller lever with watertight collar WHK

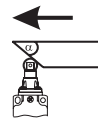


Features

- Actuating speed 0.5 m/s with an actuating angle of $\alpha = 40^\circ$
- Actuation only possible from one side (R.H.S. in illustration)
- Free movement of actuator from other side
- Plastic roller
- Actuator head can be repositioned in steps $4 \times 90^\circ$
- Collar to protect against the entry of dirt

Legend

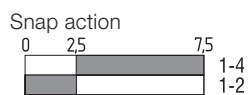
α : Actuating angle from right of switch axis



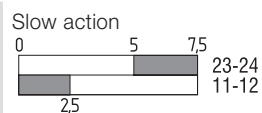
Info

- Metal roller available

Switch travel/	Change-	4 BK	1	1 NO	BK 23	24 BK
Contacts	over contact	2 BN	BU	1 NC	BN 11	12 BU

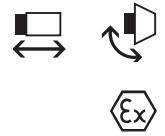


EEExM 61 WHK

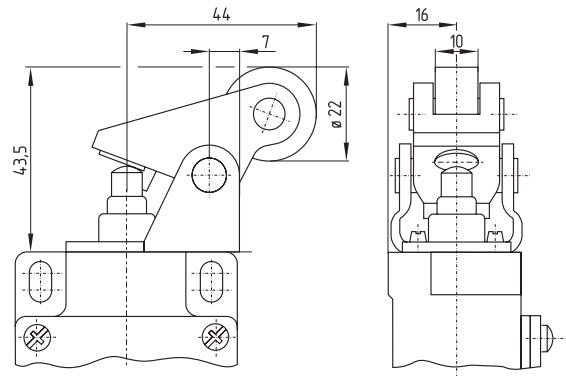


EEEx 61 WHK 1Ö/1S

1. Ex switchgear
1.3 Safety switches
1.3.7 Position switches with safety function
EEEx/EEExM 61 range



“Parallel” offset roller lever with watertight collar WPH



Features

- Actuating speed 0.5 m/s with an actuating angle of $\alpha = 30^\circ$
- Actuation parallel to axis of switch plunger from below
- Plastic roller
- Actuator head can be repositioned in steps $4 \times 90^\circ$
- Collar to protect against the entry of dirt

Legend

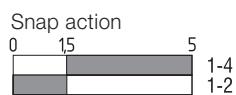
α : Actuating angle from below



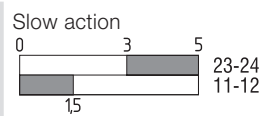
Info

- Metal roller available

Switch travel/ Contacts	Change-over contact	4 BK 2 BN	1 BU	1 NO 1 NC	BK 23 BN 11	24 BK 12 BU
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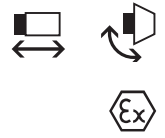


EEExM 61 WPH

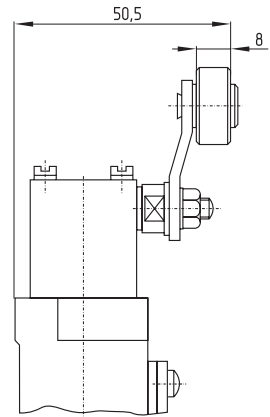
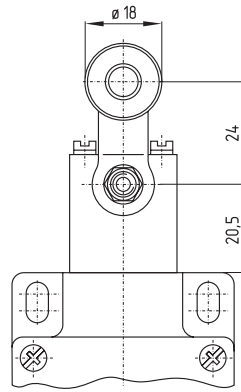


EEEx 61 WPH 1Ö/1S

1. Ex switchgear
1.3 Safety switches
1.3.7 Position switches with safety function
EEEx/EEExM 61 range



Roller lever D



Features

- Actuating speed with actuating angle 45° to switch axis 0.5 m/s
- Wear-resistant plastic roller
- Lever can be repositioned 10° steps clockwise or counter-clockwise
- Actuator can be transposed by 180°

Info

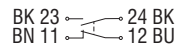
- Metal roller available

**Switch travel/
Contacts**

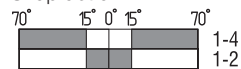
**Change-
over contact**



1 NO
1 NC

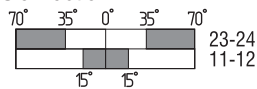


Snap action



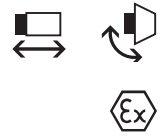
EEExM 61 D

Slow action

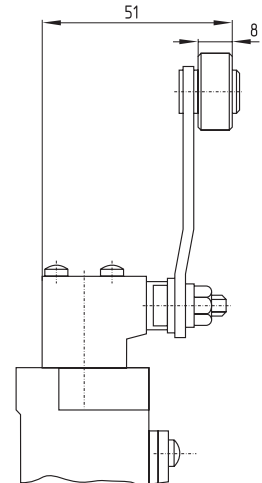
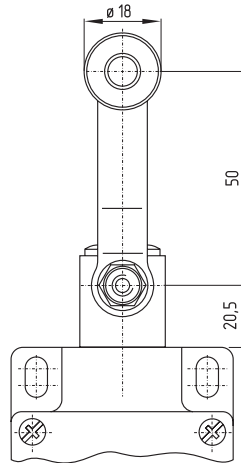


EEEx 61 D 1Ö/1S

1. Ex switchgear
1.3 Safety switches
1.3.7 Position switches with safety function
EEEx/EEExM 61 range



Long roller lever DL



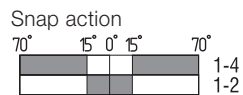
Features

- Actuating speed with actuating angle 45° to switch axis 0.5 m/s
- Wear-resistant plastic roller
- Lever can be repositioned 10° steps clockwise or counter-clockwise
- Actuator can be transposed by 180°

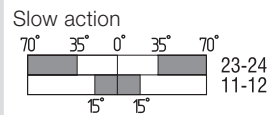
Info

- Metal roller available

Switch travel/ Contacts	Change- over contact	4 BK 2 BN	1 BU	1 NO 1 NC	BK 23 BN 11	24 BK 12 BU
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EEExM 61 DL

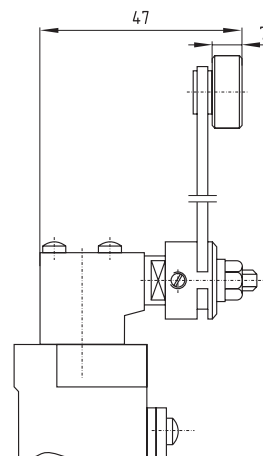
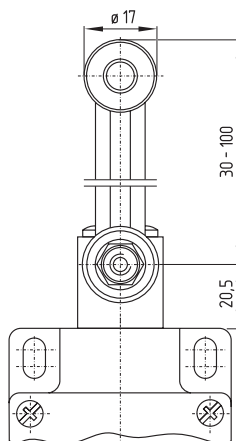


EEEx 61 DL 1Ö/1S

1. Ex switchgear
1.3 Safety switches
1.3.7 Position switches with safety function
EEEx/EEExM 61 range



Adjustable-length roller lever DS



Features

- Actuating speed with actuating angle 45° to switch axis 0.5 m/s
- Wear-resistant plastic roller
- Lever can be repositioned 10° steps clockwise or counter-clockwise
- Actuator can be transposed by 180°

Info

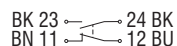
- Metal roller available

**Switch travel/
Contacts**

**Change-
over contact**



1 NO
1 NC

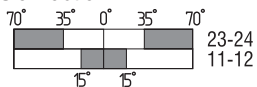


Snap action



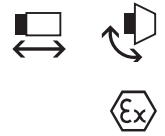
EEExM 61 DS

Slow action

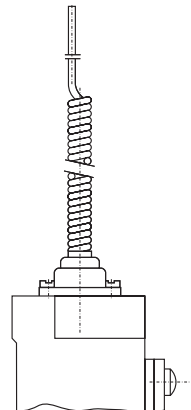
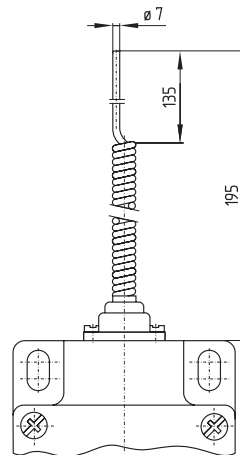


EEEx 61 DS 1Ö/1S

1. Ex switchgear
1.3 Safety switches
1.3.7 Position switches with safety function
EEEx/EEExM 61 range



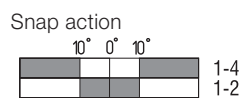
Long spring wire (Cat's whisker) TL



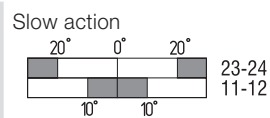
Features

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

Switch travel/ Contacts	Change- over contact	4 BK 2 BN	1 BU	1 NO 1 NC	BK 23 BN 11	24 BK 12 BU
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EEExM 61 TL

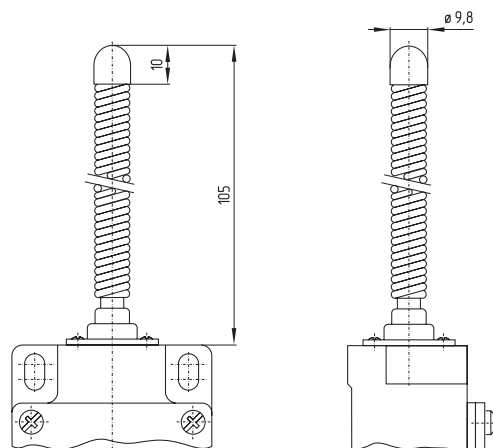


EEEx 61 TL 1Ö/1S

1. Ex switchgear
1.3 Safety switches
1.3.7 Position switches with safety function
EEEx/EEExM 61 range



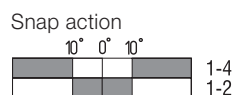
Spring rod with rounded steel tip TF



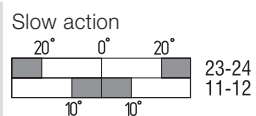
Features

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

Switch travel/ Contacts	Change- over contact	4 BK	1	1 NO	BK 23	24 BK
		2 BN	BU			
				1 NC	BN 11	12 BU

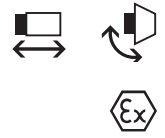


EEExM 61 TF

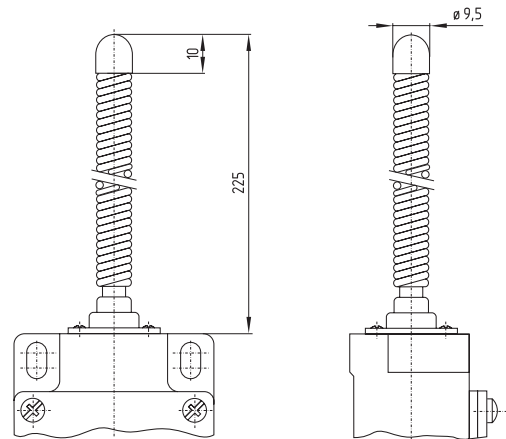


EEEx 61 TF 1Ö/1S

1. Ex switchgear
1.3 Safety switches
1.3.7 Position switches with safety function
EEEx/EEExM 61 range



Long spring rod with rounded steel tip TFL



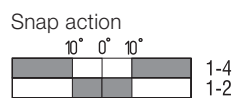
Features

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

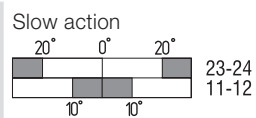
Switch travel/ Contacts **Change-over contact** 4 BK 1 BU
 2 BN

1 NO
1 NC

BK 23 24 BK
 BN 11 12 BU



EEExM 61 TFL

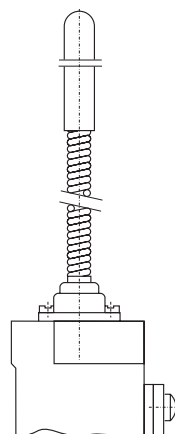
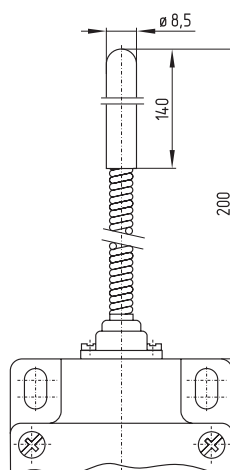


EEEx 61 TFL 1Ö/1S

1. Ex switchgear
1.3 Safety switches
1.3.7 Position switches with safety function
EEEx/EEExM 61 range



Spring rod with plastic rod TK

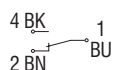


Features

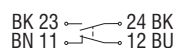
- Wear-resistant plastic rod
- Spring rod can be actuated from any direction
- Elasticity of the spring allows for deflection above the max. switching angle

**Switch travel/
Contacts**

**Change-
over contact**



1 NO
1 NC

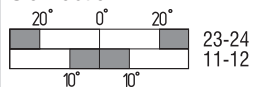


Snap action



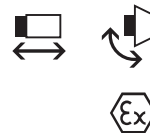
EEExM 61 TK

Slow action



EEEx 61 TK 1Ö/1S

1. Ex switchgear
1.3 Safety switches
1.3.8 Position switches with safety function
1.3.8 Technical data



	EEx 14	EExM 14	EExM 14 1Ö/1S
Standards:	IEC 60947-5-1; EN 1088; BG-GS-ET 15		
	EN 50014; EN 50018; EN 50281-1-1		
Ex marking:	Ⓔ II 2G EEx d IIC T6		
	II 2D IP65 T80°C		
Certification:	PTB 03 ATEX 1070 X	PTB 03 ATEX 1069 X	PTB 00 ATEX 1006 X
Switch insert:	–	–	–
Design:	–		
Enclosure:	Thermoplastic, self-extinguishing UL 94-VO		
Cover:	Same like enclosure		
Protection class:	IP 65 to IEC/EN 60529/DIN VDE 0470-1		
Contact material:	Silver		
Switching system:	⊖ IEC 60947-5-1; slow action,	Snap action	
	NC contacts with positive break ⊖	–	–
Contact type:	Change-over contact,	Change-over contact,	Change-over contact,
	double break Zb, with galvanically	single break C	double break Za
	separated contact bridges		
Termination:	H05VV-F 4 x 0.75 mm ²	H05VV-F 3 x 0.75 mm ²	H05VV-F 4 x 0.75 mm ²
Rated impulse			
withstand voltage U _{imp} :	4 kV		
Rated insulation voltage U _i ;250 V			
Thermal test current I _{the} :	6 A	5 A	
Utilisation category:	AC-15; DC-13		
Rated operating			
current/voltage I _e /U _e :	6 A/250 VAC; 0.25 A/230 VDC	5 A/250 VAC; 0.16 A/230 VDC	5 A/250 VAC; 0.2 A/230 VDC
Max. fuse rating:	6 A gL/gG D-fuse	5 A gL/gG D-fuse	5 A gL/gG D-fuse
Ambient temperature:	–20 °C ... +65 °C	–20 °C ... +60 °C	–20 °C ... +65 °C
Mechanical life:	> 1 million operations		
Switching frequency:	1800/h	–	
Switching point accuracy:	±0.1 mm		
Actuating speed:***	–		
Contact break for			
complete stroke:*	–		
Positive break force:	–		
Positive break stroke:	See switch description		
Shock resistance:	–		



* referring to the switch insert
 ** referring to the switch plunger

*** for complete actuating stroke
 **** in accordance with actuating speed

1. Ex switchgear
1.3 Safety switches
1.3.8 Position switches with safety function
1.3.8 Technical data



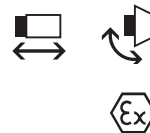
	EEx 13	EEx 95	EEx 335
Standards:	IEC 60947-5-1; EN 1088; BG-GS-ET 15		
	EN 50014; EN 5018; EN 50281-1-1	EN 50014; EN 5018; EN 50019; EN 50281-1-1	
Ex marking:	Ⓔ II 2G EEx d IIC T6	Ⓔ II 2G EEx de IIC T6	Ⓔ II 2G EEx de IIC T6
	II 2D IP65 T80°C	II 2D IP67 T80°C	II 2D IP65 T80°C
Certification:	PTB 03 ATEX 1068 X	DMT 01 ATEX E 118	DMT 01 ATEX E 178
Switch insert:	–	–	EEx 95
Design:	–	EN 50047	Mounting to EN 50041
Enclosure:	Glass-fibre reinforced thermoplastic, self-extinguishing		Zinc die-cast
Cover:	Same like enclosure		Steel, enamel finish
Protection class:	IP 65 to IEC/EN 60529	IP 67 to IEC/EN 60529	IP 65 to IEC/EN 60529
Contact material:	Silver		
Switching system:	Slow action, NC contacts with positive break ⊖		
Contact type:	Change-over contact, double	Change-over contact, double break Zb or 2 NC contacts,	
	break Zb,with galvanically	with galvanically separated contact bridges	
	separated contact bridges		
Termination:	H05VV-F 4 x 0.75 mm ²	M3 screw terminals, wire max. 1.5 mm ²	
		(including conductor ferrules)	
Rated impulse			
withstand voltage U _{imp} :	4 kV		
Rated insulation voltage U _i :250 V			
Thermal test current I _{the} :	6 A		
Utilisation category:	AC-15; DC-13		
Rated operating			
current/voltage 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 ... +65 °C	–20 °C ... +65 °C	–20 °C ... +60 °C
Mechanical life:	> 1 million operations		
Switching frequency:	1800/h	max. 3600/h	1800/h
Switching point accuracy:	±0.1 mm		
Actuating speed:***		min. 60 mm/min	–
Contact break for			
complete stroke:**	2 x 4.5 mm	2 x 3.5 mm	
Positive break force:	–		
Positive break stroke:	See switch description		
Shock resistance:	–		



* referring to the switch insert
 ** referring to the switch plunger

*** for complete actuating stroke
 **** in accordance with actuating speed

1. Ex switchgear
1.3 Safety switches
1.3.8 Position switches with safety function
1.3.8 Technical data



	EEx 355	EEx T 356	EEx 61
Standards:	IEC 60947-5-1; EN 1088; BG-GS-ET 15; EN 50014; EN 5018; EN 50281-1-1		
	EN 50019	–	
Ex marking:	Ⓔ II 2G EEx de IIC T6	Ⓔ II 2G EEx d IIC T6	
	II 2D IP67 T80°C	II 2D IP65 T80°C	
Certification:	BVS 04 ATEX E 126	PTB 03 ATEX 1068 X*	PTB 03 ATEX 1068 X*
Switch insert:	EEx 95	EEx 13	
Design:	Mounting to EN 50041	Mounting to EN 50041	–
Enclosure:	zinc die-cast, enamel finish	Glass-fibre reinforced	aluminium die-cast, enamel finish
		thermoplastic, self-extinguishing	
Cover:	Steel, enamel finish		
Protection class:	IP 67 to IEC/EN 60529	IP 65 to IEC/EN 60529	
Contact material:	Silver		
Switching system:	Slow action, NC contacts with positive break ⊖		
Contact type:	Change-over contact, double break Zb or 2 NC contacts, with galvanically separated contact bridges		
Termination:	M3 screw terminals, wire max.	Cable H05VV-F 4 x 0.75 mm²;	Cable H05VV-F 4 x 0.75 mm²;
	1.5 mm² (including conductor ferrules)	Length: 2 and 5 m	Length: 3 m
Rated impulse			
withstand voltage U _{imp} :	4 kV	2.5 kV	4 kV
Rated insulation voltage U _i ; 250 V			
Thermal test current I _{the} :	6 A		
Utilisation category:	AC-15; DC-13		
Rated operating			
current/voltage I _e /U _e :	6 A/250 VAC	6 A/250 VAC; 0.25 A/230 VDC	
Max. fuse rating:	6 A gL/gG D-fuse		
Ambient temperature:	–20 °C ... +60 °C		–20 °C ... +65 °C
Mechanical life:	> 1 million operations		
Switching frequency:	1800/h		
Switching point accuracy:	±0.1 mm		
Actuating speed:***	–		min. 60 mm/min
Contact break for			
complete stroke:**	2 x 4 mm	2 x 3.5 mm	2 x 4 mm
Positive break force:	–		
Positive break stroke:	See switch description		
Shock resistance:	–		



* referring to the switch insert
 ** referring to the switch plunger

*** for complete actuating stroke
 **** in accordance with actuating speed

1. Ex switchgear
1.3 Safety switches
1.3.8 Position switches with safety function
1.3.8 Technical data



EExM 61	
Standards:	IEC/EN 60947-5-1; EN 50014; EN 5018; EN 50281-1-1
Ex marking:	Ex II 2G EEx d IIC T6 II 2D IP65 T80°C
Certification:	PTB 03 ATEX 1067 X*
Switch insert:	EEx 12
Design:	–
Enclosure:	aluminium die-cast, enamel finish
Cover:	Steel, enamel finish
Protection class:	IP 65 to IEC/EN 60529
Contact material:	Silver
Switching system:	Snap action
Contact type:	Change-over contact, single break, type C
Termination:	Cable H05VV-F 4 x 0.75 mm ² ; Length: 3 m
Rated impulse withstand voltage U_{imp} :	4 kV
Rated insulation voltage U_i :	250 V
Thermal test current I_{the} :	5 A
Utilisation category:	AC-15; DC-13
Rated operating current/voltage I_e/U_e :	5 A/250 VAC; 0.16 A/230 VDC
Max. fuse rating:	5 A gL/gG D-fuse
Ambient temperature:	–20 °C ... +60 °C
Mechanical life:	> 1 million operations
Switching frequency:	1800/h
Switching point accuracy:	±0.1 mm
Actuating speed:***	min. 60 mm/min
Contact break for complete stroke:**	–
Positive break force:	See switch description
Positive break stroke:	See switch description
Shock resistance:	–



* referring to the switch insert
 ** referring to the switch plunger

*** for complete actuating stroke
 **** in accordance with actuating speed

1.	Ex switchgear
1.3	Safety switches
1.3.8	Position switches with safety function
1.3.8	Technical data





Application

These Ex safety switches are suitable for hinged safety guards which need to be closed to ensure the necessary operational security.

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

Depending on the particular version of the switches, small doors and service flaps, as well as heavy hinged doors on engineering machines and plants, can be protected in such a way as to provide for easy setting up and maintenance.

Design and mode of operation

A general advantage of the 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 switches provides cost advantage for the user in avoiding the necessity of mounting a specially designed cam.

These safety switches are provided with slow action.

Flap safety switches

Features EEx 95 T.C

- Mounting dimensions to EN 50047
- 2 contacts
- Thermoplastic enclosure
- Compact design
- Slow action
- Suitable for fitting outside the hinge shaft

Hinge safety switches

EEx 13 SB

- 2 contacts ⊖
- Thermoplastic enclosure
- Slow action
- Prewired cable
- Double-shaft universal joint available

Hinge safety switches

EEx 95 SB

- Mounting dimensions to EN 50047
- 2 contacts
- Thermoplastic enclosure
- Compact design
- Slow action
- Actuating shaft is fitted in the hinge axis
- Double-shaft universal joint available

TV.S 335 TV.S 355

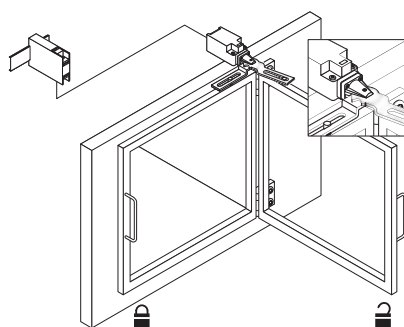
- Mounting dimensions to EN 50041
- 2 contacts
- Metal enclosure
- Compact design
- Slow action
- Actuating shaft is fitted in the hinge axis
- Ø 8 or 10 mm hole for shaft
- Double-shaft universal joint available

Note

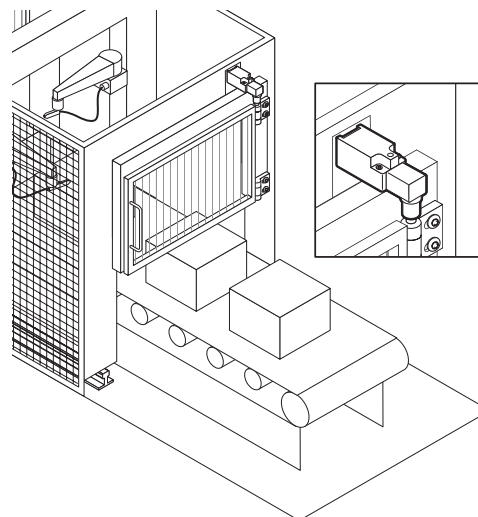
Technical data are shown in tabular form in chapter 1.4.7.

Applications

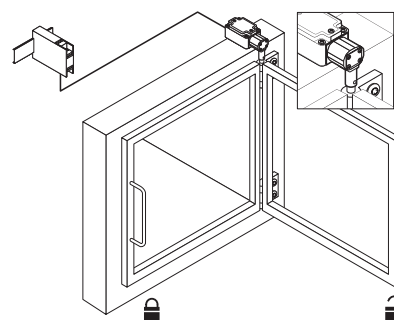
EEx 95 T.C on hinged guard



Application



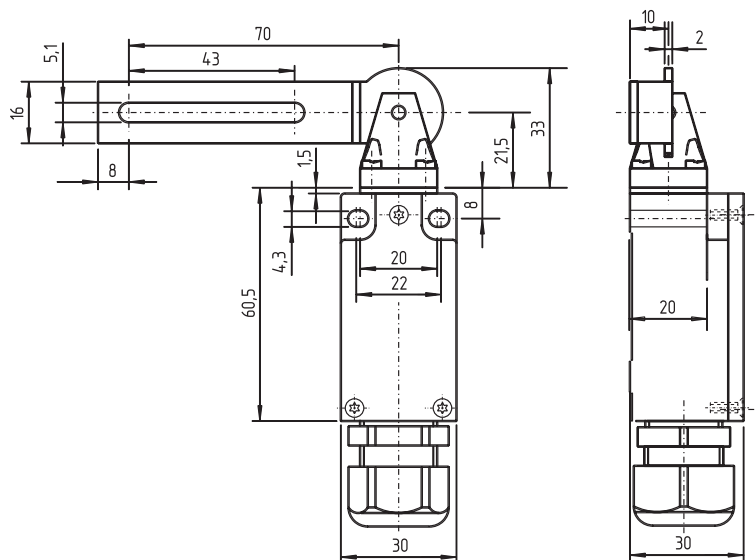
EEx 335 TV.S on hinged guard



1. Ex switchgear
 1.4 Safety switches
 1.4.1 Safety switch for hinged guards
 1.4.1 EEx 95 T.C range



Right-hand version



Features

- Thermoplastic enclosure
- II 2G EEx de IIC T6
II 2D IP67 T80°C
- Actuator heads can be turned in steps 4 x 90°
- Opening angle 180°
- Stainless steel actuator

Approvals

EC Type test certificate:
DMT 01 ATEX E 118

Ordering details

Flap safety switch for hinged guards, right-hand version, with 1 NO and 1 NC contact:
EEx 95 T5C 1Ö/1S

Info

Version for equipment category 3D
(dust-Ex zone 22) available
Ordering suffix: -3D

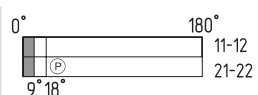
Contacts/
Switch travel

1 NO 13-14
1 NC 21-22

2 NC 11-12
21-22



EEx 95 T5C 1Ö/1S



EEx 95 T5C 2Ö

Slow action

1 NO 23-24
1 NC 15-16



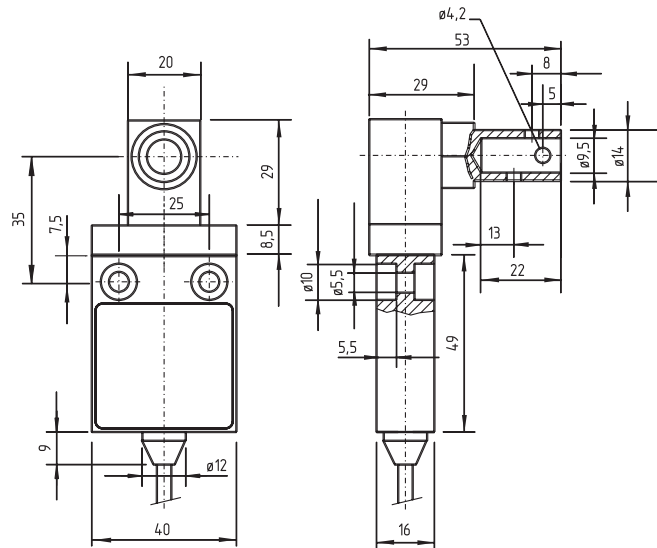
Slow action
with overlapping contacts

EEx 95 T5C UE

Notes

Closed guard device = 0° in contact switch travel diagrams.
This is the rest position of the switch.

1. Ex switchgear
1.4 Safety switches
1.4.2 Safety switch for hinged guards
EEx 13 SB range



Features

- Thermoplastic enclosure
- Prewired cable
- Double insulated □
- II 2G EEx d IIC T6
II 2D IP65 T80°C
- Actuating shaft can be turned 360°
- Bore for shaft Ø 9.5 mm

Approvals

EC Type test certificate:
PTB 03 ATEX 1068 X

Info

- Shaft bore Ø 10 mm available, ordering suffix -10mm
- Universal joint K2 available to compensate for axial displacement

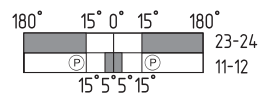
Info

Version for equipment category 3D
(dust-Ex zone 22) available
Ordering suffix: -3D

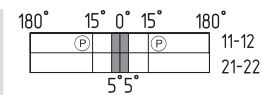
**Contacts/
Switch travel**

1 NO
1 NC

2 NC



EEx 13 SB 1Ö/1S



EEx 13 SB 2Ö

Slow action

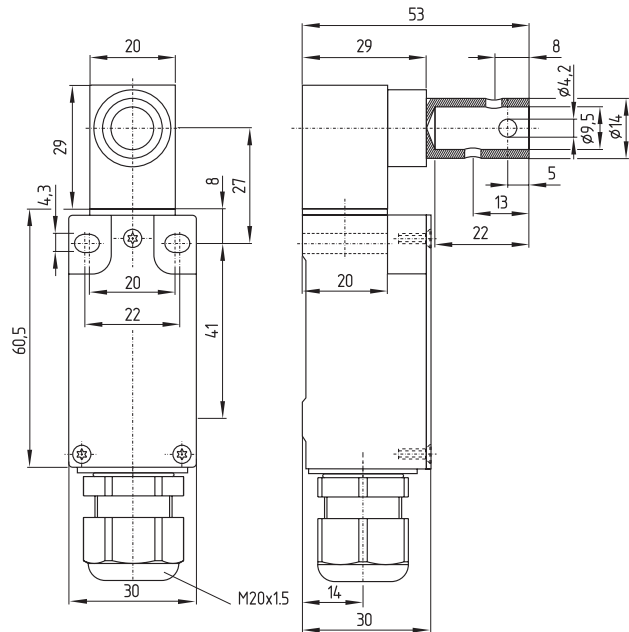
Note

Closed guard device = 0° in contact switch travel diagrams.
This is the rest position of the switch.

**Ordering
details**

Hinge safety switch for hinged guards,
2 NC contacts:
EEx 13 SB 2Ö

1. Ex switchgear
1.4 Safety switches
1.4.3 Safety switch for hinged guards
EEx 95 SB range



Features

- Thermoplastic enclosure
- Wiring compartment
- Double insulated □
- II 2G EEx de IIC T6
II 2D IP67 T80°C
- Actuator head can be repositioned in steps 4 x 90°
- Actuating shaft can be turned 360°
- Bore for shaft Ø 9.5 mm
- Cable entry M20 x 1.5

Info

- Shaft bore Ø 10 mm available, ordering suffix -10mm
- Universal joint K2 available to compensate for axial displacement

Info

Version for equipment category 3D (dust-Ex zone 22) available
 Ordering suffix: -3D

Approvals

EC Type test certificate:
 DMT 01 ATEX E 118

Ordering details

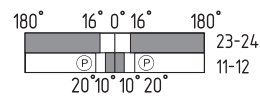
Hinge safety switch for hinged guards, 1 NO and 1 NC contact: EEx 95 SB 1Ö/1S

**Contacts/
Switch travel**

1 NO 23 → 24
1 NC 15 → 16

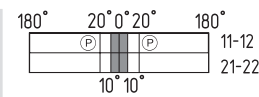
2 NC 11 → 12
 21 → 22

Slow action



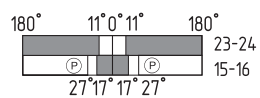
EEx 95 SB 1Ö/1S

1 NO
1 NC 23 → 24
 15 → 16



EEx 95 SB 2Ö

Slow action
 with overlapping contacts

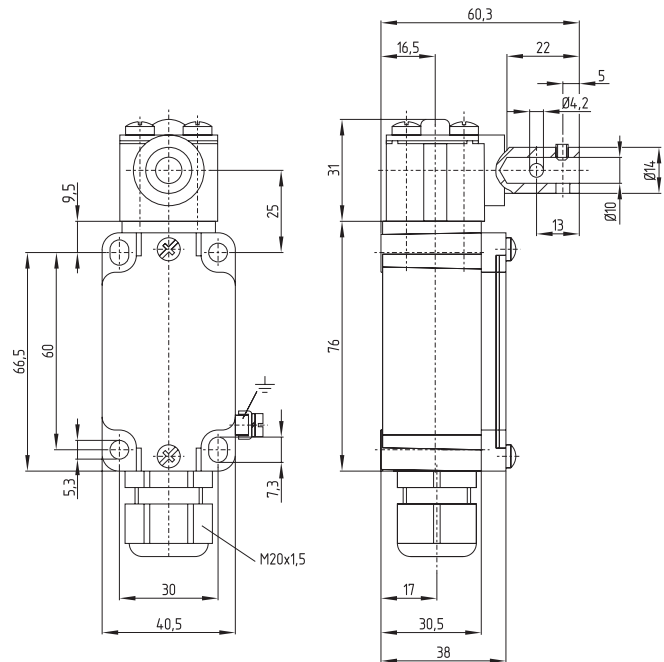


EEx 95 SB UE

Note

Closed guard device = 0° in contact switch travel diagrams.
 This is the rest position of the switch.

1. Ex switchgear
1.4 Safety switches
1.4.4 Safety switch for hinged guards
EEEx 335 V.S range



Features

- Metal enclosure
- II 2G EEx de IIC T6
II 2D IP65 T80°C
- Actuator heads can be turned in steps 4 x 90° using Torx T 20 screwdriver with pin
- Actuating shaft can be turned 360°
- 1 cable entry

Shaft bore A

Hinge pin fixing

EEEx 335 V10S : Ø 10 mm

Info

Version for equipment category 3D
(dust-Ex zone 22) available
Ordering suffix: -3D

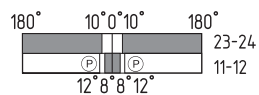
Approvals

EC Type test certificate:
DMT 01 ATEX E 178

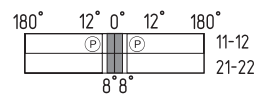
**Contacts/
Switch travel**

1 NO 13-14
1 NC 21-22

2 NC 11-12
21-22



EEEx 335 V10S 1Ö/1S



EEEx 335 V10S 2Ö

Slow action

Notes

Closed guard device = 0° in contact switch travel diagrams.
This is the rest position of the switch.

**Ordering
details**

Hinge safety switch for hinged guards,
2 NC contacts:
EEEx 335 V10S 2Ö

1. Ex switchgear
1.4 Safety switches
1.4.5 Safety switch for hinged guards
EEEx 355 V.S range

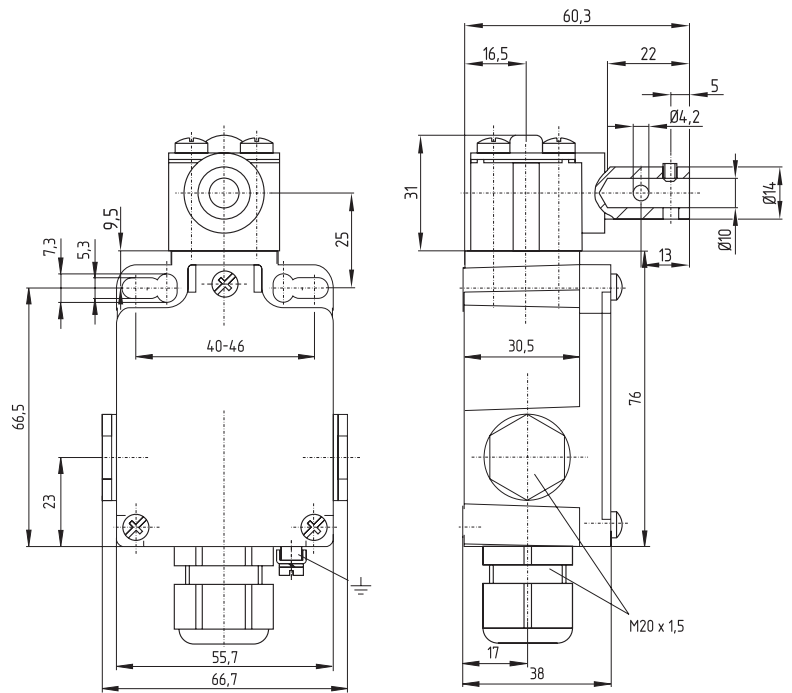


Features

- Metal enclosure
- II 2G EEx de IIC T6
II 2D IP67 T80°C
- Actuator heads can be turned in steps 4 x 90° using Torx T 20 screwdriver and pin
- Actuating shaft can be turned 360°
- 3 cable entries

Approvals

EC Type test certificate:
BVS 04 ATEX E 126



Shaft bore A **Hinge pin fixing**
 EEx 355 V10S: Ø 10 mm

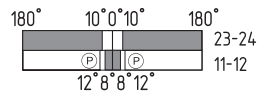
Info

Version for equipment category 3D
 (dust-Ex zone 22) available
 Ordering suffix: -3D

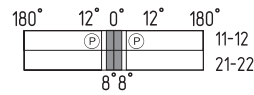
**Contacts/
Switch travel**

1 NO 13 — 14
1 NC 21 — 22

2 NC 11 — 12
 21 — 22



EEEx 355 V10S 1Ö/1S



EEEx 355 V10S 2Ö

Slow action

Notes

Closed guard device = 0° in contact switch travel diagrams.
 This is the rest position of the switch.

**Ordering
details**

Hinge safety switch for hinged guards,
 2 NC contacts:
EEEx 355 V10S 2Ö

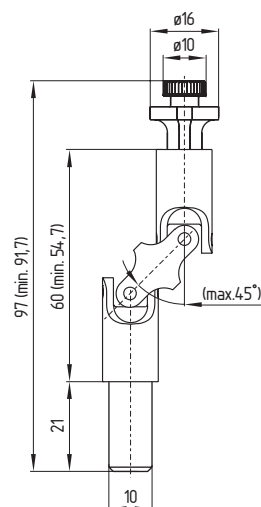
1.
1.4
1.4.6

Ex switchgear
Safety switches
Safety switch for hinged guards
Accessories



Universal joint K2

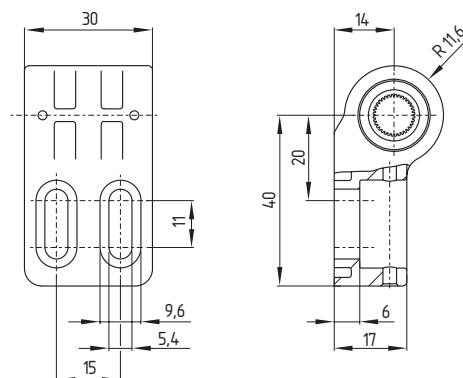
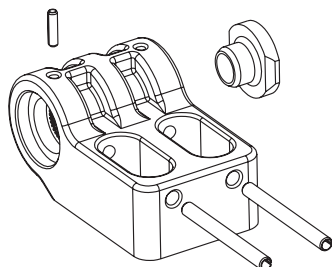
- Factory-mounted pins
- Suitable for EEx 335 V10S, EEx 95 SB-10mm and EEx 335 V10S
- Suitable only in connection with hinges F and L



Fixed hinge F

**Included
in delivery**

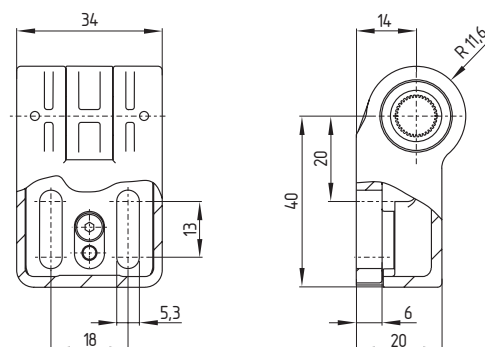
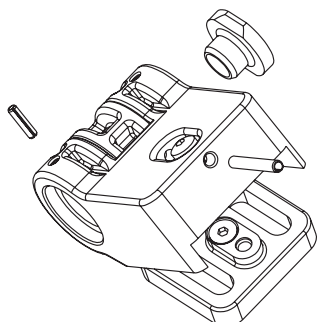
- Locating pins
- One blanking plug
- Two M 5 x 20 screws to ISO 7380



Adjustable hinge L

**Included
in delivery**

- Locating pins
- One blanking plug
- Two M 5 x 20 screws to ISO 7380



1. Ex switchgear
1.4 Safety switches
1.4.7 Safety switch for hinged guards
1.4.7 Technical data



	EEx 95 T.C	EEx 13 SB
Standards:	IEC 60947-5-1; EN 1088; BG-GS-ET 15; EN 50014; EN 50018; EN 50281-1-1	
	EN 50019	–
Ex marking:	II 2G EEx de IIC T6 II 2D IP67 T80°C	II 2G EEx d IIC T6 II 2D IP65 T80°C
Certification:	DMT 01 ATEX E 118	PTB 03 ATEX 1068 X
Switch insert:	–	–
Design:	Mountings to EN 50047	–
Enclosure:	Glass-fibre reinforced thermoplastic, self-extinguishing	
Protection class:	IP 67 to IEC/EN 60529	IP 65 to IEC/EN 60529
Contact material:	Silver	
Contact type:	Change-over contact with double break Zb or 2 NC contacts, with galvanically separated contact bridges	Change-over contact with double break Zb with galvanically separated contact bridges
Switching system:	Slow action, NC contacts with positive break $\ominus$	
Termination:	M3 screw terminals for max. 1.5 mm ² wire (including conductor ferrules)	cable H05VV-F4 x 0.75 mm ²
Rated impulse withstand voltage U_{imp} :	4 kV	
Rated insulation voltage U_i :	250 V	
Thermal test current I_{the} :	6 A	
Utilisation category:	AC-15; DC-13	
Rated operating current/voltage 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 ... +60 °C	–20 °C ... +65 °C
Mechanical life:	> 1 million operations	
Switching frequency:	1800/h	
Shaft bore:	–	Ø 9.5 mm, Ø 10 mm
Positive break angle:	18°	
Positive break torque:	–	0.6 Nm

CE₀₁₅₈

1.
1.4
1.4.7

Ex switchgear
Safety switches
Safety switch for hinged guards
Technical data



	EEx 95 SB	EEx 335 V10S/EEx 355 V10S
Standards:	IEC 60947-5-1; EN 1088; BG-GS-ET 15; EN 50014; EN 50018; EN 50019; EN 50281-1-1	
Ex marking:	 II 2G EEx de IIC T6 II 2D IP67 T80°C	 II 2G EEx de IIC T6 II 2D IP65 T80°C
Certification:	DMT 01 ATEX E 118	DMT 01 ATEX E 178/BVS 04 ATEX E 126
Switch insert:	–	EEx 95
Design:	Mountings to EN 50047	Mountings to EN 50041
Enclosure:	Glass-fibre reinforced thermoplastic, self-extinguishing	Zinc die-cast, enamel finish
Protection class:	IP 67 to IEC/EN 60529	IP 65 to IEC/EN 60529/IP 67 to IEC/EN 60529
Contact material:	Silver	
Contact type:	Change-over contact with double break Zb or 1 NC or 2 NC contacts, with galvanically separated contact bridges	
Switching system:	Slow action, NC contacts with positive break $\ominus$	
Termination:	Screw terminals for max. 1.5 mm ² wire (including conductor ferrules)	
Rated impulse		
withstand voltage U_{imp} :	4 kV	
Rated insulation voltage U_i :	250V	
Thermal test current I_{the} :	6 A	
Utilisation category:	AC-15; DC-13	AC-15
Rated operating		
current/voltage 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 ... +60 °C	
Mechanical life:	> 1 million operations	
Switching frequency:	1800/h	
Shaft bore:	Ø 9.5 mm, Ø 10 mm	Ø 10 mm
Positive break angle:	18°	12°
Positive break torque:	0.6 Nm	–

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Application

Ex pull-wire emergency stop switches are mounted on machines and sections of plants which cannot be protected by guards. In contrast to mushroom head emergency stop push buttons, on pull-wire switches the emergency stop command can be initiated from any point along the wire. In combination with one safety monitoring module for emergency stop applications, ZS range Ex pull-wire emergency stop switches can be used for Control Category 3 or 4 to EN 954-1.

The Ex pull-wire emergency stop switches have a positive linkage between the NC contacts and the pulling eye.

Design and mode of operation

The Ex pull-wire emergency stop switches are brought into their operating condition by pre-tensioning the wire, i.e. the NC contacts are closed and the NO contacts open. All Ex pull-wire emergency stop switches have wire-breakage monitoring. On pulling or breakage of the wire, the NC contacts are positively opened and the NO contacts are closed. The switch can then only be returned to the operational condition by a resetting operation. The wire is to be pre-tensioned until the operational condition is reached. Only in this condition is the wire-breakage monitoring activated, the NC contacts closed and the NO contacts open.

A wide range of accessories is available for all pull-wire emergency stop switches, see chapter 1.5.6.

The pull-wire emergency stop switches are of protection class IP 65 or IP 54. Any desired mounting position can be used.

1.

1.5

Ex switchgear

Safety switches

Pull-wire emergency stop switches



Features

EEx ZS 71

- 2 contacts
- 2 spring-force variants
- Optional position indication
- Up to 20 m long wire rope

EEx ZS 75

- 4 contacts
- 3 spring-force variants
- Adjustable actuating force
- Up to 50 m long wire rope

EEx ZS 75 S

- 4 contacts
- Two-side actuation
- Up to 2 x 50 m long wire rope

EEx ZS 73

- 2 contacts
- 4 spring-force variants
- Adjustable actuating force
- Up to 50 m long wire rope

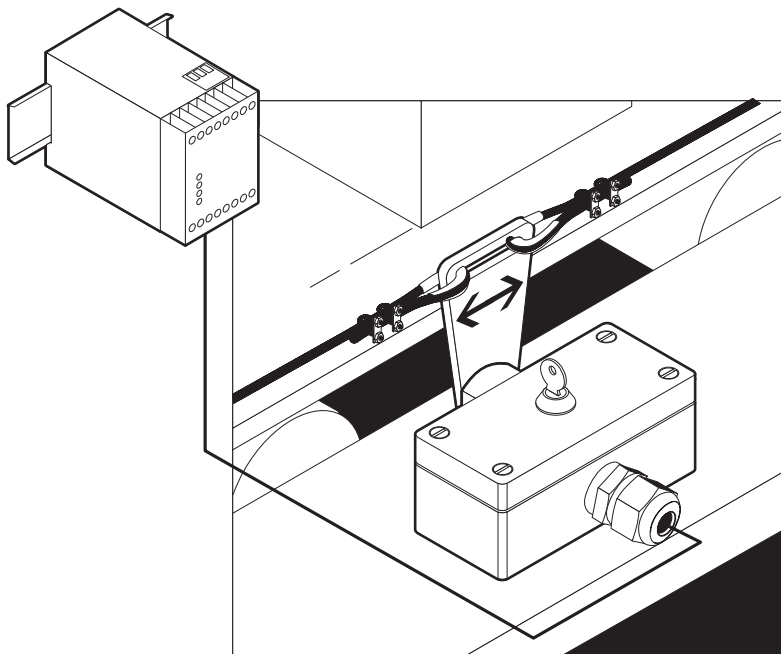
EEx ZS 73 S

- 2 contacts
- Two-side actuation
- Up to 2 x 50 m long wire rope

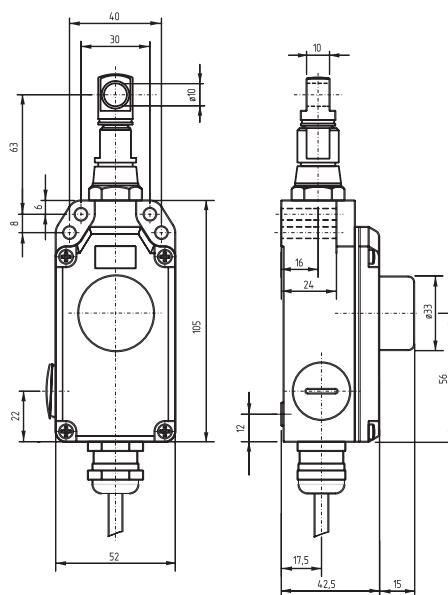
Note

Technical data are shown in tabular form in chapter 1.5.7.

Application



1. Ex switchgear
1.5 Safety switches
1.5.1 Pull-wire emergency stop switches
1.5.1 EEx ZS 71 range



Features

- Metal enclosure
- 2 contacts
- II 2G EEx d IIC T6
II 2D IP65 T80°C
- Small body
- Various spring force variants (pretensioning forces)
- Wire up to 20 m long
- Reset by push button or key possible
- Twisting not possible
- Optional position indicator
- Available with external watertight collar
- Pull-wire and wire-breakage functions

Cable length

- On the Ex pull-wire emergency stop switches, the cables are 3 m long
- Other lengths on enquiry

Note

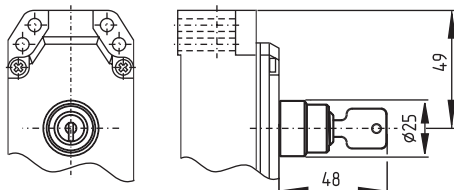
For tensioned span lengths over 3 m, intermediate wire supports are required, see accessories in chapter 1.5.6.

Approvals

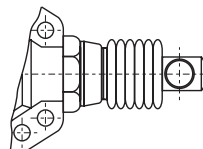
EC Type test certificate:
PTB 03 ATEX 1070 X*

*referring to the switch insert

Key reset



Watertight collar



Info

Version for equipment category 3D (dust-Ex zone 22) available
 Ordering suffix: -3D

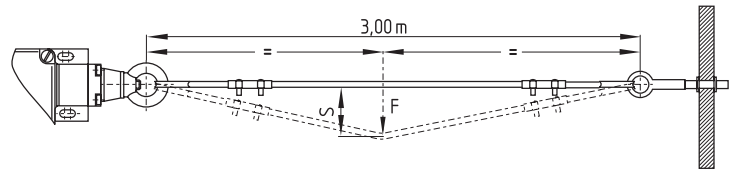
3D version is equipped with wiring compartment.

1. Ex switchgear
1.5 Safety switches
1.5.1 Pull-wire emergency stop switches
1.5.1 EEx ZS 71 range



Actuating deflection/force

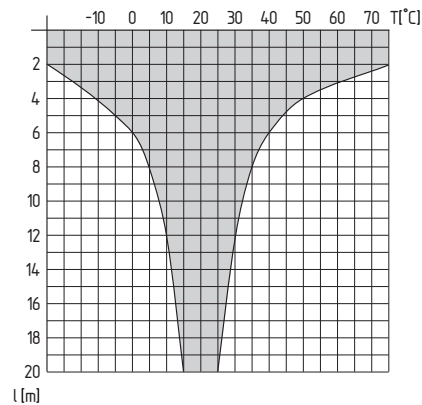
The values quoted relate to the switch being mounted at an ambient temperature of 20 °C. Stretching of the wire due to elongation and deformation of the wire thimbles has not been taken into account. The actuating forces given are only guide values, since the spring forces are subject to tolerances. Actuating deflections and forces relate to a 3 m long wire.



Pre-tensioning force [N]	Actuating deflection S [cm]	Actuating force F [N]	Recommended wire length [m]	Ordering suffix
55	9	11	0-5	-55N
200	9	25	5-20	-200N

Temperature range

Recommended lengths of wire for pull-wire emergency stop switches in relation to the range of ambient temperature.

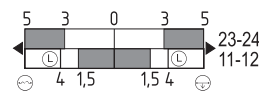


Contacts/Switch travel

1 NO

1 NC

BK 23 → 24 BK
BN 11 → 12 BU



Push button reset
Key reset

EEx ZS 71 1Ö/1S VD
EEx ZS 71 1Ö/1S VS

Push button reset, watertight collar
Key reset, watertight collar

EEx ZS 71 1Ö/1S WVD
EEx ZS 71 1Ö/1S WVS

Push button reset, position indicator
Key reset, position indicator

EEx ZS 71 1Ö/1S VDA
EEx ZS 71 1Ö/1S VSA

Push button reset, watertight collar, position indicator
Key reset, watertight collar, position indicator

EEx ZS 71 1Ö/1S WVDA
EEx ZS 71 1Ö/1S WVSA

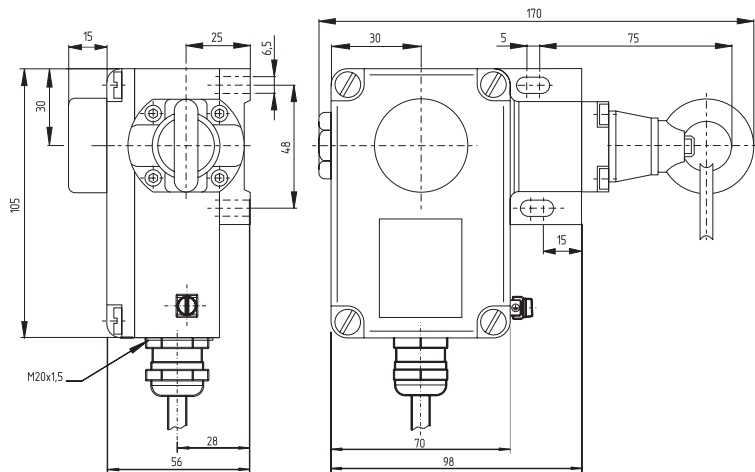
Note

Ordering suffix for pretensioning force must always be added to part number, see ordering details.

Ordering details

EEx ZS 71 range pull-wire emergency stop switch for one-side operation with one NO and one NC contact, push button reset and 55 N pretensioning force:
EEx ZS 71 1Ö/1S VD-55N

1. Ex switchgear
1.5 Safety switches
1.5.2 Pull-wire emergency stop switches
EEx ZS 73 range



Features

- Metal enclosure
- 2 contacts
- II 2G EEx d IIC T6
II 2D IP65 T80°C
- 4 spring force variants
(pretensioning forces)
- Adjustable actuating force
- Wire up to 50 m long
- Reset by push button
or key possible
- Available with external
watertight collar
- Pull-wire and wire-breakage
functions

Cable length

- On the Ex pull-wire emergency stop switches, the cables are 3 m long
- Other lengths on enquiry

Note

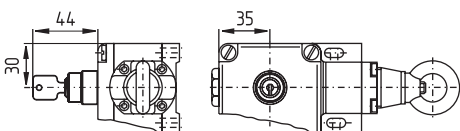
For tensioned span lengths over 5 m, intermediate wire supports are required, see accessories in chapter 1.5.6.

Approvals

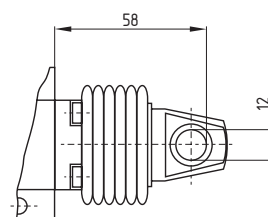
EC Type test certificate:
PTB 03 ATEX 1070 X*

*referring to the switch insert

Key reset



Watertight collar



Info

Version for equipment category 3D
(dust-Ex zone 22) available
Ordering suffix: -3D

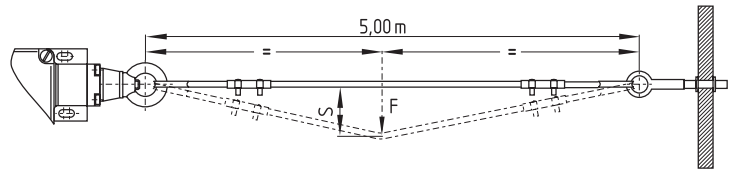
3D version is equipped with wiring compartment.

1. Ex switchgear
1.5 Safety switches
1.5.2 Pull-wire emergency stop switches
EEEx ZS 73 range



Actuating deflection/force

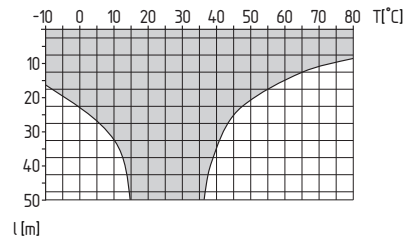
The values quoted relate to the switch being mounted at an ambient temperature of 20 °C. Stretching of the wire due to elongation and deformation of the wire thimbles has not been taken into account. The actuating forces given are only guide values, since the spring forces are subject to tolerances. Actuating deflections and forces relate to a 5 m long wire.



Pre-tensioning force [N]	Actuating deflection S [cm]	Actuating force F [N]	Recommended cable length [m]	Ordering suffix
295-390	12	60	30-50	-295N
195-275	12	41	20-30	-195N
120-180	12	25	10-20	-120N
80-100	12	8	<10	-80N

Temperature range

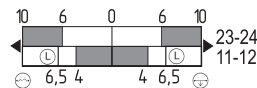
Recommended lengths of wire for pull-wire emergency stop switches in relation to the range of ambient temperature.



Contacts/ Switch travel

1 NO
1 NC

BK 23 → 24 BK
 BN 11 → 12 BU



Push button reset
 Key reset

EEEx ZS 73 1Ö/1S VD
EEEx ZS 73 1Ö/1S VS

Push button reset, watertight collar
 Key reset, watertight collar

EEEx ZS 73 1Ö/1S WVD
EEEx ZS 73 1Ö/1S WVS

Note

Ordering suffix for pretensioning force must always be added to part number, see ordering details.

Ordering details

EEEx ZS 73 range pull-wire emergency stop switch for one-side operation with one NO and one NC contact, key reset, watertight collar and 295-390 N pretensioning force:
 EEEx ZS 73 1Ö/1S WVS-295N

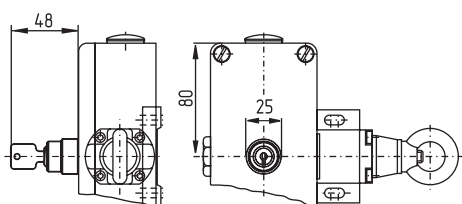
1. Ex switchgear
1.5 Safety switches
1.5.3 Pull-wire emergency stop switches
1.5.3 EEx ZS 75 range



Features

- Metal enclosure
- 2 or 4 contacts
- II 2G EEx d IIC T6
II 2D IP65 T80°C
- 4 spring force variants
(pretensioning forces)
- Adjustable actuating force
- Twisting not possible
- Wire up to 50 m long
- Reset by push button
or key possible
- Available with external
watertight collar
- Pull-wire and wire-breakage
functions

Key reset



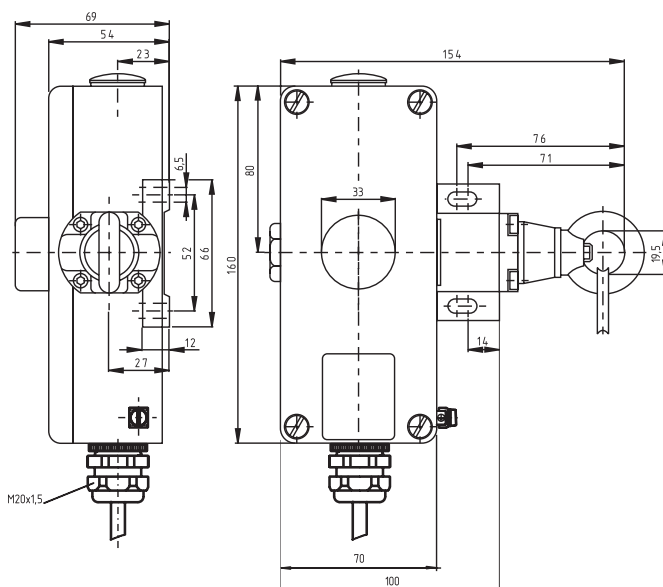
Temperature range

Recommended lengths of wire for pull-wire emergency stop switches in relation to the range of ambient temperature.

Info

Version for equipment category 3D
(dust-Ex zone 22) available
Ordering suffix: -3D

3D version is equipped with wiring compartment.



Cable length

- On the Ex pull-wire emergency stop switches, the cables are 3 m long
- Other lengths on enquiry

Note

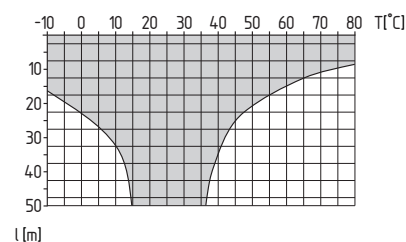
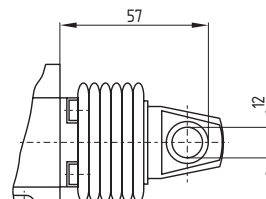
For tensioned span lengths over 5 m, intermediate wire supports are required, see accessories in chapter 1.5.6.

Approvals

EC Type test certificate:
PTB 03 ATEX 1070 X*

*referring to the switch insert

Watertight collar

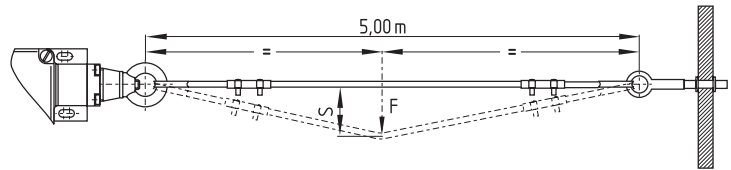


1. Ex switchgear
1.5 Safety switches
1.5.3 Pull-wire emergency stop switches
EEEx ZS 75 range



Actuating deflection/ force

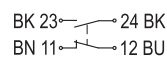
The values quoted relate to the switch being mounted at an ambient temperature of 20 °C. Stretching of the wire due to elongation and deformation of the wire thimbles has not been taken into account. The actuating forces given are only guide values, since the spring forces are subject to tolerances. Actuating deflections and forces relate to a 5 m long wire.



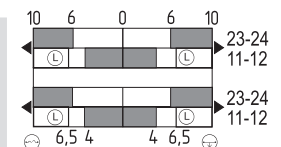
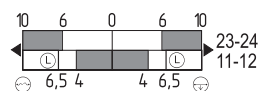
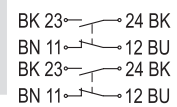
Pre-tensioning force [N]	Actuating deflection S [cm]	Actuating force F [N]	Recommended cable length [m]	Ordering suffix
295-390	12	60	30-50	-295N
195-275	12	41	20-30	-195N
120-180	12	25	10-20	-120N
80-100	12	8	<10	-80 N

Contacts/ Switch travel

**1 NO
1 NC**



**2 NO
2 NC**



Without latch interlock
 Push button reset
 Key reset

EEEx ZS 75 1Ö/1S
EEEx ZS 75 1Ö/1S VD
EEEx ZS 75 1Ö/1S VS

Without latch interlock, with watertight collar
 Push button reset, with watertight collar
 Key reset, with watertight collar

EEEx ZS 75 1Ö/1S W
EEEx ZS 75 1Ö/1S WVD
EEEx ZS 75 1Ö/1S WVS

EEEx ZS 75 2Ö/2S
EEEx ZS 75 2Ö/2S VD
EEEx ZS 75 2Ö/2S VS

EEEx ZS 75 2Ö/2S W
EEEx ZS 75 2Ö/2S WVD
EEEx ZS 75 2Ö/2S WVS

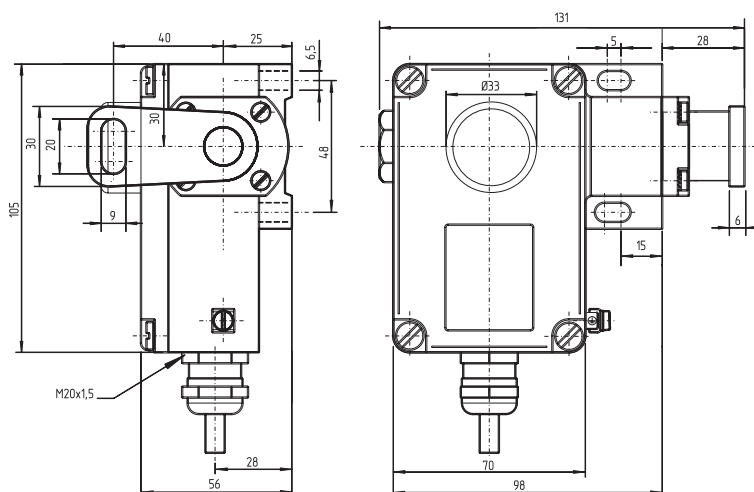
Note

Ordering suffix for pretensioning force must always be added to part number, see ordering details.

Ordering details

EEEx ZS 75 range pull-wire emergency stop switch for one-side operation with two NO and two NC contacts, key reset and 120-180 N pretensioning force:
 EEEx ZS 75 2Ö/2S VS-120N

1. Ex switchgear
1.5 Safety switches
1.5.4 Pull-wire emergency stop switches
1.5.4 EEx ZS 73 S range



Features

- Metal enclosure
- 2 contacts
- II 2G EEx d IIC T6
II 2D IP65 T80°C
- 4 spring force variants
(pretensioning forces)
- Adjustable actuating force
- Wire up to 2 x 50 m long
- Reset by push button
or key possible
- Pull-wire and wire-breakage
functions

**Cable
length**

- On the Ex pull-wire emergency stop
switches, the cables are 3 m long
- Other lengths on enquiry

Note

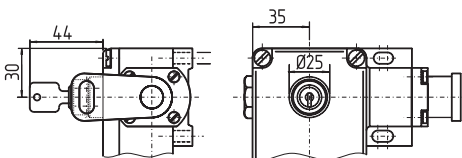
For tensioned span lengths over 4 m,
intermediate wire supports are re-
quired, see accessories in
chapter 1.5.6.

Approvals

EC Type test certificate:
PTB 03 ATEX 1070 X*

*referring to the switch insert

Key reset



Info

Version for equipment category 3D
(dust-Ex zone 22) available
Ordering suffix: -3D

**3D version is equipped with wiring
compartment.**

1.

1.5

1.5.4

Ex switchgear

Safety switches

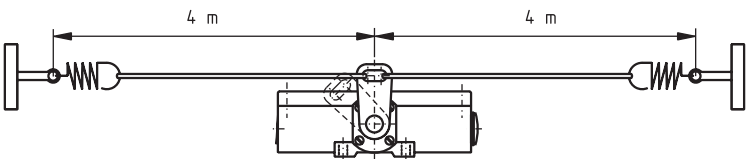
Pull-wire emergency stop switches

EEx ZS 73 S range



Actuating deflection/force

The values quoted relate to the switch being mounted at an ambient temperature of 20 °C. Stretching of the wire due to elongation and deformation of the wire thimbles has not been taken into account. The actuating forces given are only guide values, since the spring forces are subject to tolerances. Actuating deflections and forces relate to a 4 m long wire.

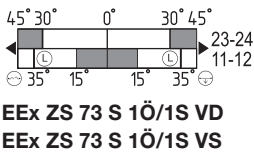


Actuating deflection S [cm]	Actuating force F [N]	Recommended cable length [m]
35	70	30-50

Contacts/
Switch travel

1 NO
1 NC
BK 23 — 24 BK
BN 11 — 12 BU

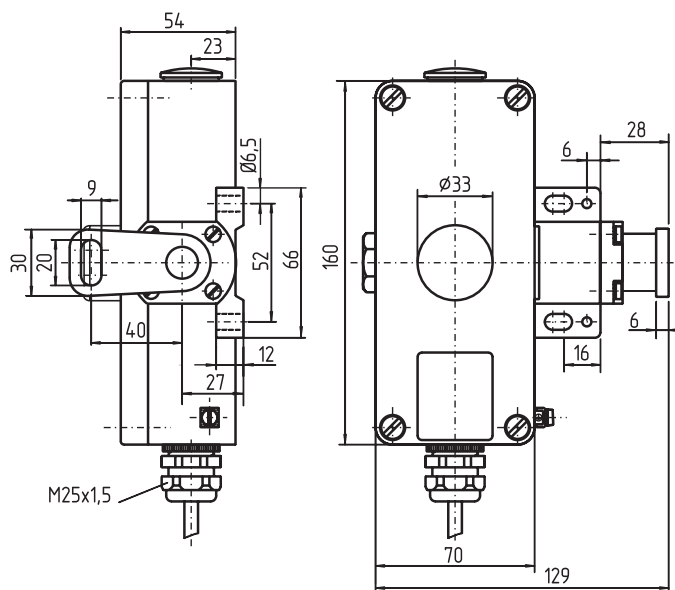
Push button reset
Key reset



Ordering details

EEx ZS 73 S range pull-wire emergency stop switch for two-side operation with one NO and one NC contact, key reset for wire lengths up to 2 x 50 m: EEx ZS 73 S 1Ö/1S VS

1. Ex switchgear
1.5 Safety switches
1.5.5 Pull-wire emergency stop switches
1.5.5 EEx ZS 75 S range



Features

- Metal enclosure
- 2 or 4 contacts
- II 2G EEx d IIC T6
II 2D IP65 T80°C
- 4 spring force variants
(pretensioning forces)
- Adjustable actuating force
- Twisting not possible
- Wire up to 2 x 50 m long
- Reset by push button
or key possible
- Pull-wire and wire-breakage
functions

Cable length

- On the Ex pull-wire emergency stop switches, the cables are 3 m long
- Other lengths on enquiry

Note

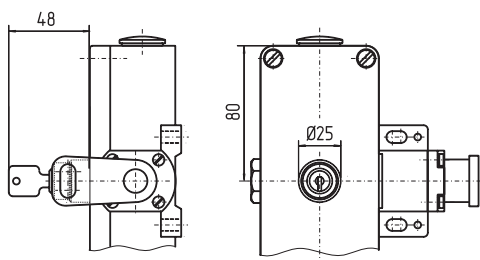
For tensioned span lengths over 4 m, intermediate wire supports are required, see accessories in chapter 1.5.6.

Approvals

EC Type test certificate:
PTB 03 ATEX 1070 X*

*referring to the switch insert

Key reset



Info

Version for equipment category 3D
(dust-Ex zone 22) available
Ordering suffix: -3D

3D version is equipped with wiring compartment.

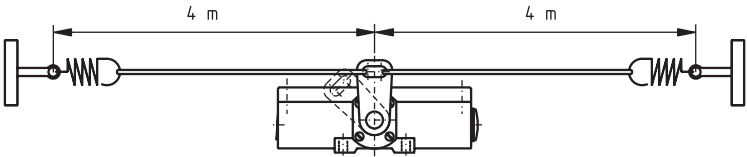
1.
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1.5.5

Ex switchgear
Safety switches
Pull-wire emergency stop switches
EEx ZS 75 S range



Actuating
deflection/
force

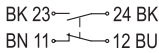
The values quoted relate to the switch being mounted at an ambient temperature of 20 °C. Stretching of the wire due to elongation and deformation of the wire thimbles has not been taken into account. The actuating forces given are only guide values, since the spring forces are subject to tolerances. Actuating deflections and forces relate to a 4 m long wire.



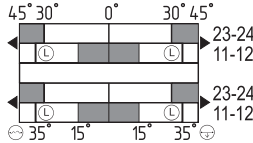
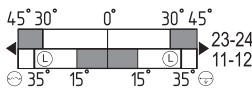
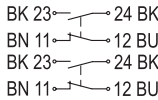
Actuating deflection S [cm]	Actuating force F [N]	Recommended cable length [m]
35	70	30-50

Contacts/
Switch travel

1 NO
1 NC



2 NO
2 NC



Without latch interlock
Push button reset
Key reset

EEx ZS 75 S 1Ö/1S
EEx ZS 75 S 1Ö/1S VD
EEx ZS 75 S 1Ö/1S VS

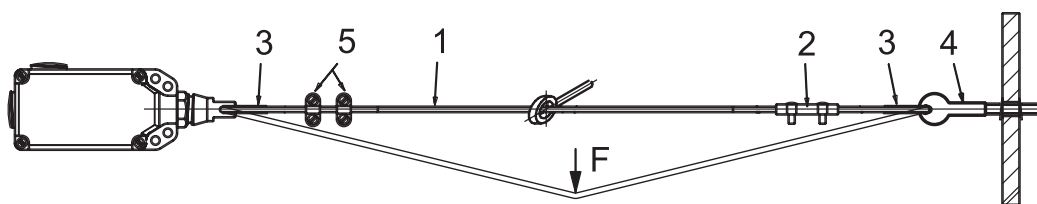
EEx ZS 75 S 2Ö/2S
EEx ZS 75 S 2Ö/2S VD
EEx ZS 75 S 2Ö/2S VS

Ordering
details

EEx ZS 75 S range pull-wire emergency stop switch for two-side operation with two NO and two NC contacts, key reset and for wire lengths up to 2 x 50 m: EEx ZS 75 S 2Ö/2S VS

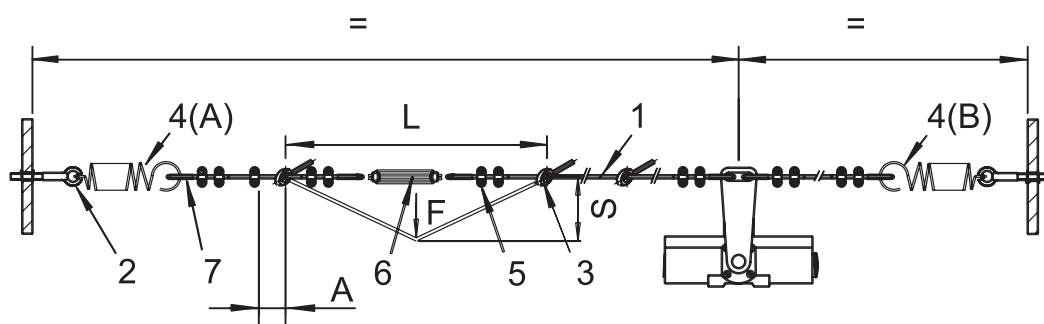


One-side operation



- Legend**
- 1 Wire rope with red PVC sheath
 - 2 Duplex wire clamp
 - 3 Wire thimble
 - 4 Eyebolt
 - 5 Wire clamp

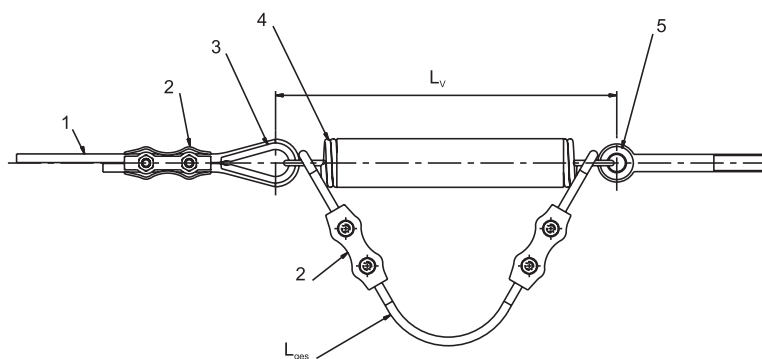
Two-side operation



- Legend**
- 1 Wire rope
 - 2 Eyebolt
 - 3 Wire support
 - 4 Tension spring
 - 5 Wire clamp
 - 6 Tensioner
 - 7 Wire thimble
- Note**
- A Travel limit 70 mm
 - L Wire support max. 4 m
 - S Switching/actuating travel max. 400 mm (L = 4 m)
- Always mount pull-wire emergency stop switch in middle position.

Spring pretensioning and travel limitation

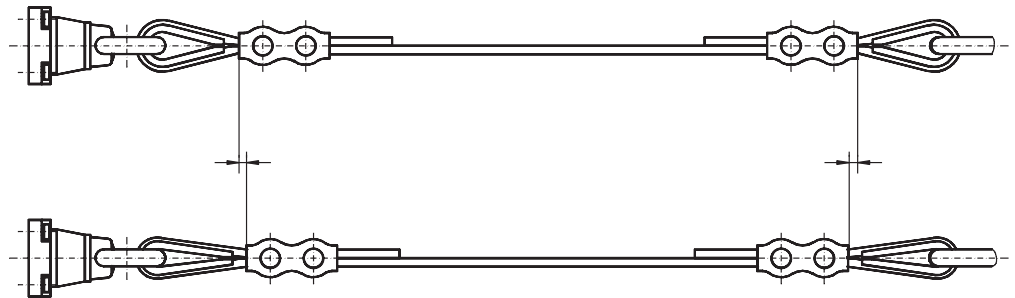
- Note**
- In order to guarantee a safe operation, observe the enclosed mounting and wiring instructions.
- Before mounting the pull-wire the red PVC sheath must be removed from the pull-wire in the clamping range of the pull-wire.



- Legend**
- 1 Pull-wire
 - 2 Duplex wire clamp
 - 3 Wire thimble
 - 4 Tension spring
 - 5 Eyebolt
 - 6 Tensioner
 - 7 Wire thimble
- L_{ges} Total length for limitation of tension spring 270 mm
- L_v Pre-tension 200 mm



Deformation of wire thimble

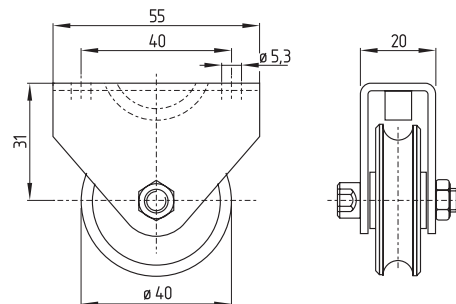


Note After fitting the wire, pull strongly on it several times, as the pull-wire and the wire thimble will deform. Subsequently retension the wire using the Duplex clamp, eye-bolt or tensioner.

Pulley

- To guide the wire rope where the path is not a straight line
- For Ø 5 mm wire with red PVC sheath (steel core: Ø 3 mm)

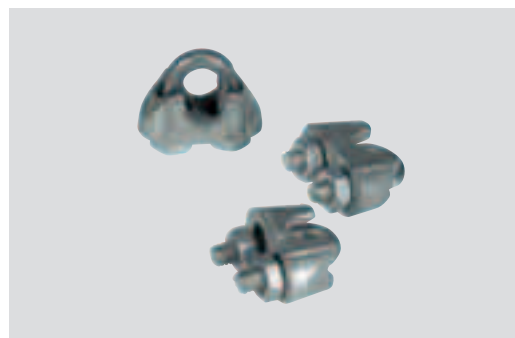
Note According to EN 418, pulleys may only be mounted such that the complete length of the pull-wire can be observed.





Wire clamp

- 3 mm wire clamp
- 5 mm wire clamp
- Also available in stainless steel
- Ordering unit: 1 piece



Egg-shaped wire clamp

- For wire rope Ø 3 mm steel core
- Ordering unit: 1 piece



Duplex wire clamp

- Duplex wire clamp
- For wire rope Ø 3 mm steel core
- Ordering unit: 1 piece





Wire thimbles

- To DIN 6899
- For wire rope $\varnothing$ 3 mm steel core,
ordering part number: Wire thimble 3B
- Also available in stainless steel
- Ordering unit: 1 piece



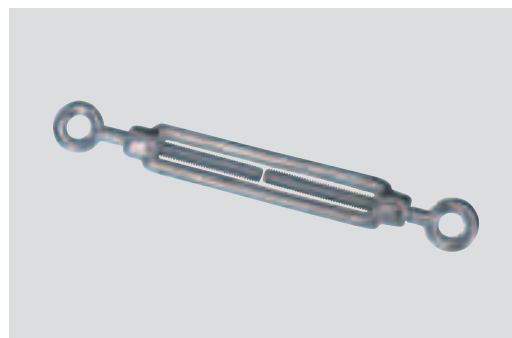
Eyebolts

- To DIN 444
- Eyebolt M 8 x 70 including nut,
length referring to eye centre: 70 mm,
thread length: 25 mm, thread: M 8 x 1.5
- Also available in stainless steel
- Eyebolt BM 10 x 40 including nut
(not shown)
length referring to eye centre: 40 mm,
thread: M 10 x 1.5
- Ordering unit: 1 piece



Tensioner

- For exact adjustment of the tension
of the wire rope
- To DIN 1480
- Tensioner M6: Adjustable from
145 mm to 225 mm
- Tensioner M8: Stainless steel,
adjustable from 160 mm to 225 mm
- Also available in stainless steel
- Ordering unit: 1 piece



1. Ex switchgear
1.5 Safety switches
1.5.6 Pull-wire emergency stop switches
Accessories



Tension spring

- Only suitable for two-side actuation
- To maintain the reaction force
- Ordering part number RZ-156I
- Length approx. 130 mm without tension
- Ordering unit: 1 piece



Wire rope

- Steel core Ø 3 mm
- With red PVC sheath
- Ø 5 mm total
- Also available in stainless steel
- Ordering unit: per metre



Wire rope set

- 5 m wire rope, steel core Ø 3 mm with 2 mm red PVC sheath
- 2 wire clamps DIN 741
- 1 wire thimble DIN 6899
- 1 eye-bolt DIN 444
- 1 Duplex wire clamp

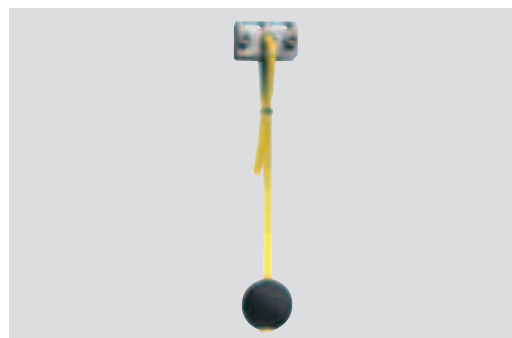


1.	Ex switchgear	
1.5	Safety switches	
1.5.6	Pull-wire emergency stop switches	
1.5.6	Accessories	



Wire rope with ball

- Yellow wire rope (polypropylene)
- With ball and mounting clamp
- 1, 2, 3 or 5 m long
- Ordering unit: 1 piece



1. Ex switchgear
1.5 Safety switches
1.5.7 Pull-wire emergency stop switches
1.5.7 Technical data



	EEx ZS 71	EEx ZS 73	EEx ZS 75
Standards:	IEC 60947-5-1; EN 50014; EN 50018; EN 50281-1-1		
Ex marking:	Ⓔ II 2G EEx d IIC T6		
	II 2D IP65 T80°C		
Certification:	PTB 03 ATEX 1070 X*		
Enclosure:	Cast aluminium, enamel finish	Aluminium die-cast, enamel finish	
Cover:	Thermoplastic	Same like enclosure	
Protection class:	IP 65 for versions with push button reset VD, WVD; IP 54 for versions with key reset VS, WVS		
	to IEC/EN 60529		
Contact material:	Silver		
Switching insert:	1 x EX 14 VD	1 x EX 14 KU VD	1 x or 2 x EX 14 KU VD
Contact type:	Change-over contact with double break, NC contacts with positive break ⊕		
Switching system:	⊖ IEC 60947-5-1; slow action		
Termination:	Cable H05VV-F 4 x 0.75 mm ²		
Rated impulse			
withstand voltage U _{imp} :	4 kV		
Rated insulation voltage U _i ;250 V			
Thermal test current I _{the} :	6 A		
Utilisation category:	AC-15; DC-13		
Rated operating			
current/voltage 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		
Mechanical life:	> 1 million operations		



* referring to the switch insert

1. Ex switchgear
1.5 Safety switches
1.5.7 Pull-wire emergency stop switches
1.5.7 Technical data



	EEx ZS 73 S	EEx ZS 75 S
Standards:	IEC 60947-5-1; EN 50014; EN 50018; EN 50281-1-1	
Ex marking:	Ⓔ II 2G EEx d IIC T6 II 2D IP65 T80°C	
Certification:	PTB 03 ATEX 1070 X*	
Enclosure:	Aluminium die-cast, enamel finish	
Cover:	Thermoplastic	Same like enclosure
Protection class:	IP 65 for versions with push button reset VD; IP 54 for versions with key reset VS to IEC/EN 60529	
Contact material:	Silver	
Switching insert:	1 x EX 14 KU VD	1 x or 2 x EX 14 KU VD
Contact type:	Change-over contact with double break, NC contacts with positive break ⊖	
Switching system:	⊖ IEC 60947-5-1; slow action	
Termination:	Cable H05VV-F 4 x 0.75 mm ²	
Rated impulse withstand voltage U_{imp} :	4 kV	
Rated insulation voltage U_i :	250 V	
Thermal test current I_{the} :	6 A	
Utilisation category:	AC-15; DC-13	
Rated operating current/voltage 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	
Mechanical life:	> 1 million operations	



* referring to the switch insert



Application

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

There are versions as push buttons, semi-rotary, key-operated and emergency-stop switches. The emergency-stop devices are connected in the safety circuit of a machine or plant. They meet the requirements of EN 60204-1.

Design and mode of operation

These Ex command devices fit in Ø 22.5 mm mounting holes and are suitable for spacings of 30 mm between centres. All actuators provide IP 67 and the devices are double-insulated to protection class II. The actuator is connected by a bayonet fastener to the EEx 14 switch. Switching elements are available with slow action.

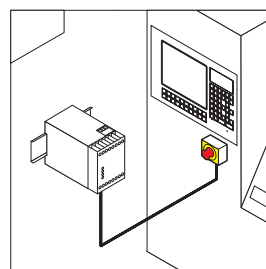
Features EEx 14

- 2 contacts
- Thermoplastic enclosure
- Compact design
- Pre-wired cable
- Slow action
- 1 NO and 1 NC contact
- Clip-in actuators
- Actuators:
 - Emergency-stop push buttons
 - Push buttons with/without diaphragm
 - Selector switches
 - Control switches, spring return
 - Selector/control switches
 - Key-operated switches

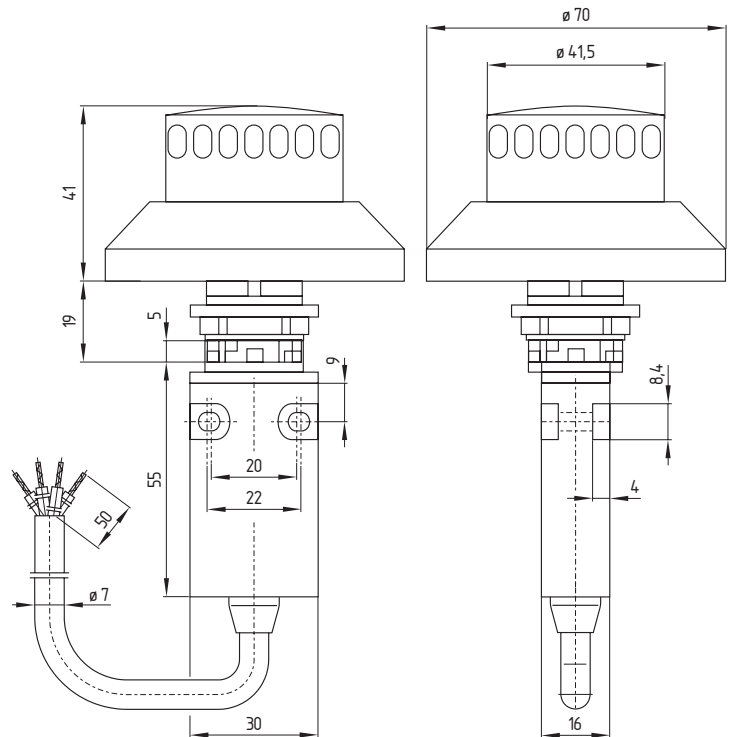
Note

Technical data are shown in tabular form in chapter 1.6.5.

Application



1. Ex switchgear
1.6 Safety switches
1.6.1 Emergency stop and push buttons
EEEx 14 RUV range



Features

- Thermoplastic actuator
- To EN 418
- II 2G EEx d IIC T6
II 2D IP65 T80°C
- 1 NC and 1 NO contact, double break Zb
- Projection from front of panel 41 mm
- Mounting hole Ø 22.5 mm
- With collar to prevent blocking
- Reset by turning clockwise
- With pressure-point to protect against unintentional actuation

Approvals

EC Type Test Certificate: PTB 03 ATEX 1070X

Info

Version for equipment category 3D
(dust-Ex zone 22) available
Ordering suffix: -3D

**Contacts/
Switch travel**

**1 NO
1 NC**

BK 23 → 24 BK
BN 11 → 12 BU

Slow action

EEEx 14 RUV

**Cable
length**

- Cable length 1 m
- Other lengths on enquiry

Info

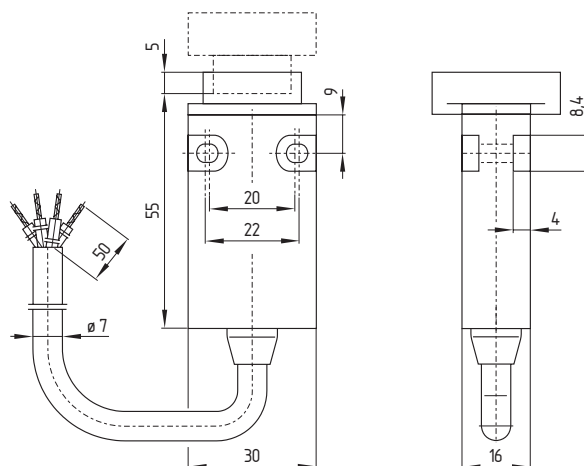
- Also available with cable on side

Note

The switch must be protected from mechanical damage.

1.
1.6
1.6.2

Ex switchgear
Safety switches
Emergency stop and push buttons
EEx 14 range



Features

- Thermoplastic enclosure
- II 2G EEx d IIC T6
II 2D IP65 T80°C
- Slow action $\ominus$ with
1 NC and 1 NO contact,
double break Zb
- Pre-wired cable
- Clip-in actuator

Cable length

- Cable length 1 m
- Other lengths on enquiry

Approvals

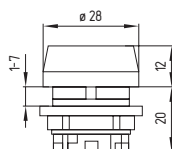
EC Type Test Certificate: PTB 03 ATEX 1070X

Info

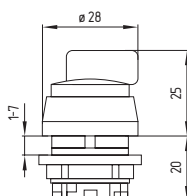
Version for equipment category 3D
(dust-Ex zone 22) available
Ordering suffix: -3D

Actuators

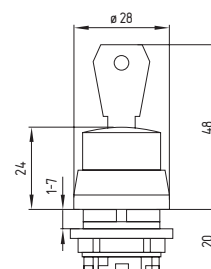
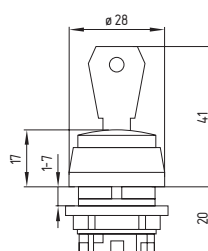
push button
RT and RTM



selector and control switch
RW and RST



key actuator
RSSA



Note

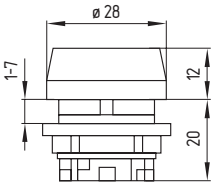
The switch must be protected from
mechanical damage.

Info

- Also available with cable on side



RT and RTM push button



Features	• RT push button without diaphragm • RTM push button with diaphragm • Diaphragm of transparent silicon material • II 2G EEx de IIC T6 • II 2D IP65 T80°C • IP 67 for actuator with diaphragm • Pre-wired cable	Approvals	EC Type Test Certificate: PTB 03 ATEX 1070X
		Info	Version for equipment category 3D (dust-Ex zone 22) available Ordering suffix: -3D

Contacts/ Switch travel	1 NO	BK 23	24 BK
	1 NC	BN 11	12 BU

Slow action

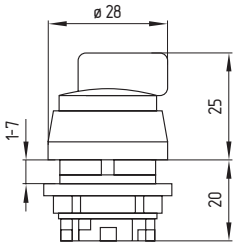
Without diaphragm	EEx 14 RT
With diaphragm	EEx 14 RTM

Note The part numbers shown in the “Contacts” table comprise the actuator and basic unit complete with connecting cable.

Note The switch must be protected from mechanical damage.



RW and RST selector and control switch



Features	• RW selector with rest positions • II 2G EEx de IIC T6 II 2D IP65 T80°C • 5 variants available • RST type with spring return • Pre-wired cable	Cable length	• Cable length 1 m • Other lengths on enquiry
			Approvals
			EC Type Test Certificate: PTB 03 ATEX 1070X
		Info	Version for equipment category 3D (dust-Ex zone 22) available Ordering suffix: -3D

RW actuators	• RWA • With 2 rest positions • Switching angle 90° 0 - I or I - II		RST actuators	• RSTA • Switching angle 90° • Spring return to left 0 ← II	
	• RWB • With 3 rest positions • Switching angle 45° + 45° I - 0 - II			• RSTB • Switching angle 45° + 45° • Spring return to centre I → 0 ← II	
	• RWC • Rest position to left • Spring return from right • Switching angle 45° + 45° I - 0 ← II			I Switch position Spring return	

Note The switch must be protected from mechanical damage.

1.

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1.6.3

Ex switchgear

Safety switches

Emergency stop and push buttons

EEx 14 range



RW and RST selector and control switch

Contacts/	1 NO	BK 23	24 BK
Switch travel	1 NC	BN 11	12 BU

Slow action

RWA actuator	EX 14 RWA 0 - I
RWA actuator	EX 14 RWA I - II
RWB actuator	EX 14 RWB I - 0 - II
RWC actuator	EX 14 RWC I - 0 ← II
RSTA actuator	EX 14 RSTA 0 ← I
RSTB actuator	EX 14 RSTB I → 0 ← II

Note

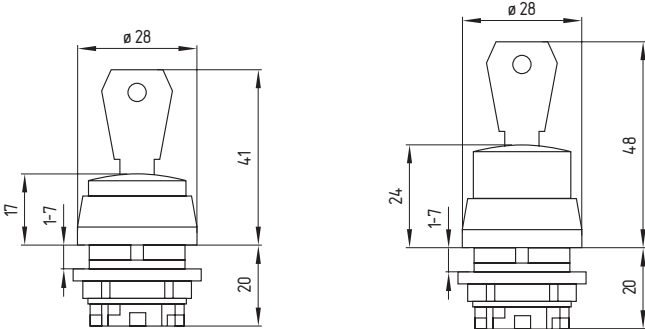
The part numbers shown in the “Contacts” table comprise the actuator and basic unit complete with connecting cable.

Ordering details

A command device of the EEx 14 range with slow action, RWA selector switch actuator inscribed 0 - I : EEx 14 RWA 0 - I



RSSA key switch



Features

- RSSA key actuator with safety cylinder lock (locks against turning)
- II 2G EEx de IIC T6 II 2D IP65 T80°C
- Normal version always has same key number
- 9 versions available
- Pre-wired cable

Info

Version for equipment category 3D (dust-Ex zone 22) available
Ordering suffix: -3D

Cable length

- Cable length 1 m
- Other lengths on enquiry

Approvals

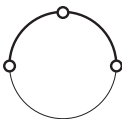
EC Type Test Certificate: PTB 03 ATEX 1070X

Note

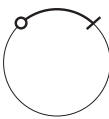
The switch must be protected from mechanical damage.

Key switch actuators

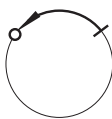
RSSA 12



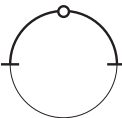
RSSA 17



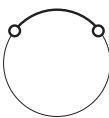
RSSA 27



RSSA 13



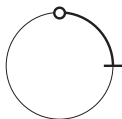
RSSA 18



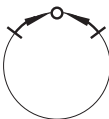
Legend

- Switching position
- Position in which key can be removed
- Spring return

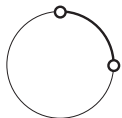
RSSA 14



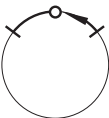
RSSA 23



RSSA 15



RSSA 24



1.

1.6

1.6.4

Ex switchgear

Safety switches

Emergency stop and push buttons

EEx 14 range



RSSA key switch

Contacts/	1 NO	BK 23	24 BK
Switch travel	1 NC	BN 11	12 BU

Slow action

RSSA 12 key switch	EEx 14 RSSA 12
RSSA 13 key switch	EEx 14 RSSA 13
RSSA 14 key switch	EEx 14 RSSA 14
RSSA 15 key switch	EEx 14 RSSA 15
RSSA 17 key switch	EEx 14 RSSA 17
RSSA 18 key switch	EEx 14 RSSA 18
RSSA 23 key switch	EEx 14 RSSA 23
RSSA 24 key switch	EEx 14 RSSA 24
RSSA 27 key switch	EEx 14 RSSA 27

Note The part numbers shown in the "Contacts" table comprise the actuator and basic unit complete with connecting cable.

Ordering details A command device of the EEx 14 range
RSSA 23 key switch actuator:
EEx 14 RSSA 23

1. Ex switchgear
1.6 Safety switches
1.6.5 Emergency stop and push buttons
1.6.5 Technical data



EEx 14 RUV / EEx 14 RT / EEx 14 RW / EEx 14 RST / EEx 14 RSSA	
Standards:	IEC/EN 60947-5-1; EN 50014; EN 50018; EN 50281-1-1
EEx identification:	Ⓔ II 2G EEx d IIC T6, II 2D IP65 T80°C
Certification:	PTB 03 ATEX 1070 X
Enclosure:	Thermoplastic, self-extinguishing UL 94-VO
Protection class:	IP 65 to IEC/EN 60529
Contact material:	Silver
Switching system:	Slow action NC contacts with positive break Ⓣ
Contact type:	Change-over contact, double break Zb, with galvanically separated contact bridges
Termination:	Cable H 05VV-F 4 x 0.75 mm ²
Rated impulse	
withstand voltage U_{imp} :	4 kV
Rated insulation voltage U_i ; 250 V	
Thermal test current I_{the} :	6 A
Utilisation category:	AC-15; DC-13
Rated operating	
current/voltage 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
Mechanical life:	>1 million operations
Switching frequency:	1800/h
Repeat operation	
accuracy:	–
Resistance to shock:	50 g/6 ms



1.	Ex switchgear
1.6	Safety switches
1.6	Emergency stop and push buttons
1.6.5	Technical data





Application

Ex position switches are used wherever moving parts on machinery and plants need to be positioned, controlled and monitored. The particular requirements in industrial practice need individual solutions. The design details in relation to body dimensions, materials, electrical loading capacity, rated values and quality characteristics are to a great extent determined by the variety of application, from precision mechanics to heavy engineering.

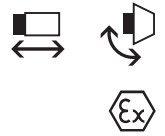
Many of the Ex position switches fulfil the requirements of IEC 60947-5-1 and can therefore also be used as Ex position switches with safety function. These products are identified in the catalogue by the symbol ⊖ for positive break.

In addition, all Ex position switches shown in chapter 1.3 can also be used for the applications described above.

Design and mode of operation

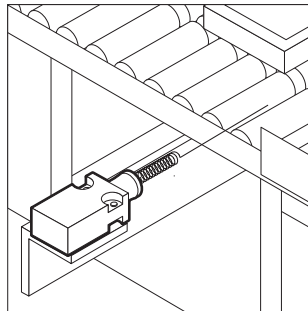
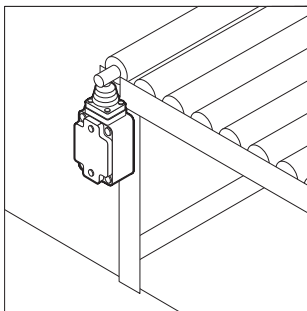
The Ex position switches are available with snap action or slow action. The majority of units are also obtainable with metal rollers.

The switches are listed in sequence of body size, starting with the smallest devices.



Features EEx/EEExM 14	• Slow action ☹: 2 contacts type Zb • Snap action: 1 contact, type C, 2 contacts, type Zb • Thermoplastic enclosure • Pre-wired cable • Double-insulated ☐	EEx 95	• To EN 50047 • Slow action ☹: 2 contacts, type Zb • Thermoplastic enclosure • Wiring compartment	EEx/EEExM 61	• Slow action ☹: 2 contacts, type Zb • Snap action, 1 contact, type C • Metal enclosure • Wiring compartment
EEx 12	• Snap action, 1 contact, type C • Metal enclosure • Pre-wired cable	EEx 335/355	• To EN 50041/mounting dimensions to EN 50041 • Slow action ☹: 2 contacts, type Zb • Metal enclosure • Wiring compartment	Note	Technical data are shown in tabular form in chapter 2.9.
EEx 13	• Slow action ☹: 2 contacts, type Zb • Thermoplastic enclosure • Pre-wired cable	EEx T 356	• Mounting dimensions to EN 50041 • Slow action ☹: 2 contacts, type Zb • Thermoplastic enclosure with metal cover • Pre-wired cable		

Application



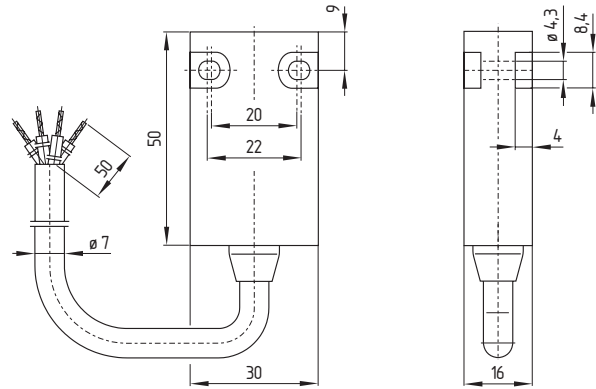
2.

2.1

Ex switchgear

Position switches

EEx/EEExM 14 and EEExM 14 1Ö/1S range



Features

- Thermoplastic enclosure
- Double-insulated □
- II 2G EEx d IIC T6
- II 2D IP65 T80°C
- Slow action ⊖, change-over contact, double break
- Snap action, change-over contact, single or double break
- Available with overlapping contacts
- Mountings to EN 50047
- Suitable for in-line mounting
- Pre-wired cable 1 m long
- IP 67

Cable length

Always specify cable length

1 metre long	ordering suffix	-1m
2 metres long	ordering suffix	-2m
5 metres long	ordering suffix	-5m
10 metres long	ordering suffix	-10m
Other lengths on enquiry		

Info

- With overlapping contacts, ordering suffix 1Ö/1S UE
- With cable on side, ordering suffix -s

Approvals

EC Type test certificate:
 EEx 14: PTB 03 ATEX 1070 X
 EEExM 14: PTB 03 ATEX 1069 X
 EEExM 14 1Ö/1S: PTB 00 ATEX 1006 X

Note

The switch must be protected from mechanical damage.

Note

A detailed description of the actuators, as well as the contacts and switch travel diagrams, can be found in chapter 1.3.1.

Info

Version for equipment category 3D (dust-Ex zone 22) available
 Ordering suffix: -3D

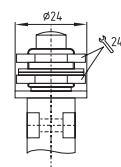
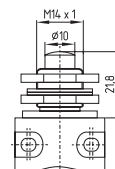
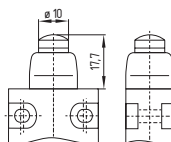
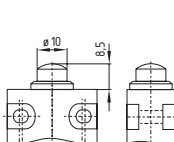
Actuators

Plunger

Plunger

with watertight collar W

with front mounting F



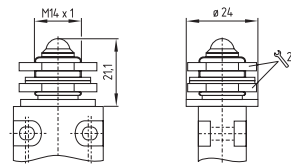
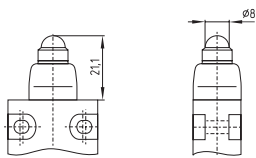
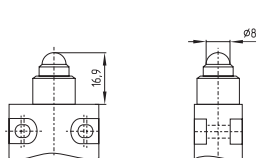
Actuators

Ball plunger

Ball plunger KU

with watertight collar WKU

with front mounting FKU

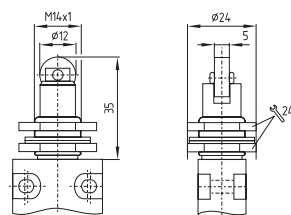
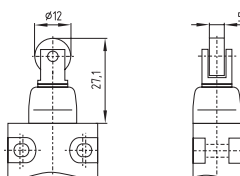
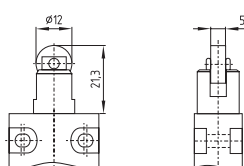


Roller plunger

Roller plunger R

with watertight collar WR

with front mounting FR

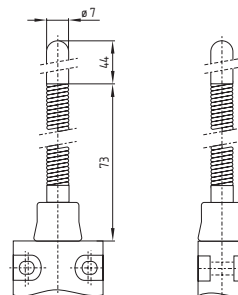
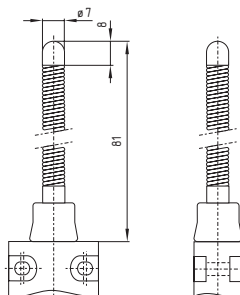
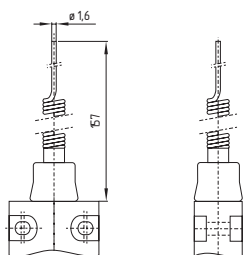


Spring rod

Long spring wire
(Cat's whisker) TL

with rounded steel tip TF

with plastic rod TK

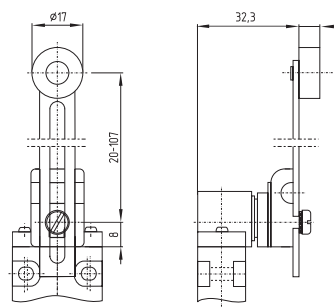
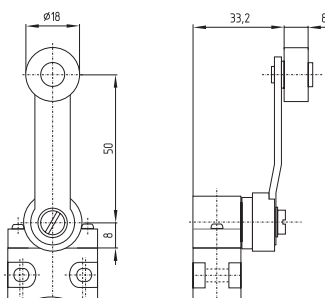
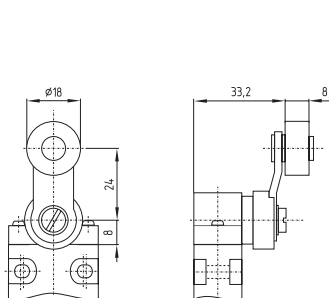


Roller lever

Roller lever D

Long roller lever DL

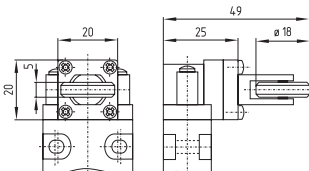
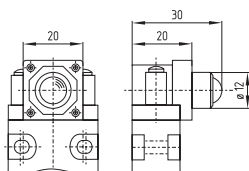
Adjustable-length roller lever DS



Vertical actuation

Ball plunger at front VKU

Roller plunger at front VR



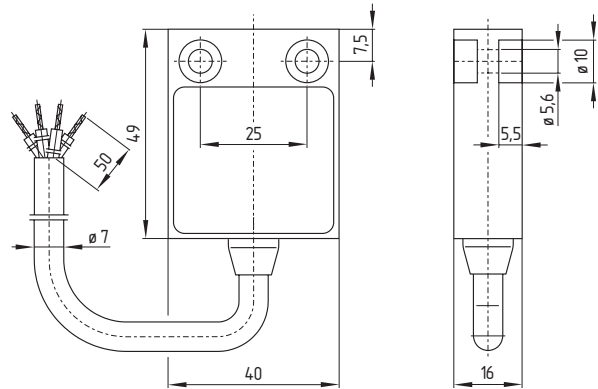
2.

2.2

Ex switchgear

Position switches

EEx 13 range



Features

- Thermoplastic enclosure
- II 2G EEx d IIC T6
II 2D IP65 T80°C
- Double-insulated □
- Slow action ⚡, 1 NO and 1 NC contact, double break
- Available with overlapping contacts
- Suitable for in-line mounting
- Pre-wired cable 1 m long
- IP 67

Info

- With M 16 x 1.5 insert for cable protection hose: below, ordering suffix -03
- Special cables on enquiry

Approvals

EC Type test certificate:
PTB 03 ATEX 1068 X

Cable length

Always specify cable length

1 metre long	ordering suffix	-1m
2 metres long	ordering suffix	-2m
5 metres long	ordering suffix	-5m
10 metres long	ordering suffix	-10m
Other lengths on enquiry		

Note

A detailed description of the actuators, as well as the contacts and switch travel diagrams, can be found in chapter 1.3.2.

Info

Version for equipment category 3D
(dust-Ex zone 22) available
Ordering suffix: -3D

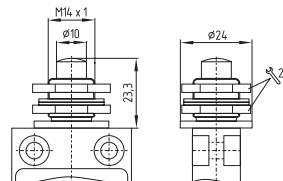
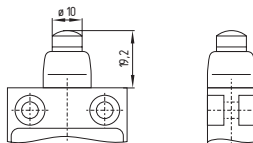
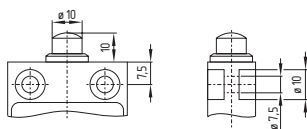
Actuators

Plunger

Plunger

with watertight collar W

with front mounting F

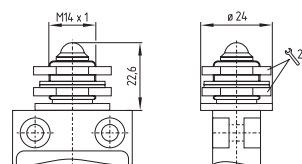
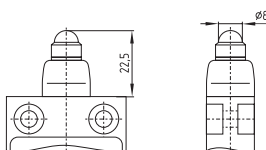
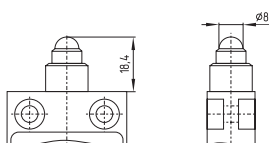


Ball plunger

Ball plunger KU

with watertight collar WKU

with front mounting FKU

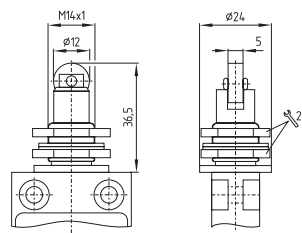
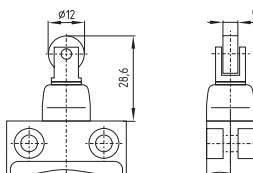
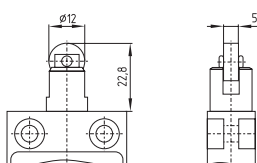


Roller plunger

Roller plunger R

with watertight collar WR

with front mounting FR

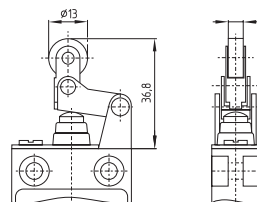
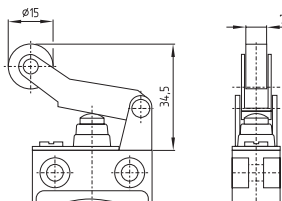
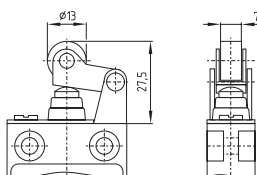


Offset roller lever

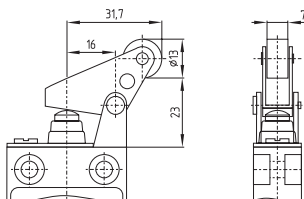
Offset roller lever
with watertight collar WH

Long offset roller lever
with watertight collar WHL

Rocking offset roller lever
with watertight collar WHK



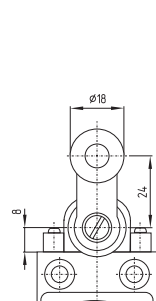
"Parallel" offset roller lever
with watertight collar WPH



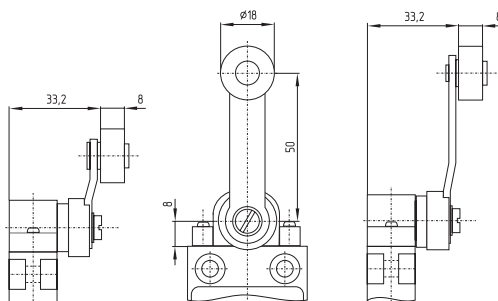
Actuators

Roller lever

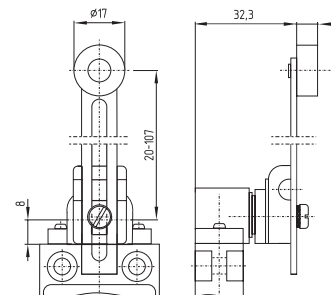
Roller lever D



Long roller lever DL

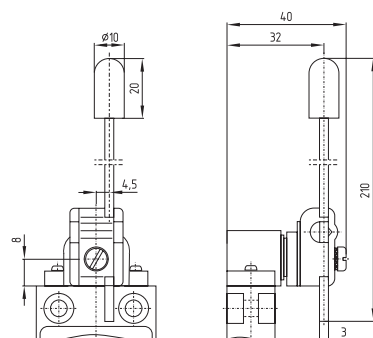


Adjustable-length roller lever DS



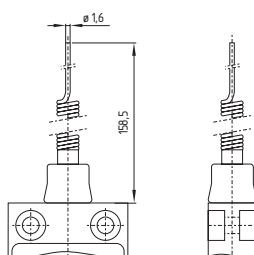
Wire lever

Wire lever DD

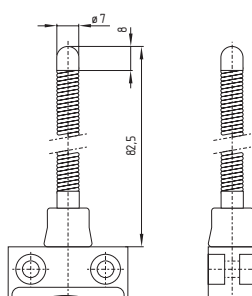


Spring rod

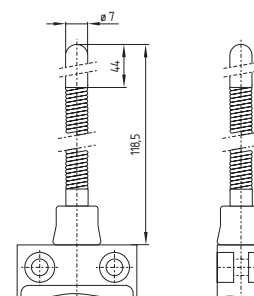
Long spring wire
(Cat's whisker) TL



with rounded steel tip TF



with plastic rod TK





Actuators

2.

2.3

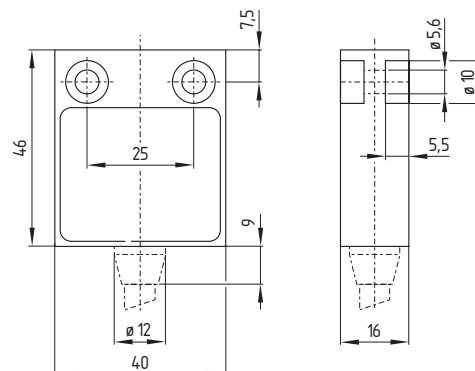
Ex switchgear

Position switches

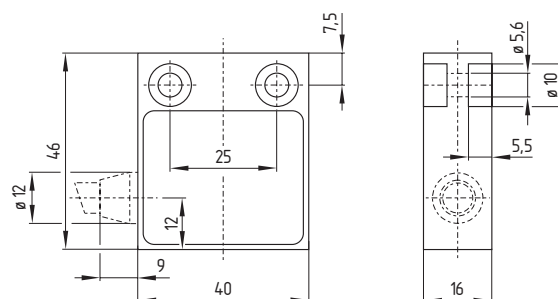
EEx 12 range



With cable
below



With cable
on side



Features

- Metal enclosure
- II 2G EEx d IIC T6
II 2D IP65 T80°C
- Snap action,
change-over contact, single break
- Suitable for in-line mounting
- Pre-wired cable
- IP 67

Info

- With cable on side,
ordering suffix -s
- With M 16 x 1.5 insert for
cable protection hose:
below, ordering suffix -03
on side, ordering suffix -04

Cable length

Always specify cable length

1 metre long	ordering suffix	-1m
2 metres long	ordering suffix	-2m
5 metres long	ordering suffix	-5m
10 metres long	ordering suffix	-10m
Other lengths on enquiry		

Ordering details

An EEx 12 range position switch with plunger
and watertight collar, cable on side 2 m long:
EEx 12 W-s-2m

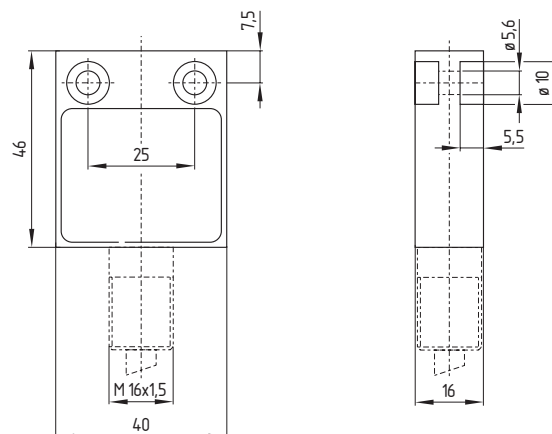
Approvals

EC Type test certificate:
PTB 03 ATEX 1067 X

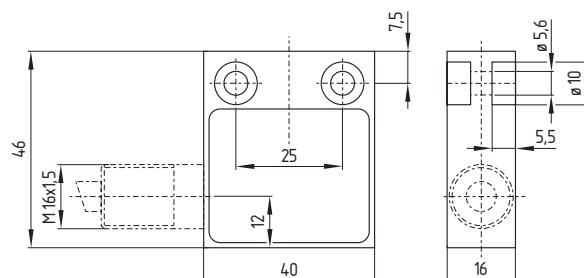
Info

Version for equipment category 3D
(dust-Ex zone 22) available
Ordering suffix: -3D

With insert
below



With insert
on side



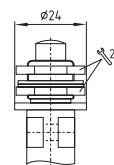
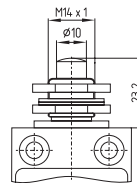
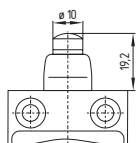
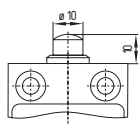
Actuators

Plunger

Plunger

with watertight collar W

with front mounting F

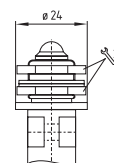
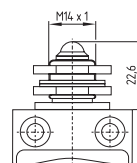
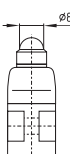
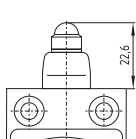
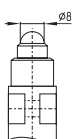
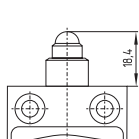


Ball plunger

Ball plunger KU

with watertight collar WKU

with front mounting FKU

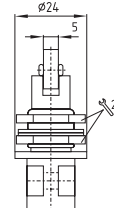
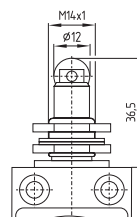
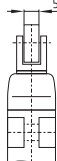
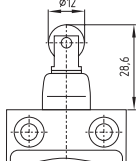
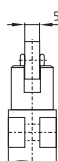
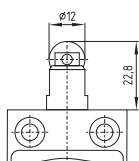


Roller plunger

Roller plunger R

with watertight collar WR

with front mounting FR

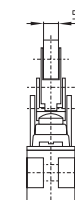
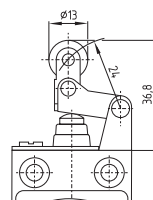
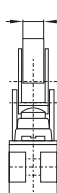
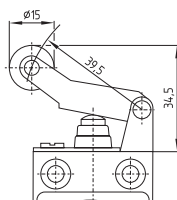
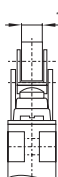
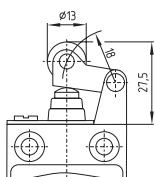


Offset roller lever

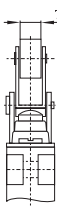
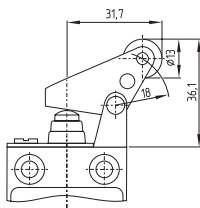
Offset roller lever
with watertight collar WH

Long offset roller lever
with watertight collar WHL

Rocking offset roller lever
with watertight collar WHK



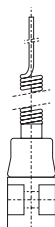
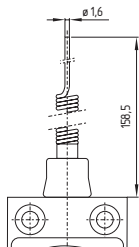
"Parallel" offset roller lever
with watertight collar WPH



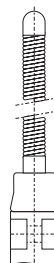
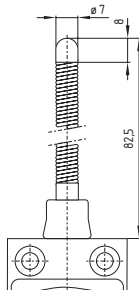
Actuators

Spring rod

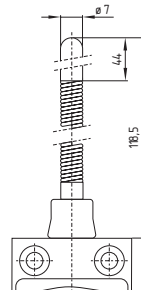
Long spring wire
(Cat's whisker) TL



with rounded steel tip TF

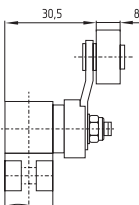
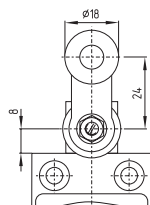


with plastic rod TK

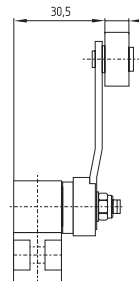
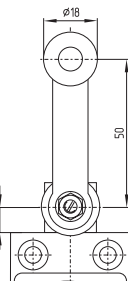


Roller lever

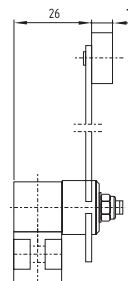
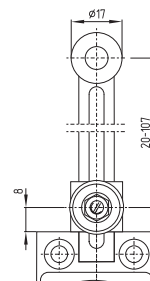
Roller leverD



Long roller lever DL

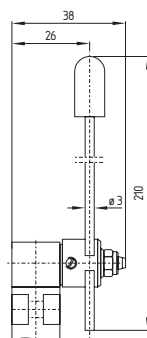
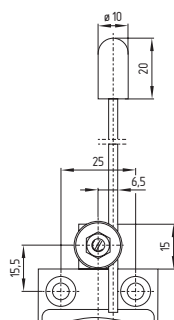


Adjustable-length roller lever DS



Wire lever

Wire lever DD



2.

2.3

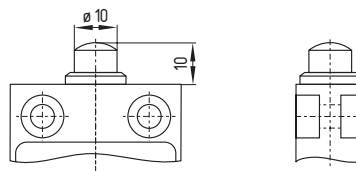
Ex switchgear

Position switches

EEx 12 range



Plunger



Features

- Actuating speed with actuating angle 0° to switch axis 0.5 m/s

Info

Version for equipment category 3D
(dust-Ex zone 22) available
Ordering suffix: -3D

Contacts/ Switch travel

**Change-over
Contact**

4 BK 1
2 BN BU

Snap action

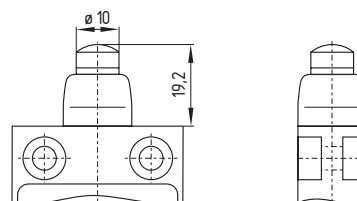


EEx 12

Ordering details

An EEx 12 range position switch with plunger,
snap action with one change-over contact:
EEx 12

Plunger with watertight collar W



Features

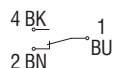
- Actuating speed with actuating angle 0° to switch axis 0.5 m/s
- Collar to protect against the entry of dirt

Info

Version for equipment category 3D
(dust-Ex zone 22) available
Ordering suffix: -3D

Contacts/ Switch travel

Change-over Contact



Snap action



EEx 12 W

Ordering details

An EEx 12 range position switch with plunger and watertight collar W, snap action with one change-over contact:
EEx 12 W

2.

2.3

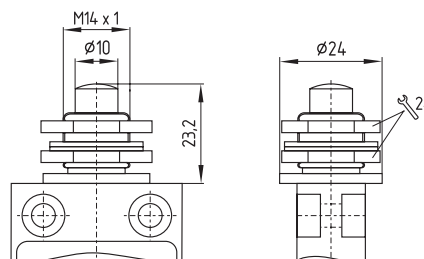
Ex switchgear

Position switches

EEx 12 range



Plunger with front mounting F



Features

- Actuating speed with actuating angle 0° to switch axis 0.5 m/s

Info

Version for equipment category 3D
(dust-Ex zone 22) available
Ordering suffix: -3D

Contacts/ Switch travel

Change-over 4 BK 1
Contact 2 BN BU

Snap action

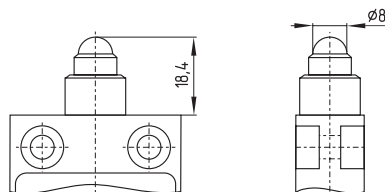


EEx 12 F

Ordering details

An EEx 12 range position switch with plunger and front mounting, snap action with one change-over contact:
EEx 12 F

Ball plunger KU



Features

- Actuating speed with actuating angle 20° to switch axis 0.5 m/s
- 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

Info

Version for equipment category 3D
(dust-Ex zone 22) available
Ordering suffix: -3D

Contacts/ Switch travel

Change-over Contact



Snap action

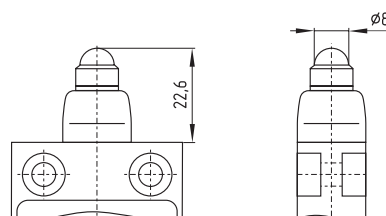


Ex 12 KU

Ordering details

An Ex 12 range position switch with ball plunger KU,
snap action with one change-over contact:
Ex 12 KU

Ball plunger with watertight collar WKU



Features

- Actuating speed with actuating angle 15° to switch axis 0.5 m/s
- 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 dirt

Info

Version for equipment category 3D
(dust-Ex zone 22) available
Ordering suffix: -3D

Contacts/ Switch travel

Change-over Contact

4 BK 1 BU
2 BN

Snap action

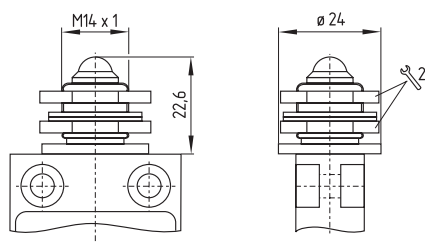


EEx 12 WKU

Ordering details

An EEx 12 range position switch with ball plunger and watertight collar WKU, snap action with one change-over contact: EEx 12 WKU

Ball plunger with front mounting FKU



Features

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

Info

Version for equipment category 3D
(dust-Ex zone 22) available
Ordering suffix: -3D

Contacts/ Switch travel

Change-over Contact 4 BK 1 BU
2 BN

Snap action

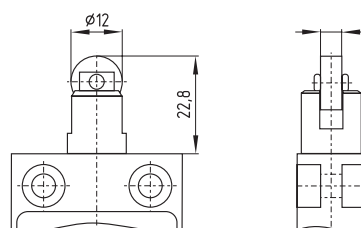


Ex 12 FKU

Ordering details

An Ex 12 range position switch with ball plunger and front mounting FKU, snap action with one change-over contact: Ex 12 FKU

Roller plunger R



Features

- Actuating speed with actuating angle 30° to switch axis 0.5 m/s
- Metal roller
- Available with roller turned 90°

Info

Version for equipment category 3D
(dust-Ex zone 22) available
Ordering suffix: -3D

Contacts/ Switch travel

Change-over 4 BK 1
Contact 2 BN BU

Snap action

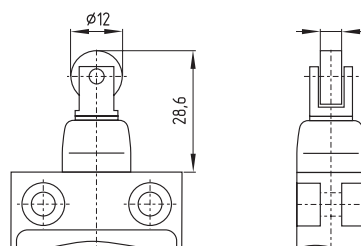


Ex 12 R

Ordering details

An Ex 12 range position switch with roller plunger R,
snap action with one change-over contact: Ex 12 R

Roller plunger with watertight collar WR



Features

- Actuating speed with actuating angle 25° to switch axis 0.5 m/s
- Metal roller
- Available with roller turned 90°
- Collar to protect against the entry of dirt

Info

Version for equipment category 3D
(dust-Ex zone 22) available
Ordering suffix: -3D

Contacts/ Switch travel

Change-over Contact

4 BK 1 BU
2 BN

Snap action

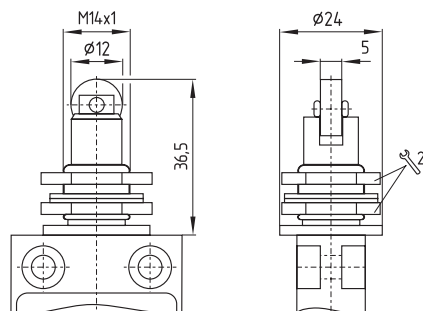


EEx 12 WR

Ordering details

An EEx 12 range position switch with roller plunger and watertight collar WR, snap action with one change-over contact: EEx 12 WR

Roller plunger for front mounting FR



Features

- Actuating speed with actuating angle 25° to switch axis 0.5 m/s
- Metal roller
- Available with roller turned 90°

Info

Version for equipment category 3D
(dust-Ex zone 22) available
Ordering suffix: -3D

Contacts/ Switch travel

Change-over Contact 4 BK 1
2 BN BU

Snap action

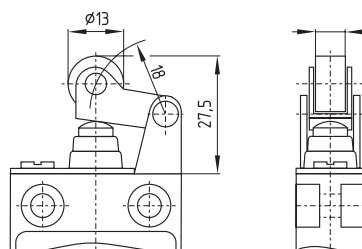


EEx 12 FR

Ordering details

An EEx 12 range position switch with roller plunger and front mounting FR, snap action with one change-over contact: EEx 12 FR

Offset roller lever with watertight collar WH

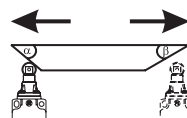


Features

- Actuating speed 0.5 m/s with an actuating angle of $\alpha = 40^\circ$ and $\beta = 25^\circ$
- Metal roller
- Can be supplied with actuator turned 180°
- Collar over plunger to protect against ingress of dirt

Legend

α : Actuating angle from right of switch axis
 β : Actuating angle from left of switch axis



Info

Version for equipment category 3D (dust-Ex zone 22) available
Ordering suffix: -3D

Note

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

Contacts/ Switch travel

Change-over Contact
4 BK 1 BU
2 BN

Snap action



Ex 12 WH

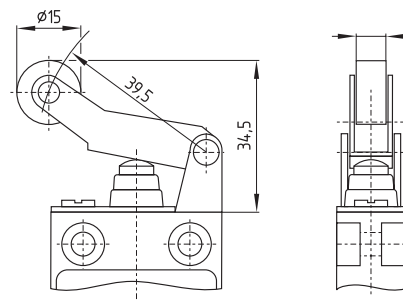
Info

- Plastic roller available

Ordering details

An Ex 12 range position switch with offset roller lever and watertight collar WH, snap action with one change-over contact: Ex 12 WH

Long offset roller lever with watertight collar WHL

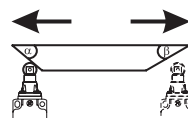


Features

- Actuating speed 0.5 m/s with an actuating angle of $\alpha = 40^\circ$ and $\beta = 30^\circ$
- Metal roller
- Can be supplied with actuator turned 180°
- Collar over plunger to protect against ingress of dirt

Legend

α : Actuating angle from right of switch axis
 β : Actuating angle from left of switch axis



Info

Version for equipment category 3D (dust-Ex zone 22) available
Ordering suffix: -3D

Note

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

Contacts/ Switch travel

Change-over Contact
4 BK 1 BU
2 BN

Snap action



Ex 12 WHL

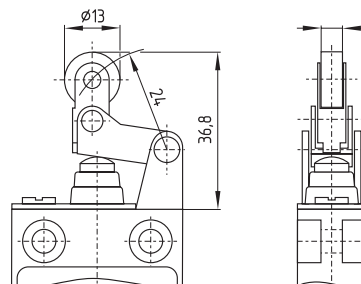
Info

- Plastic roller available

Ordering details

An Ex 12 range position switch with long offset roller lever and watertight collar WHL, snap action with one change-over contact:
Ex 12 WHL

Rocking offset roller lever with watertight collar WHK



Features

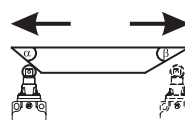
- Actuating speed 0.5 m/s with an actuating angle of $\alpha = 40^\circ$
- Actuation only possible from one side (R.H.S. in illustration)
- Free movement of actuator from other side
- Metal roller
- Can be supplied with actuator turned 180°
- Collar over plunger to protect against ingress of dirt

Info

- Plastic roller available

Legend

α : Actuating angle from right of switch axis



Info

Version for equipment category 3D
(dust-Ex zone 22) available
Ordering suffix: -3D

Contacts/ Switch travel

Change-over Contact
4 BK 1 BU
2 BN

Snap action



EEx 12 WHK

Ordering details

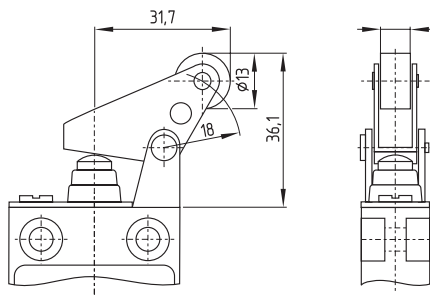
An EEx 12 range position switch with rocking offset roller lever and watertight collar WHK, snap action with one change-over contact: EEx 12 WHK

2. Ex switchgear

2.3 Position switches

2.3 EEx 12 range

“Parallel” offset roller lever with watertight collar WPH



Features

- Actuating speed 0.5 m/s with an actuating angle of $\alpha = 30^\circ$
- Actuation parallel to axis of switch plunger from below
- Metal roller
- Can be supplied with actuator turned 180°
- Collar over plunger to protect against ingress of dirt

Info

- Plastic roller available

Legend

α : Actuating angle from below



Info

Version for equipment category 3D (dust-Ex zone 22) available
Ordering suffix: -3D

Contacts/ Switch travel

Change-over Contact
4 BK 1 BU
2 BN

Snap action

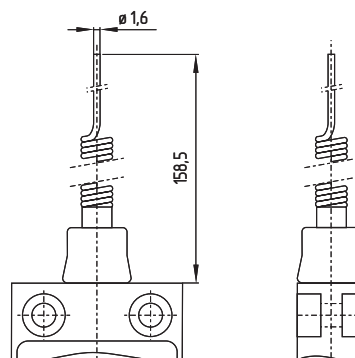


EEx 12 WPH

Ordering details

An EEx 12 range position switch with "parallel" offset roller lever and watertight collar WPH, snap action with change-over contact:
EEx 12 WPH

Long spring wire (Cat's whisker) TL



Features

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

Info

Version for equipment category 3D
(dust-Ex zone 22) available
Ordering suffix: -3D

Contacts/ Switch travel

Change-over Contact
4 BK 1 BU
2 BN

Snap action

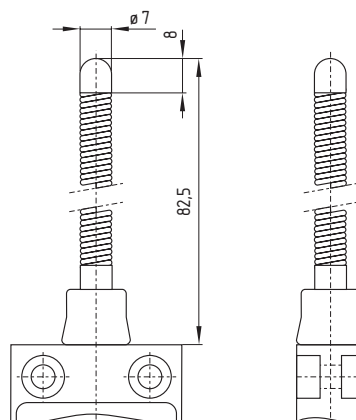


EEx 12 TL

Ordering details

An EEx 12 range position switch with long spring wire TL,
snap action with one change-over contact: EEx 12 TL

Spring rod with rounded steel tip TF



Features

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

Info

Version for equipment category 3D
(dust-Ex zone 22) available
Ordering suffix: -3D

Contacts/ Switch travel

Change-over Contact 4 BK 1 BU
2 BN

Snap action

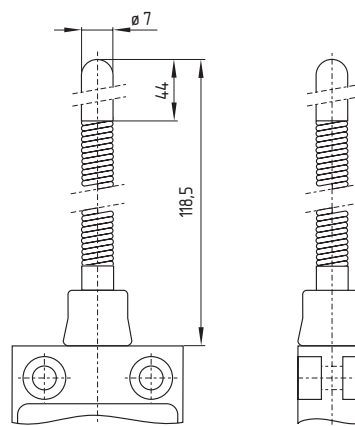


EEx 12 TF

Ordering details

An EEx 12 range position switch with spring rod and rounded steel tip TF, snap action with one change-over contact:
EEx 12 TF

Spring rod with plastic rod TK



Features

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

Info

Version for equipment category 3D
(dust-Ex zone 22) available
Ordering suffix: -3D

Contacts/ Switch travel

**Change-over
Contact** 4 BK 1
2 BN BU

Snap action

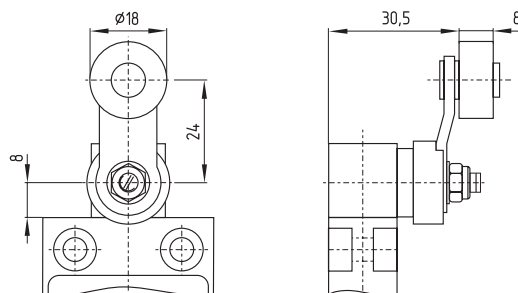


EEx 12 TK

Ordering details

An EEx 12 range position switch with spring rod and plastic rod
TK, snap action with one change-over contact: EEx 12 TK

Roller lever D



Features

- Actuating speed with actuating angle 45° to switch axis 0.5 m/s
- Wear-resistant plastic roller
- Lever can be repositioned 10° steps clockwise or counter-clockwise
- Actuator can be ordered transposed by 180°

Info

Version for equipment category 3D
(dust-Ex zone 22) available
Ordering suffix: -3D

Info

- Metal roller available

Contacts/ Switch travel

Change-over Contact 4 BK 1 BU
2 BN

Snap action

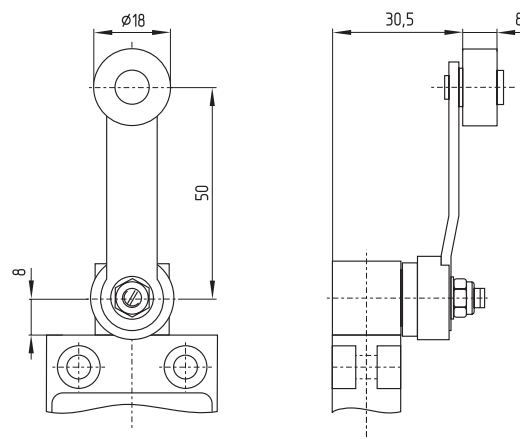


Ex 12 D

Ordering details

An Ex 12 range position switch with roller lever D, snap action and one change-over contact: Ex 12 D

Long roller lever DL



Features

- Actuating speed with actuating angle 45° to switch axis 0.5 m/s
- Wear-resistant plastic roller
- Lever can be repositioned 10° steps clockwise or counter-clockwise
- Actuator can be ordered transposed by 180°

Info

Version for equipment category 3D
(dust-Ex zone 22) available
Ordering suffix: -3D

Info

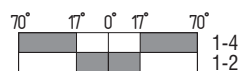
- Metal roller available

Contacts/ Switch travel

Change-over
Contact



Snap action

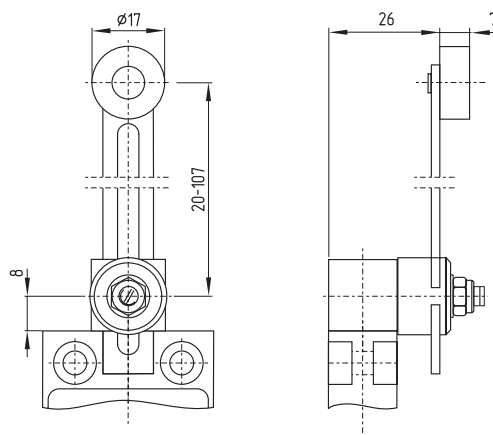


EEx 12 DL

Ordering details

An EEx 12 range position switch with long roller lever DL,
snap action with one change-over contact: EEx 12 DL

Adjustable-length roller lever DS



Features

- Actuating speed with actuating angle 45° to switch axis 0.5 m/s
- Wear-resistant plastic roller
- Lever can be repositioned 10° steps clockwise or counter-clockwise
- Actuator can be ordered transposed by 180°

Info

Version for equipment category 3D
(dust-Ex zone 22) available
Ordering suffix: -3D

Info

- Metal roller available

Contacts/ Switch travel

Change-over Contact
4 BK 1
2 BN BU

Snap action



EEx 12 DS

Ordering details

An EEx 12 range position switch with adjustable-length roller lever DS, snap action with one change-over contact:
EEx 12 DS

2.

2.3

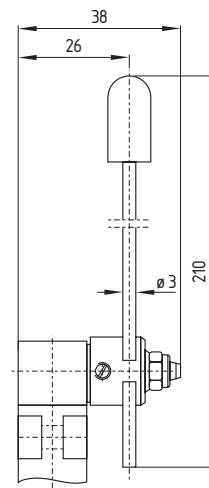
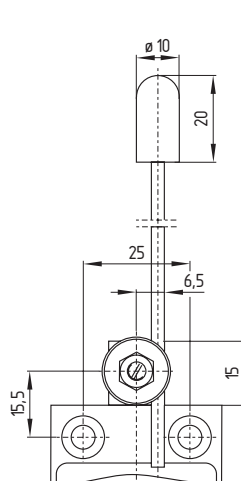
Ex switchgear

Position switches

EEx 12 range



Wire lever DD



Features

- Wear-resistant plastic tip
- Lever can be repositioned 10° steps clockwise or counter-clockwise
- Actuator can be ordered transposed by 180°

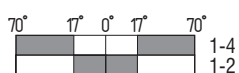
Info

Version for equipment category 3D
(dust-Ex zone 22) available
Ordering suffix: -3D

Contacts/ Switch travel

Change-over 4 BK 1
Contact 2 BN BU

Snap action



EEx 12 DD

Ordering details

An EEx 12 range position switch with wire lever DD, snap action
with one change-over contact: EEx 12 DD

2.
2.3

Ex switchgear
Position switches
EEx 12 range



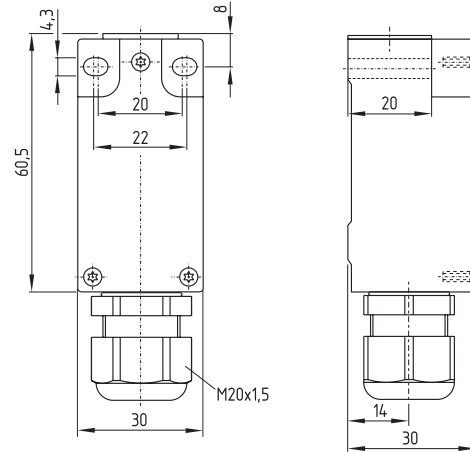
2.

2.4

Ex switchgear

Position switches

EEx 95 range



Features

- Thermoplastic enclosure
- II 2G EEx de IIC T6
II 2D IP67 T80°C
- To EN 50047
- Transversely slotted mounting holes
- Double-insulated
- Slow action available with overlapping contacts
- Wide range of alternative actuators
- Actuator heads can be repositioned in steps 4 x 90°
- M 20 x 1.5 cable entry

Approvals

EC Type test certificate:
DMT 01 ATEX E 118

Info

Version for equipment category 3D
(dust-Ex zone 22) available
Ordering suffix: -3D

Note

A detailed description of the actuators, as well as the contacts and switch travel diagrams, can be found in chapter 1.3.3.

Info

- Enclosure with vertically slotted mounting holes, ordering suffix -LL

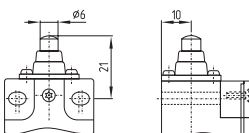
Ordering details

- Position switch with safety function series EEx 95 with plunger W with slow action with overlapping contacts and one NO and one NC contact:
EEx 95 W UE

Actuators

Plunger

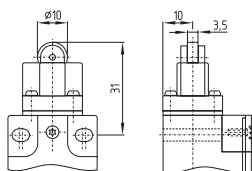
Plunger W



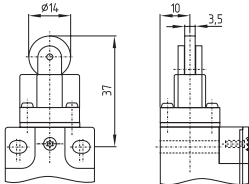
Actuators

Roller plunger

Roller plunger R

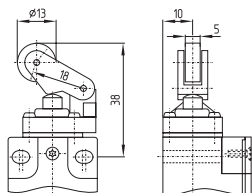


Long roller plunger RL

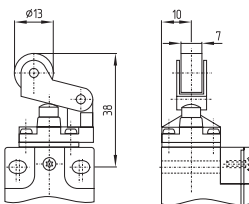


Offset roller lever

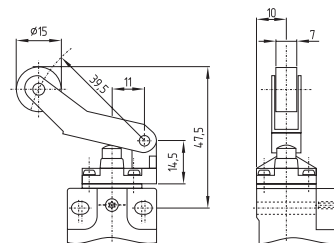
Offset roller lever WH



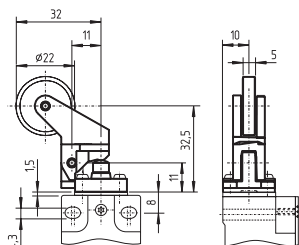
Offset metal roller lever WHM



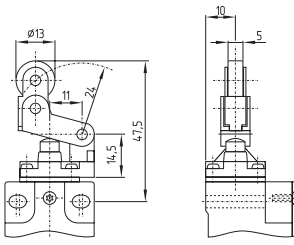
Long offset metal roller lever WHLM



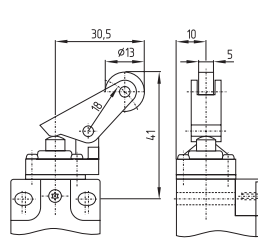
Thermoplastic roller lever 4K



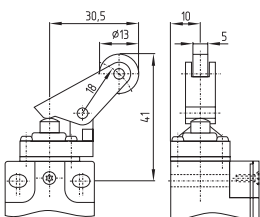
Rocking offset roller lever with single direction actuation WHKM



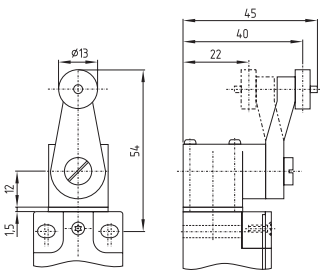
"Parallel" offset roller lever WPH



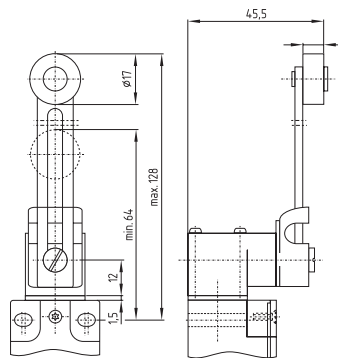
"Parallel" offset metal roller lever WPHM



Roller lever D



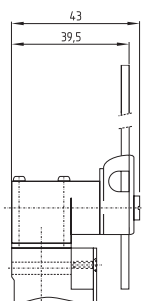
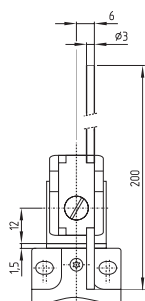
Adjustable-length roller lever DS



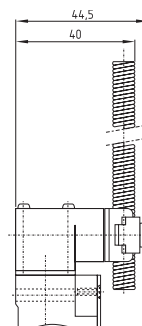
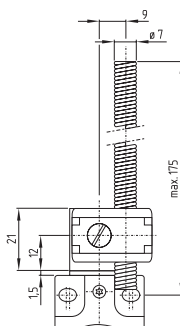
Actuators

Rod lever

Rod lever DS

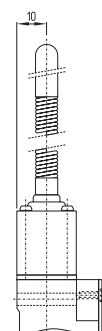
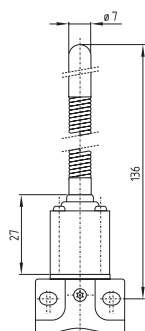


Spring-rod lever DF

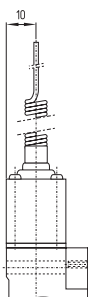
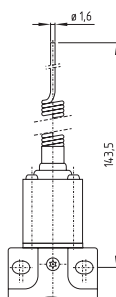


Spring rod

Spring rod TK



Long spring wire
(Cat's whisker) TL

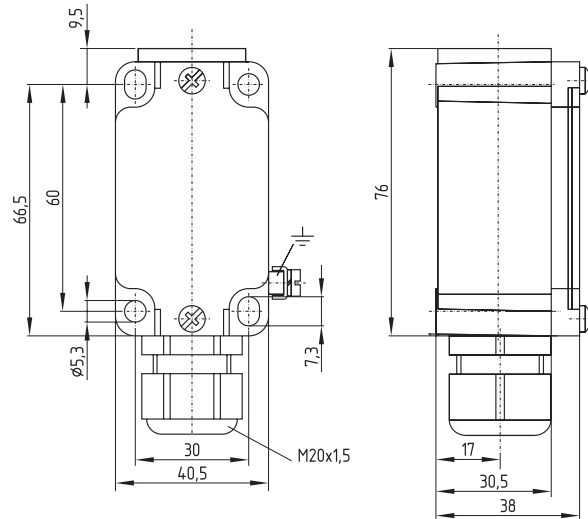




Actuators

2. 2.5

Ex switchgear Position switches EEx 335 range



Features

- Metal enclosure
- II 2G EEx de IIC T6
II 2D IP65 T80°C
- To EN 50041
- Slow action available with 2 positive break NC contacts to EN 60947-5-1
- Slow action available with overlapping contacts
- Wiring compartment
- Wide range of alternative actuators
- Actuator heads can be repositioned in steps 4 x 90°
- Angle of roller lever adjustable in 10° steps

Info

- Metal rollers on enquiry

Approvals

EC Type Test Certificate: DMT 01 ATEX E 178*

*referring to the switch insert

Ordering details

Position switch with safety function series Z/T 335 with plunger S with slow action with one NO and one NC contact:
EEx 335 S 1Ö/1S

Info

Version for equipment category 3D (dust-Ex zone 22) available
Ordering suffix: -3D

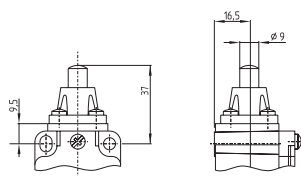
Note

A detailed description of the actuators, as well as the contacts and switch travel diagrams can be found in chapter 1.3.4.

Actuators

Plunger

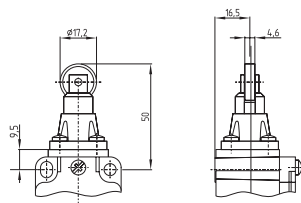
Plunger S



Actuators

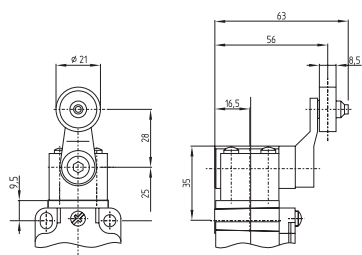
Roller plunger

Roller plunger R

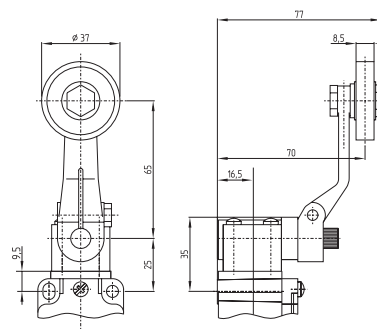


Roller lever

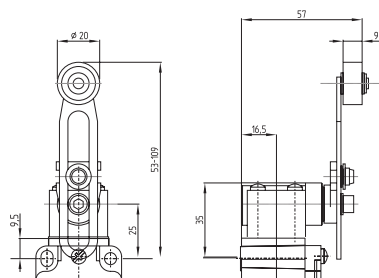
Roller lever 4VH



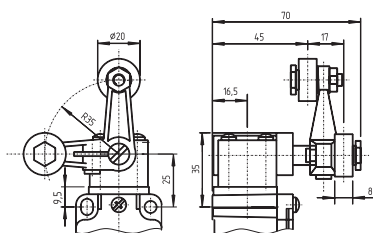
Roller lever 4V3H



Adjustable-length roller lever 4V7H

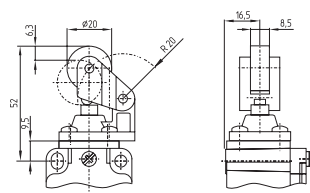


Forked lever with latching head 3V4D

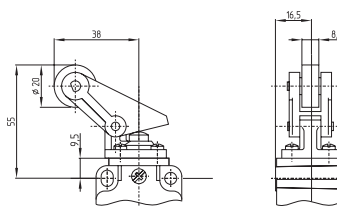


Offset roller lever

Offset roller lever 1K



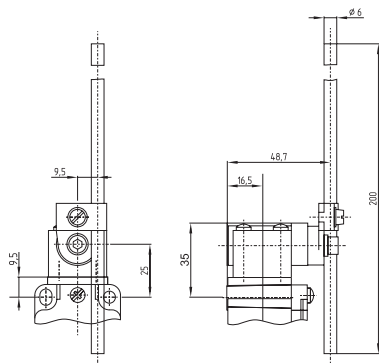
Offset angled roller lever 3K



Actuators

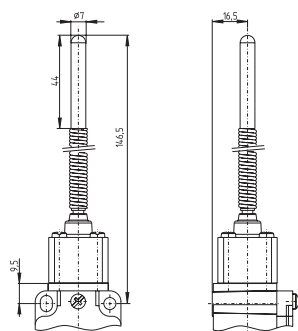
Rod lever

Rod lever 4V10H



Spring rod

Spring rod with plastic rod TK

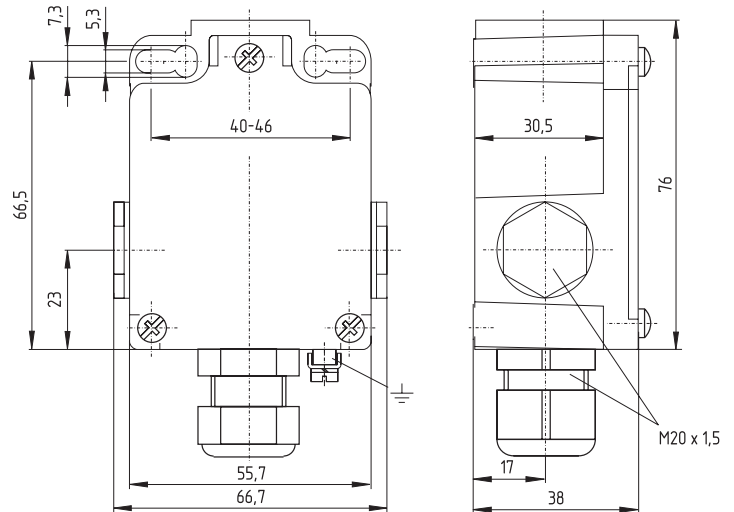




Actuators

2. 2.6

Ex switchgear Position switches Ex 355 range



Features

- Metal enclosure
-  II 2G Ex de IIC T6
II 2D IP67 T80°C
- Mounting dimensions and switching points to EN 50041
- Available with 2 positive break NC contacts to EN 60947-5-1
- Fixings and switching points to EN 50041
- Slow action available with 2 positive break NC or with overlapping contacts
- Slow action available with overlapping contacts
- Wiring compartment
- Wide range of alternative actuators
- Actuator heads can be repositioned in steps 4 x 90°
- Angle of roller lever adjustable in 10° steps
- 3 cable entries

Info

- Metal rollers on enquiry
- Version for equipment category 3D (dust-Ex zone 22) available
Ordering suffix: -3D

Ordering details

Position switch with safety function series EEx 355 with roller lever 3H with slow action with two NC contacts: EEx 355 4V3H 1Ö/1S

Note

A detailed description of the actuators, as well as the contacts and switch travel diagrams, can be found in chapter 1.3.5.

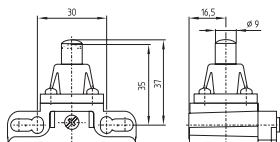
Approvals

EC Type Test Certificate:
BVS 04 ATEX E 126

Actuators

Plunger

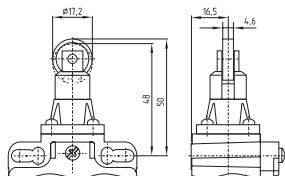
Plunger S



Actuators

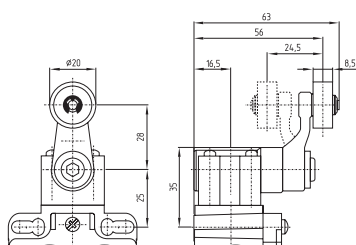
Roller plunger

Roller plunger R

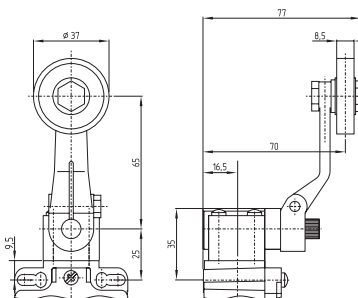


Roller lever

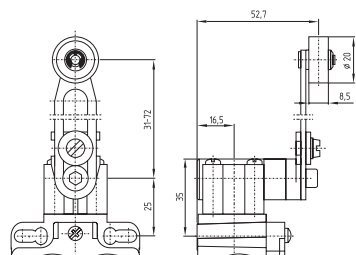
Roller lever 4VH



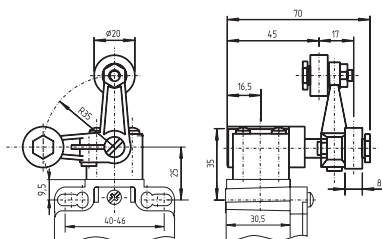
Roller lever 4V3H



Adjustable-length roller lever 4V7H

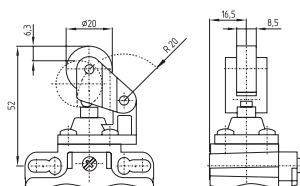


Forked lever with latching head 3V4D

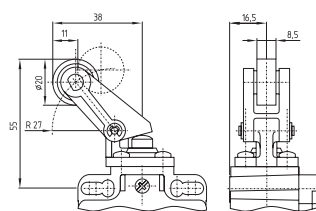


Offset roller lever

Offset roller lever 1K



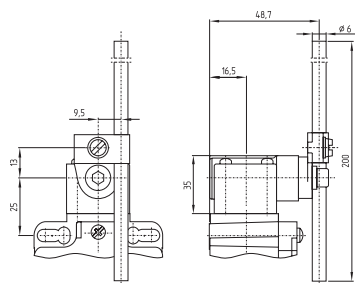
Offset angled roller lever 3K



Actuators

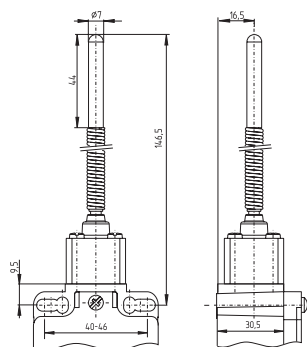
Rod lever

Rod lever 4V10H



Spring rod

Spring rod with plastic rod TK





Actuators

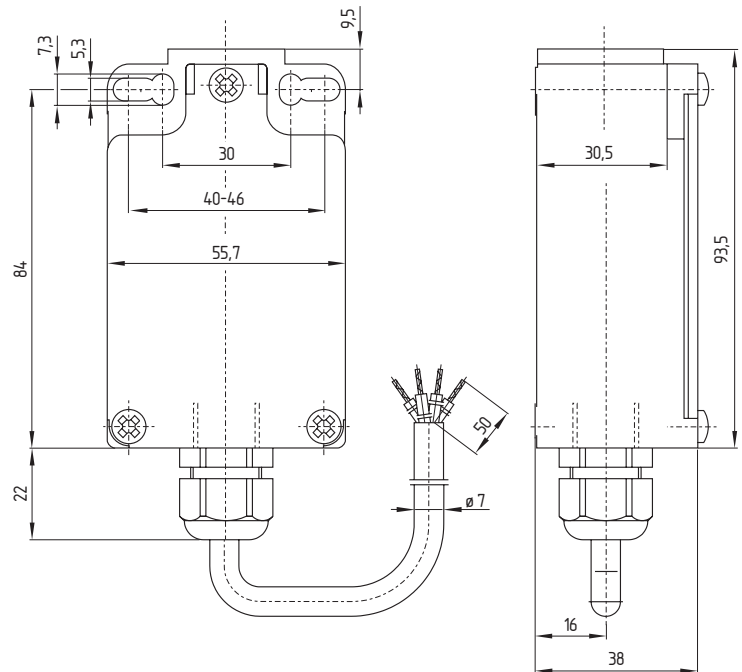
2.

2.7

Ex switchgear

Position switches

EEx T 356 range



Features

- Thermoplastic enclosure with metal cover
- Double-insulated □
- Ex II 2G EEx de IIC T6
II 2D IP65 T80°C
- Mounting dimensions and switching points to EN 50041
- Slow action with 1 NO and 1 positive break NC contact
- Actuator heads can be repositioned in steps 4 x 90°
- Angle of roller lever adjustable in 10° steps
- Good resistance to oil and petroleum spirit
- EEx certified
- Pre-wired cable available in various lengths

Info

- Metal rollers on enquiry

Cable length

2 metres long ordering suffix -2m
5 metres long ordering suffix -5m
Please state cable length in orders

Ordering details

Position switch with safety function series EEx T 356 with roller lever H with slow action with one NO and one NC contact and 5 m cable:
EEx T4VH 356 1Ö/1S-5m

Approvals

EC Type Test Certificate: DMT 01 ATEX E 178*

*referring to the switch insert

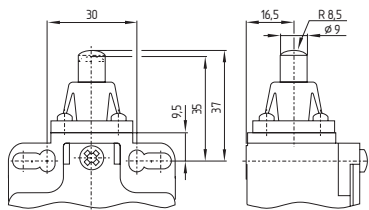
Note

A detailed description of the actuators, as well as the contacts and switch travel diagrams can be found in chapter 1.3.6.

Actuators

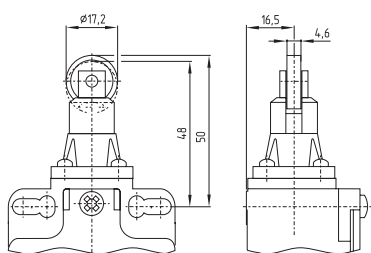
Plunger

Plunger S



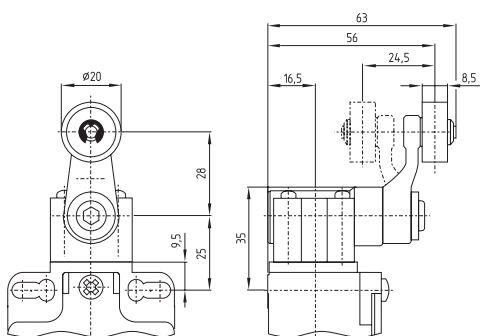
Roller plunger

Roller plunger R

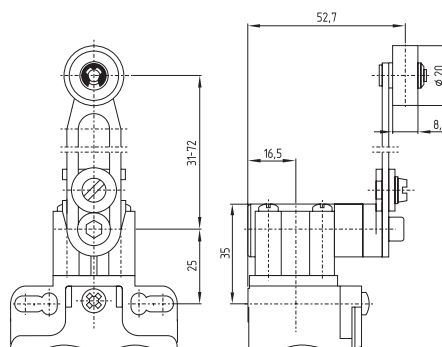


Roller lever

Roller lever H

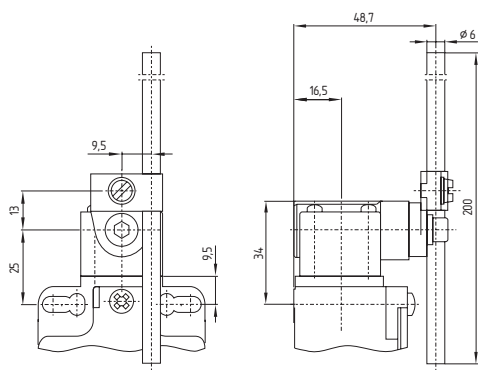


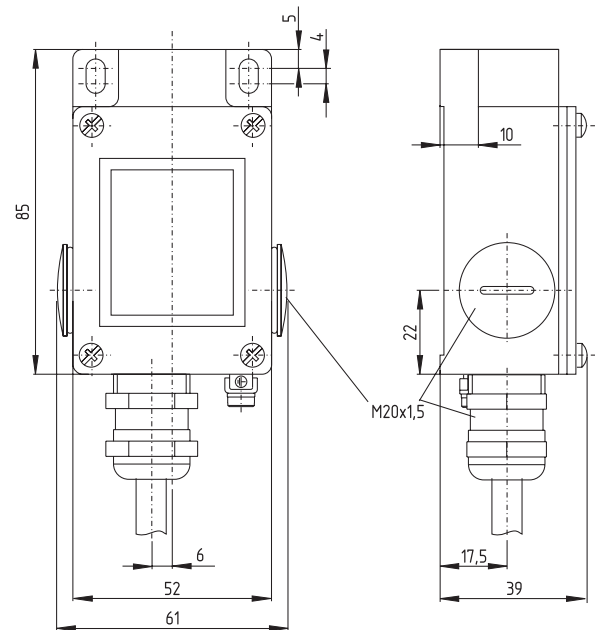
Adjustable-length roller lever 7H



Rod lever

Rod lever 10H





Features

- Metal enclosure
- Ex II 2G Ex d IIC T6
II 2D IP65 T80°C
- Slow action $\ominus$,
change-over or 2 NC contacts, double break
- Snap action,
change-over contact, double break
- Available with overlapping contacts
- Pre-wired cable 3 m long
- IP 65
- Actuator head can be repositioned
in steps 4 x 90°

Cable length

- Other lengths on enquiry

Approvals

EC Type Test Certificate:
Ex 61: PTB 03 ATEX 1068 X*
ExM 61: PTB 03 ATEX 1067 X*

*referring to the switch insert

Ordering details

Position switch with safety function
series Ex/ExM 61 with roller lever D
with slow action with one NO and one
NC contact: Ex 61 D 1Ö/1S

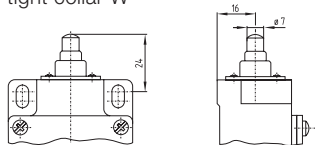
Note

**A detailed description of the actuators,
as well as the contacts and switch
travel diagrams can be found in
chapter 1.3.7.**

Actuators

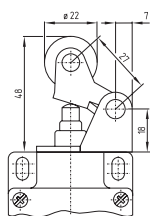
Plunger

Plunger with water-tight collar W

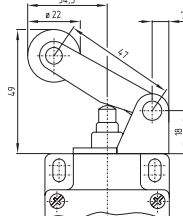


Offset roller lever

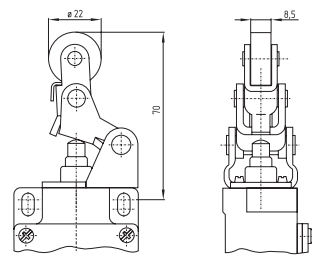
Offset roller lever with watertight collar WH



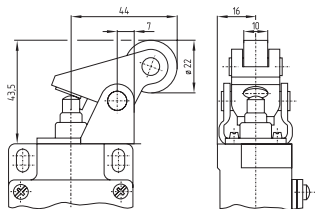
Long offset roller lever with watertight collar WHL



Rocking offset roller lever with watertight collar WHK

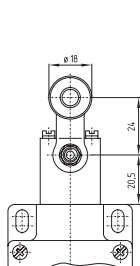


"Parallel" offset roller lever with watertight collar WPH

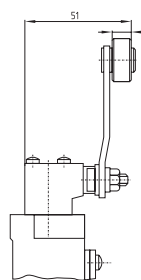
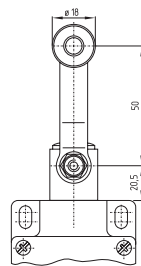
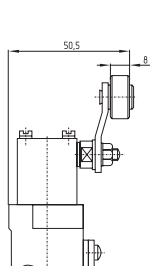


Roller lever

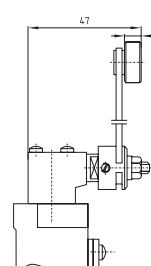
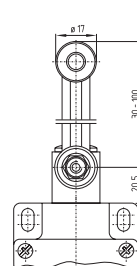
Roller lever D



Long roller lever DL



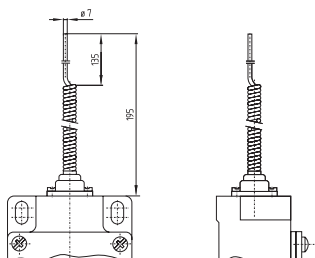
Adjustable-length roller lever DS



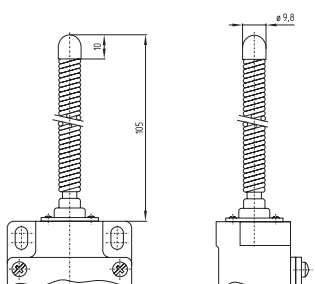
Actuators

Spring rod

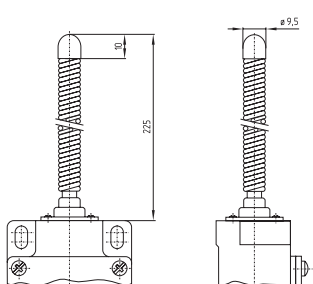
Long spring wire
(Cat's whisker) TL



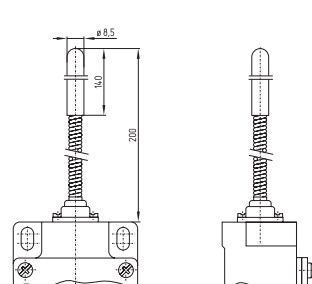
Spring rod
with rounded steel tip TF



Long spring rod
with rounded steel tip TFL



Spring rod
with plastic rod TK



2. 2.9

Ex switchgear Position switches Technical data



	EEx 14	EExM 14	EExM 14 1Ö/1S
Standards:	IEC 60947-5-1; EN 1088; BG-GS-ET 15 EN 50014; EN 50018; EN 50281-1-1		
Ex marking:	Ⓔ II 2G EEx d IIC T6 II 2D IP65 T80°C		
Certification:	PTB 03 ATEX 1070 X	PTB 03 ATEX 1069 X	PTB 00 ATEX 1006 X
Switch insert:	–	–	–
Design:	–		
Enclosure:	Thermoplastic, self-extinguishing UL 94-VO		
Cover:	Same as enclosure		
Protection class:	IP 65 to IEC/EN 60529/DIN VDE 0470-1		
Contact material:	Silver		
Switching system:	Slow action	Snap action	
	NC contacts with positive break ⊖		
Contact type:	Change-over contact, double break Zb, with galvanically separated contact bridges	Change-over contact, single break C	Change-over contact, double break Za
Termination:	H05VV-F 4 x 0.75 mm ²	H05VV-F 3 x 0.75 mm ²	H05VV-F 4 x 0.75 mm ²
Rated impulse			
withstand voltage U _{imp} :	4 kV		
Rated insulation voltage U _i : 250 V			
Thermal test current I _{the} :	6 A	5 A	
Utilisation category:	AC-15; DC-13		
Rated operating			
current/voltage I _e /U _e :	6 A/250 VAC; 0.25 A/230 VDC	5 A/250 VAC; 0.16 A/230 VDC	5 A/250 VAC; 0.2 A/230 VDC
Max. fuse rating:	6 A gL/gG D-fuse	5 A gL/gG D-fuse	5 A gL/gG D-fuse
Ambient temperature:	–20 °C ... +65 °C		
Mechanical life:	>1 million operations		
Switching frequency:.	1800/h		
Switching point accuracy:	±0.1 mm		
Actuating speed:***	–		
Contact break for			
complete stroke:*	2 x 4 m	–	
Positive break force:	–		
Positive break stroke:	see switch description		
Shock resistance:	–		
	CE ₀₁₅₈		

* referring to the switch insert
** referring to the switch plunger

*** for complete actuating stroke
**** in accordance with actuating speed

2.

2.5

Ex switchgear

Position switches

Technical data



	EEx 13	EEx 12	EEx 95
Standards:	IEC 60947-5-1; EN 1088; BG-GS-ET 15; EN 50014; EN 50018; EN 50281-1-1		
			EN 50019
Ex marking:	Ⓔ II 2G EEx d IIC T6 II 2D IP65 T80°C		Ⓔ II 2G EEx de IIC T6 II 2D IP67 T80°C
Certification:	PTB 03 ATEX 1068 X	PTB 03 ATEX 1067 X	DMT 01 ATEX E 118
Switch insert:	–		
Design:	–		EN 50047
Enclosure:	Thermoplastic, self-extinguishing UL 94-VO	aluminium die-cast, hard-coated	Thermoplastic, self-extinguishing UL 94-VO
Cover:	Same as enclosure		
Protection class:	IP 65 to IEC/EN 60529		IP 67 to IEC/EN 60529
Contact material:	Silver		
Switching system:	Slow action, positive break NC contacts ⊕	Snap action	Slow action, positive break NC contacts ⊕
Contact type:	Change-over contact, double break, galvanically separated contact bridges	Change-over contact, single break	Change-over contact, double break with 2 separated contact bridges
Termination:	H05VV-F 4 x 0.75 mm ²	H05VV-F 3 x 0.75 mm ²	M3 screw terminals, wire max. 1.5 mm ² (including conductor ferrules)
Rated impulse			
withstand voltage U _{imp} :	4 kV		
Rated insulation voltage U _i : 250 V			
Thermal test current I _{the} :	6 A	5 A	6 A
Utilisation category:	AC-15; DC-13		
Rated operating			
current/voltage I _e /U _e :	6 A/250 VAC; 0.25 A/230 VDC	5 A/250 VAC; 0.16 A/230 VDC	6 A/250 VAC; 0.25 A/230 VDC
Max. fuse rating:	6 A gL/gG D-fuse	5 A gL/gG D-fuse	6 A gL/gG D-fuse
Ambient temperature:	–25 °C ... +65 °C		–20 °C ... +60 °C
Mechanical life:	> 1 million operations		
Switching frequency:	1800/h		
Switching point accuracy:	±0.1 mm		
Actuating speed:***	–		
Contact break for			
complete stroke:**	2 x 4.5 mm	–	2 x 3.5 mm
Positive break force:	see switch description		
Positive break stroke:	see switch description		
Shock resistance:	–		
	CE ₀₁₅₈		

* referring to the switch insert
 ** referring to the switch plunger

*** for complete actuating stroke
 **** in accordance with actuating speed

2.

2.5

Ex switchgear

Position switches

Technical data



	EEx 335	EEx 355	EEx T 356
Standards:	IEC/EN 60947-5-1; EN 1088; BG-GS-ET 15; EN 50281-1-1		EN 50014; EN 50018
Ex marking:	II 2G EEx de IIC T6 II 2D IP65 T80°C	II 2G EEx de IIC T6 II 2D IP67 T80°C	II 2G EEx d IIC T6 II 2D IP65 T80°C
Certification:	DMT 01 ATEX E 178	BVS 04 ATEX E 126	PTB 03 ATEX 1068 X*
Switch insert:	EEx 95		EEx 13
Design:	to EN 50041	Mounting to EN 50041	Mounting to EN 50041
Enclosure:	Aluminium die-cast		Glass-fibre reinforced thermoplastic, self-extinguishing
Cover:	Steel, enamel finish		
Protection class:	IP 65 to IEC/EN 60529	IP 67 to IEC/EN 60529	IP 65 to IEC/EN 60529
Contact material:	Silver		
Switching system:	Slow action, NC contacts with positive break ⊖		
Contact type:	Change-over contact, double break Zb or 2 NC contacts, with galvanically separated contact bridges		Change-over contact, double break Zb with galvanically separated contact bridges
Termination:	M3 screw terminals, wire max. 1.5 mm ² (including conductor ferrules)		Cable H05VV-F 4 x 0.75 mm ² ; Length: 2 and 5 m
Rated impulse withstand voltage U _{imp} :	4 kV		
Rated insulation voltage U _i :	250 V		
Thermal test current I _{the} :	6 A		
Utilisation category:	AC-15; DC-13		
Rated operating current/voltage I _e /U _e :	6 A/250 VAC; 0.25 A/230 VDC		
Max. fuse rating:	6 A gL/gG D-fuse		6 A gL/gG D-fuse
Ambient temperature:	-20 °C ... +60 °C		-20 °C ... +65 °C
Mechanical life:	> 1 million operations		
Switching frequency:	1800/h		
Switching point accuracy:	±0.1 mm		
Actuating speed:***	–		min. 60 mm/min
Contact break for complete stroke:**	2 x 3.5 mm		
Positive break force:	–		see switch description
Positive break stroke:	see switch description		
Shock resistance:	–		



* referring to the switch insert
** referring to the switch plunger

*** for complete actuating stroke
**** in accordance with actuating speed

2.

2.5

Ex switchgear

Position switches

Technical data



	EEx 61	EExM 61
Standards:	IEC/EN 60947-5-1; EN 1088 EN 50014; EN 50018; EN 50281-1-1	
Ex marking:	Ⓔ II 2G EEx d IIC T6 II 2D IP65 T80°C	
Certification:	PTB 03 ATEX 1068 X*	PTB 03 ATEX 1067 X*
Design:	–	
Switch insert:	EEx 13	EEx 12
Enclosure:	Aluminium die-cast, enamel finish	
Cover:	Steel, enamel finish	
Protection class:	IP 65 to IEC/EN 60529	
Contact material:	Silver	
Switching system:	Slow action, positive break NC contacts ⊖	Snap action
Contact type:	Change-over contact, double break, with galvanically separated contact bridges, type Zb	Change-over contact, single break, type C
Termination:	H05VV-F 4 x 0.75 mm ² , length 3 m	
Rated impulse withstand voltage U_{imp} :	4 kV	
Rated insulation voltage U_i :	250 V	
Thermal test current I_{the} :	6 A	5 A
Utilisation category:	AC-15; DC-13	
Rated operating current/voltage I_e/U_e :	6 A/250 VAC; 0.25 A/230 VDC	5 A/250 VAC; 0.16 A/230 VDC
Max. fuse rating:	6 A gL/gG D-fuse	5 A gL/gG D-fuse
Ambient temperature:	–20 °C ... +65 °C	–20 °C ... +60 °C
Mechanical life:	> 1 million operations	
Switching frequency:	1800/h	
Switching point accuracy:	±0.1 mm	
Actuating speed:***	min. 60 mm/min	
Contact break for complete stroke:**	2 x 3.5 mm	–
Positive break force:	see switch description	
Positive break stroke:	see switch description	
Shock resistance :	–	
	CE ₀₁₅₈	

* referring to the switch insert
** referring to the switch plunger

*** for complete actuating stroke
**** in accordance with actuating speed





Application

Ex belt alignment switches are suitable for use on material handling equipment. The design details in relation to body dimensions, materials, electrical loading capacity, rated values and quality characteristics are to a great extent determined by the variety of application, from precision mechanics to heavy engineering.

Design and mode of operation

Ex belt alignment switches are actuated when the conveyor belt becomes misaligned. Depending on the plant arrangements, this signal can be used to switch the equipment off or to provide automatic correction of the belt alignment.

Features

- EEx 335 4VSR**
- 2 contacts
 - Metal enclosure
 - Mounting details to EN 50041
 - 1 cable entry
 - IP 65

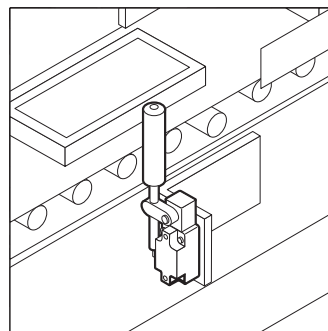
- EEx ZS 73 SR**
- 2 contacts
 - Metal enclosure
 - Push button or key release

- EEx ZS 75 SR**
- 4 contacts
 - Metal enclosure
 - Push button or key release

Note

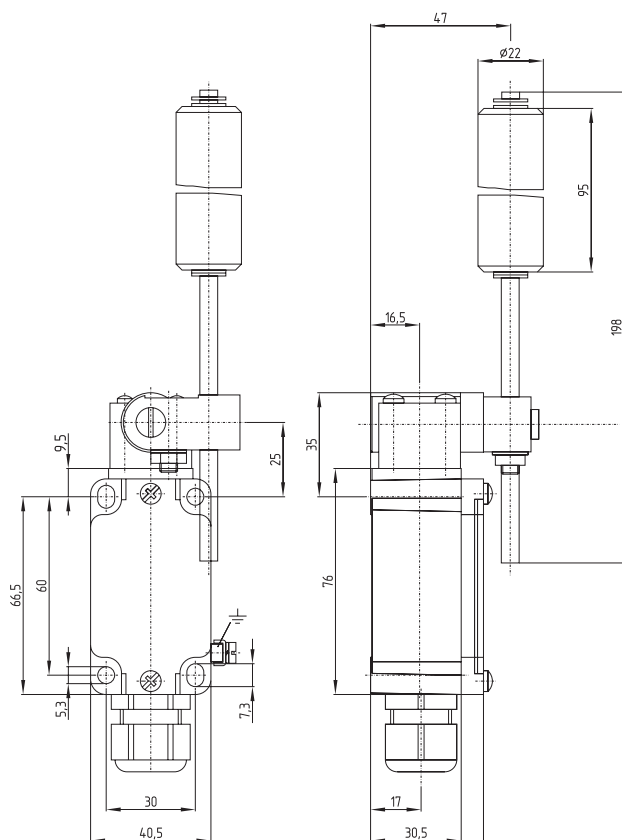
Technical data are shown in tabular form in chapter 3.4.

Applications



3. 3.1

Ex switchgear Belt-alignment switches EEx 335 4VSR range



Features

- Metal enclosure
- 2 contacts
- Ex II 2G EEx de IIC T6
II 2D IP65 T80°C
- Mounting details to EN 50041
- Adjustable-length rod lever with nylon roller
- 1 cable entry
- IP 65
- For light to medium duty
- Patented low-wear actuator head

Info

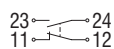
Version for equipment category 3D
(dust-Ex zone 22) available
Ordering suffix: -3D

Approvals

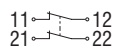
EC Type test certificate:
DMT 01 ATEX E 178

Contacts/ Switch travel

1 NO
1 NC

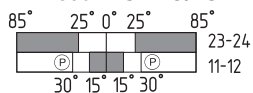


2 NC

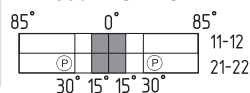


Slow action

EEx 335 4VSR 1Ö/1S



EEx 335 4VSR 2Ö

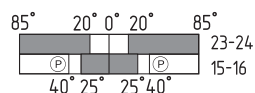


1 NO
1 NC



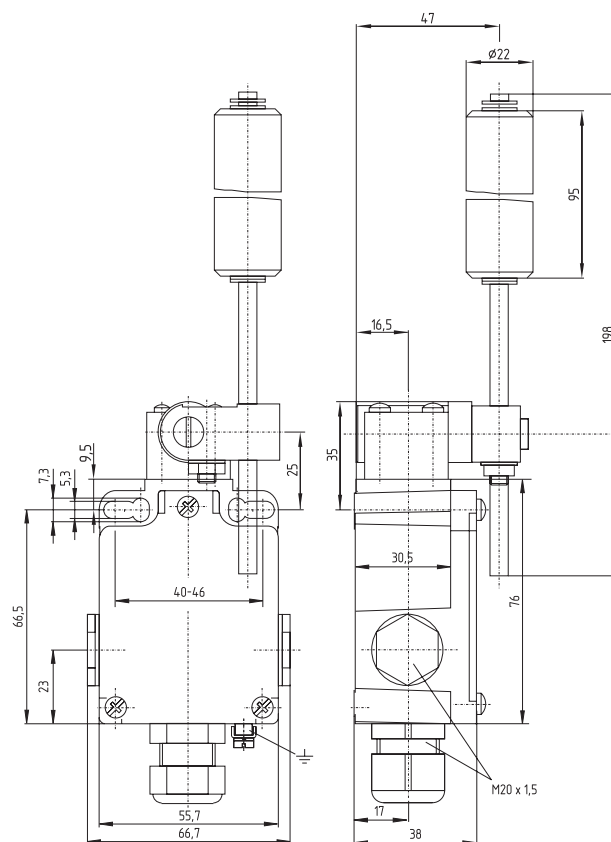
Slow action
overlapping contacts

EEx 335 4VSR UE



3. 3.2

Ex switchgear Belt-alignment switches EEx 355 4VSR range



Features

- Metal enclosure
- 2 contacts
- Ex II 2G EEx de IIC T6
II 2D IP67 T80°C
- Mounting details to EN 50041
- Adjustable-length rod lever with nylon roller
- 3 cable entries
- IP 65
- For light to medium duty
- Patented low-wear actuator head

Info

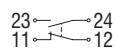
Version for equipment category 3D
(dust-Ex zone 22) available
Ordering suffix: -3D

Approvals

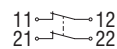
EC Type test certificate:
BVS 04 ATEX E 126

Contacts/ Switch travel

1 NO
1 NC

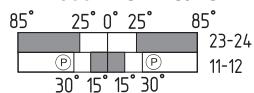


2 NC

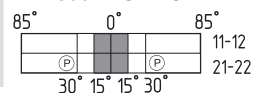


Slow action

EEx 355 4VSR 1Ö/1S



EEx 355 4VSR 2Ö

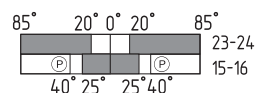


1 NO
1 NC



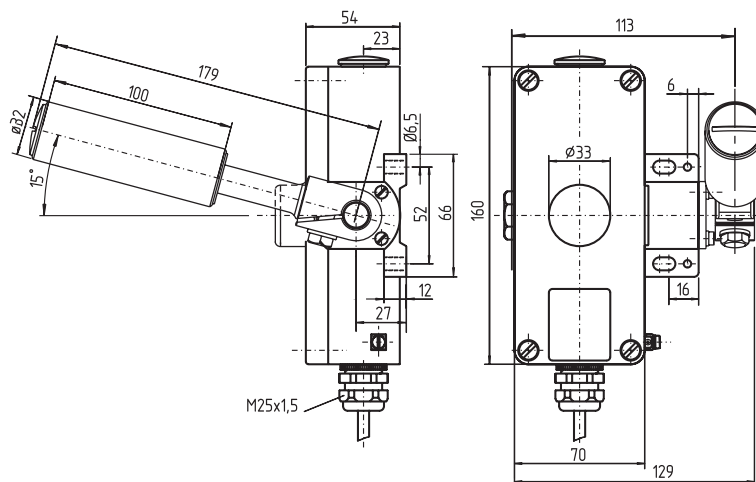
Slow action
overlapping contacts

EEx 355 4VSR UE



3. 3.4

Ex switchgear Belt-alignment switches EEx 75 SR range



Features

- Metal enclosure
- 2 or 4 contacts
- II 2G EEx d IIC T6
II 2D IP65 T80°C
- Reset by push button
or key possible

Cable length

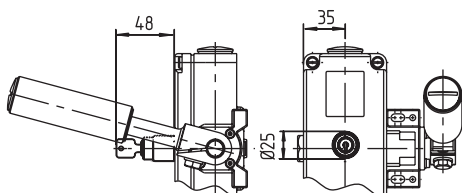
- On the Ex belt-alignment switches
the cables are 3 m long
- Other lengths on enquiry

Approvals

EC Type test certificate:
PTB 03 ATEX 1070 X*

*referring to the switch insert

Key reset



Info

Version for equipment category 3D
(dust-Ex zone 22) available
Ordering suffix: -3D

**3D version is equipped with wiring
compartment.**

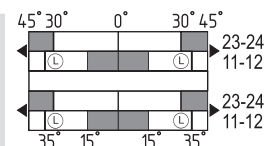
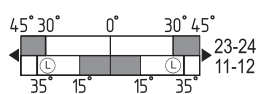
Contacts/ Switch travel

1 NO 1 NC

BK 23 → 24 BK
BN 11 → 12 BU

2 NO 2 NC

BK 23 → 24 BK
BN 11 → 12 BU
BK 23 → 24 BK
BN 11 → 12 BU



Without latch interlock
Push button reset
Key reset

**EEx 75 SR 1Ö/1S
EEx 75 SR 1Ö/1S VD
EEx 75 SR 1Ö/1S VS**

**EEx 75 SR 2Ö/2S
EEx 75 SR 2Ö/2S VD
EEx 75 SR 2Ö/2S VS**

3. 3.5

Ex switchgear Belt-alignment switches Technical data



	EEx 335 4VSR EEx 355 4VSR	EEx ZS 73 SR	EEx ZS 75 SR
Standards:	IEC 60947-5-1; EN 50014; EN 50018; EN 50281-1-1		
	EN 50019	–	
Ex marking:	EEx 335:  II 2G EEx de IIC T6 II 2D IP65 T80°C	 II 2G EEx d IIC T6 II 2D IP65 T80°C	
	EEx 355:  II 2G EEx de IIC T6 II 2D IP67 T80°C		
Certification:	EEx 335: DMT 01 ATEX E 178 EEx 355: BVS 04 ATEX E 126	PTB 03 ATEX 1070 X*	
Enclosure:	Zinc die-cast, enamel finish	Aluminium die-cast, enamel finish	
Cover:	Steel, enamel finish	Thermoplastic	Same like enclosure
Protection class:	EEx 335: IP 65; EEx 355: IP 67 to IEC/EN 60529	IP 54 for version with key reset, IP 65 for version with push button reset	
Contact material:	Silver		
Switch insert:	EEx 95	1 x EX 14 KU VD	1 x bzw. 2 x EX 14 KU VD
Contact type:	Change-over contact, double break Zb galvanically separated contact bridges or 2 NC contacts	Change-over contact, double break Zb galvanically separated contact bridges	
Switching system:	⊖ IEC 60947-5-1; slow action		
Termination:	M3 screw terminals, max. 1.5 mm ² (incl. conductor ferrules)	Cable H05VV-F 4 x 0.75 mm ²	
Rated impulse			
withstand voltage U _{imp} :	4 kV		
Rated insulation voltage U _i :250 V			
Thermal test current I _{th} :	6 A		
Utilisation category:	AC-15; DC-13		
Rated operating			
current/voltage 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 ... +60 °C		–20 °C ... +65 °C
Mechanical life:	> 1 million operations		
	 0158		

* referring to the switch insert



Application

The Ex pull-wire switch is used to give signals to start machines and to open or close electrically-driven doors, gates and barriers.

The particular requirements in industrial practice need individual solutions. The design details in relation to body dimensions, materials, electrical loading capacity, rated values and quality characteristics are to a great extent determined by the variety of application, from material handling to general and heavy engineering duties.

Design and mode of operation

The Ex pull-wire switch is available with snap action or slow action.

The Ex pull-wire switch is manually operated by pulling.

Features

EEx/EEExM 61 Z

- EEx 61 Z: 2 slow action contacts, type Zb
- EEExM 61 Z: 1 snap action contact, type C
- Metal enclosure
- IP 65
- Available with watertight collar
- Pre-wired cable

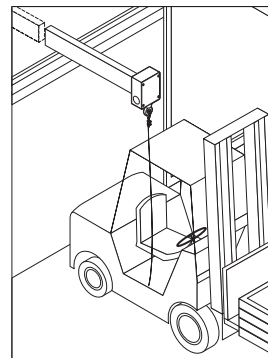
Cable length

- the Ex pull-wire switches are equipped with a 3 m long cable
- other lengths on enquiry

Note

Technical data are shown in tabular form in chapter 4.3.

Application



4.

4.1

Ex switchgear

Pull-wire switches

EEx/EEExM 61 Z range

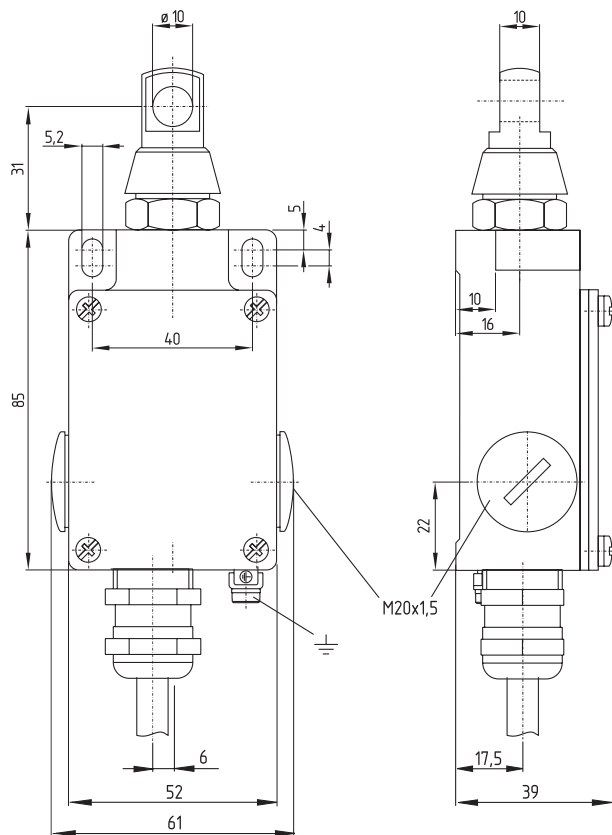


Features

- Metal enclosure
- II 2G EEx d IIC T6
II 2D IP65 T80°C
- Slow action with double break
- Snap action with single break
- IP 65
- Pre-wired cable 3 m long

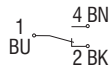
Info

- Available in various spring pressure (actuating force) variants

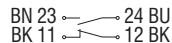


Switch travel/ Contacts

Change-over contact



1 NO 1 NC

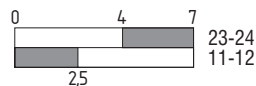


Snap action



EExM 61 Z

Slow action



EEx 61 Z 1Ö/1S

Approvals

EC Type test certificate:
EEx 61 Z: PTB 03 ATEX 1068 X*
EEExM 61 Z: PTB 03 ATEX 1067 X*

*referring to the switch insert

Wire rope with ball

- Yellow wire rope (polypropylene)
- With ball and Duplex wire clamp
- 1, 2, 3, or 4 m long
- Ordering unit: 1 piece



4.

4.3

Ex switchgear

Pull-wire switches

Technical data



	EEx 61 Z	EExM 61 Z
Standards:	IEC/EN 60947-5-1; EN 50014; EN 50018; EN 50281-1-1	
Ex marking:	II 2G EEx d IIC T6	
	II 2D IP65 T80°C	
Certification:	PTB 03 ATEX 1068 X*	PTB 03 ATEX 1067 X*
Switch insert:	EEx 13	EEx 12
Enclosure material:	Aluminium die-cast, enamel finish	
Cover material:	Steel, enamel finish	
Protection class:	IP 65 to IEC/EN 60529	
Contact material:	Silver	
Contact type:	Change-over contact, double break, with 2 separate contact bridges	Change-over contact, single break
Switching system:	Slow action	Snap action
Termination:	Cable H05VV-F 4 x 0.75 mm ²	
Rated impulse withstand voltage U_{imp} :	4 kV	
Rated insulation voltage U_i :	250 V	
Thermal test current I_{the} :	6 A	5 A
Rated operating current/voltage I_e/U_e :	6 A/250 VAC; 0.25 A/230 VDC	5 A/250 VAC; 0.16 A/230 VDC
Utilisation category:	AC-15; DC-13	
Max. fuse rating:	6 A gL/gG D-fuse	5 A
Ambient temperature:	-20 °C ... +65 °C	
Mechanical life:	> 1 million operations	
Switching frequency:	1800/h	



* referring to the switch insert



Application Ex foot switches are mounted on machines and plants in cases where operation manual operation is not possible.

Design and mode of operation All the EEx GFS range switches are mounted with a shield to prevent unintentional actuation and to protect against falling objects.

The Ex foot switches are of protection class IP 65.

Features EEx GF

- Max. 2 contacts per pedal
- Metal enclosure
- With up to 3 pedals
- Available with various paint finishes

EEx GFS

- Max. 2 contacts per pedal
- Metal enclosure
- Protective shield
- With up to 3 pedals
- Available with various paint finishes

EEx GFI

- Max. 2 contacts per pedal
- Metal enclosure
- 1 pedal
- Available with various paint finishes

EEx GFSI

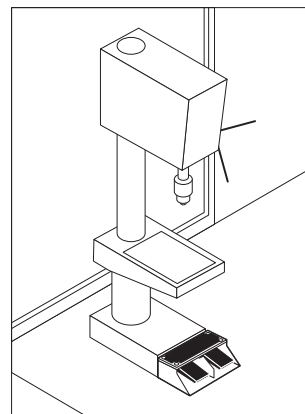
- Max. 2 contacts per pedal
- Metal enclosure
- Protective shield
- 1 pedal
- Available with various paint finishes

Cable length

- the Ex foot switches are equipped with a 3 m long cable
- other lengths on enquiry

Note Technical data are shown in tabular form in chapter 5.5.

Application



5.

5.1

Ex switchgear

Foot switches

Single-pedal types: EEx GF and EEx GFS range



Features

- Max. 2 contacts
- Metal enclosure
- II 2G EEx d IIC T6
II 2D IP65 T80°C
- With or without protective shield
- Wide opening in shield
- Low pedal height
- Pre-wired cable 3 m long
- Available with special finish in RAL colour tones

Info

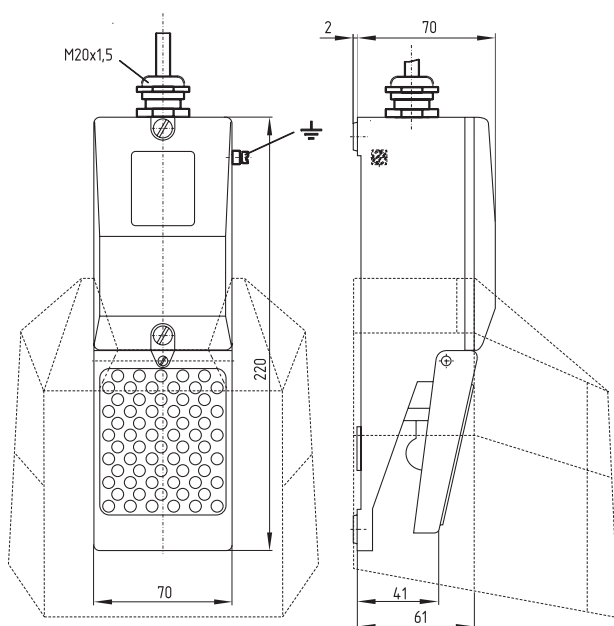
Version for equipment category 3D (dust-Ex zone 22) available, Ordering suffix: -3D

Note

Other contact configurations available on enquiry (Max. 2 contacts per pedal).

Approvals

EC Type test certificate:
EEx GF(S): PTB 03 ATEX 1070 X*
EEx GF(S)M: PTB 03 ATEX 1069 X*
* referring to the switch insert



Contacts

1 NO
1 NC

BN 11 12 BU
BK 23 24 BK

1 Change-over contact

2 BN 1
4 BK BU

Slow action

Without protective shield
With protective shield

EEx GF 1Ö/1S
EEx GFS 1Ö/1S

-
-

Snap action

Without protective shield
With protective shield

-
-

EEx GFM
EEx GFSM

5. 5.2

Ex switchgear

Foot switches

Double-pedal types: EEx GF 2 and EEx GFS 2 range



Features

- Max. 2 contacts per pedal
- Metal enclosure
- II 2G EEx d IIC T6
II 2D IP65 T80°C
- With or without protective shield
- Pre-wired cable 3 m long
- Available with special finish in RAL colour tone

Info

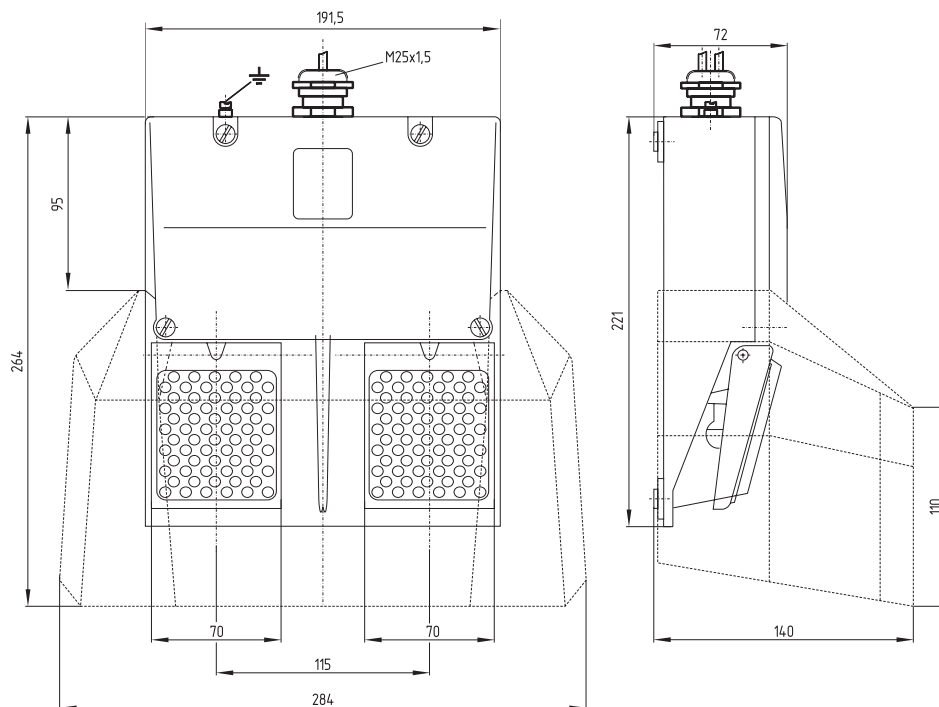
Version for equipment category 3D (dust-Ex zone 22) available, Ordering suffix: -3D

Note

Other contact configurations available on enquiry (Max. 2 contacts per pedal).

Approvals

EC Type test certificate:
EEx GF(S): PTB 03 ATEX 1070 X*
EEx GF(S)M: PTB 03 ATEX 1069 X*
* referring to the switch insert



Contacts

1 NO
1 NC

1 NO
1 NC

BN 11 12 BU
BK 23 24 BK

BN 11 12 BU
BK 23 24 BK

1 Change-over contact
1 Change-over contact

2 BN 1
4 BK BU

2 BN 1
4 BK BU

Slow action

Without protective shield
With protective shield

EEx GF 2 1ÖS/1ÖS
EEx GFS 2 1ÖS/1ÖS

-
-

Snap action

Without protective shield
With protective shield

-
-

EEx GFM 2
EEx GFSM 2



Features

- Max. 2 contacts per pedal
- Metal enclosure
- II 2G EEx d IIC T6
II 2D IP65 T80°C
- With or without protective shield
- Pre-wired cable 3 m long
- Available with special finish in RAL colour tones

Info

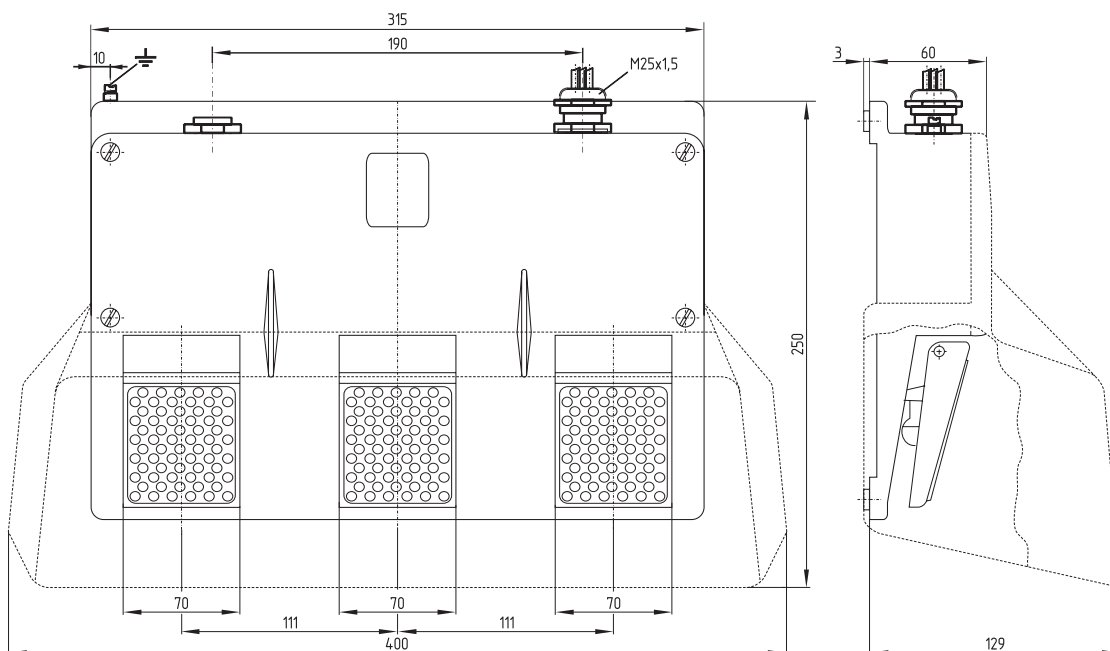
Version for equipment category 3D (dust-Ex zone 22) available, Ordering suffix: -3D

Note

Other contact configurations available on enquiry (Max. 2 contacts per pedal).

Approvals

EC Type test certificate:
EEx GF(S): PTB 03 ATEX 1070 X*
EEx GF(S)M 3: PTB 03 ATEX 1069 X*
* referring to the switch insert



Contacts

1 NO
1 NC

1 NO
1 NC

1 NO
1 NC

Change-over
contact

Change-over
contact

Change-over
contact

BN 11 12 BU
BK 23 24 BK

BN 11 12 BU
BK 23 24 BK

BN 11 12 BU
BK 23 24 BK

2 BN 1
4 BK BU

2 BN 1
4 BK BU

2 BN 1
4 BK BU

Slow action

without protective shield
with protective shield

EEx GF 3 1ÖS/1ÖS/1ÖS
EEx GFS 3 1ÖS/1ÖS/1ÖS

-
-

Snap action

without protective shield
with protective shield

-
-

EEx GFM 3
EEx GFSM 3



Features

- Max. 2 contacts
- Metal enclosure
- II 2G EEx d IIC T6
II 2D IP65 T80°C
- With or without protective shield
- Wide opening in shield
- Ergonomic pedal shape
- Pre-wired cable 3 m long
- Available with special finish in RAL colour tones

Info

Version for equipment category 3D (dust-Ex zone 22) available, Ordering suffix: -3D

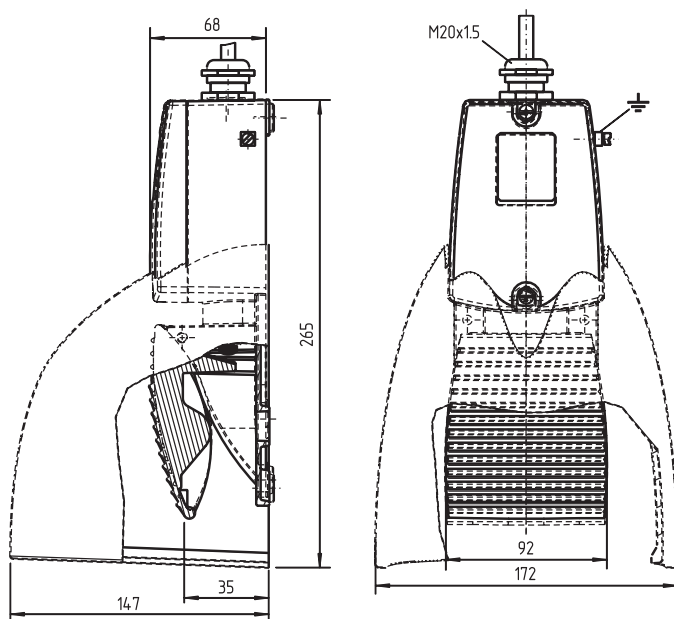
Note

Other contact configurations available on enquiry (Max. 2 contacts per pedal).

Approvals

EC Type test certificate:
PTB 03 ATEX 1070 X*

* referring to the switch insert



Contacts

1 NO
1 NC

BN 11 : 12 BU
BK 23 : 24 BK

Slow action

Without protective shield
With protective shield

EEx GFI 1Ö/1S
EEx GFSI 1Ö/1S

5.

5.5

Ex switchgear

Foot switches

Technical data



	EEx GF	EEx GF 2	EEx GF 3
Standards:	IEC/EN 60947-5-1; EN 50014; EN 50018; EN 50281-1-1		
Ex marking:	Ⓔ II 2G EEx d IIC T6		
	II 2D IP65 T80°C		
Certification:	EEx GF: PTB 03 ATEX 1070 X*; EEx GFM: PTB 03 ATEX 1069 X*		
Switch insert:	EEx 14; EExM 14		
Enclosure material:	Aluminium die-cast, enamel finish		Aluminium cast, enamel finish
Cover material:	Glass-fibre reinforced thermoplastic	Aluminium cast, enamel finish	
Pedal material:	Glass-fibre reinforced thermoplastic		
Protective shield material:	–		
Termination:	Cable H 05 VV-F 4 x 0.75 mm², length 3 m		
Protection class:	IP 65 to IEC/EN 60529		
Switching system:	Snap or slow action		
Utilisation category:	AC-15; DC-13		
Rated operating			
current/voltage 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		
Mechanical life:	> 1 million operations		
	CE 0158		

* referring to the switch insert

5.

5.5

Ex switchgear

Foot switches

Technical data



	EEx GFS	EEx GFS 2	EEx GFS 3
Standards:	IEC/EN 60947-5-1; EN 50014; EN 50018; EN 50281-1-1		
Ex marking:	 II 2G EEx d IIC T6 II 2D IP65 T80°C		
Certification:	EEx GFS: PTB 03 ATEX 1070 X*; EEx GFSM: PTB 03 ATEX 1069 X*		
Switch insert:	EEx 14; EExM 14		
Enclosure material:	Aluminium die-cast, enamel finish		Aluminium cast, enamel finish
Cover material:	–		
Pedal material:	Glass-fibre reinforced thermoplastic		
Protective shield material:	Same like enclosure		
Termination:	Cable H 05 VV-F 4 x 0.75 mm ² , length 3 m		
Protection class:	IP 65 to IEC/EN 60529		
Switching system:	Snap or slow action		
Utilisation category:	AC-15; DC-13		
Rated operating			
current/voltage 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		
Mechanical life:	> 1 million operations		
	 0158		

* referring to the switch insert

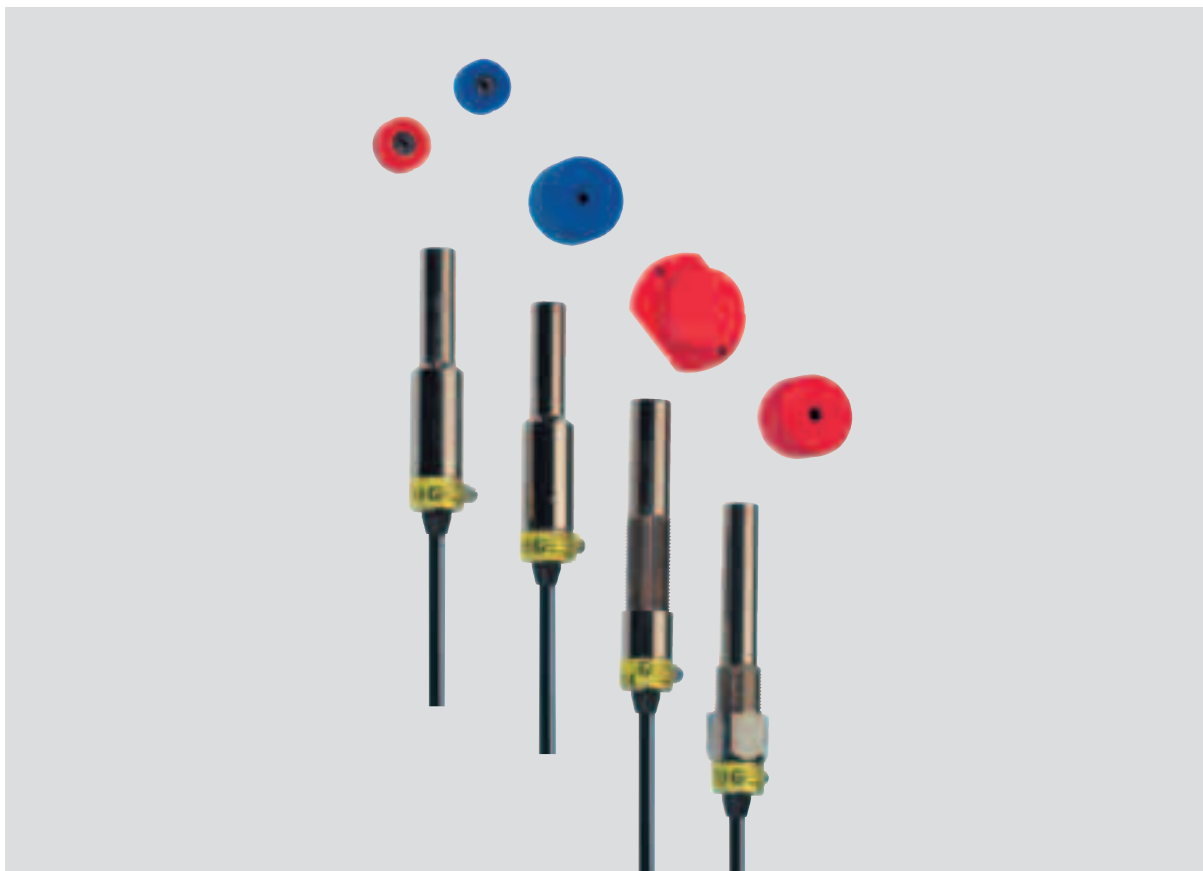
5. 5.5

Ex switchgear Foot switches Technical data



	EEx GFI	EEx GFSI
Standards:	IEC/EN 60947-5-1; EN 50014; EN 50018; EN 50281-1-1	
Ex marking:	Ⓔ II 2G EEx d IIC T6 II 2D IP65 T80°C	
Certification:	PTB 03 ATEX 1070 X*	
Switch insert:	EEx 14	
Enclosure material:	Aluminium die-cast, enamel finish	
Cover material:	Same like enclosure	–
Pedal material:	Glass-fibre reinforced thermoplastic	
Protective shield material:	–	Same like enclosure
Termination:	H 05 VV-F 4 x 0.75 mm², length 3 m	
Protection class:	IP 65 to IEC/EN 60529	
Switching system:	Slow action	
Utilisation category:	AC-15; DC-13	
Rated operating		
current/voltage 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	
Mechanical life:	> 1 million operations	
	CE ₀₁₅₈	

* referring to the switch insert



Application

The use of Ex magnetic 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. Due to a high protection class they are ideal for use outdoors.

Even in the presence of aggressive media, such as in electroplating areas, safe switching is ensured by encapsulation of the contacts. A further advantage is the facility for concealed mounting under non-magnetic materials. Working surfaces and storage areas can be arranged without the need for dust-collecting edges or other functionally required cut-outs or projections.

Ex magnetic sensors can also be used in cases where a precise approach is not possible and greater tolerances are required.

Design and mode of operation

The switches are actuated by a M range permanent magnet coming into their proximity, without any physical contact.

These devices are available with NO, NC, change-over, bi-stable or bi-stable change-over contacts. All magnetic sensors described in this chapter are supplied with pre-wired cables. When using Ex magnetic sensors, care must be taken that their mounting site is free of magnetic fields.

Features

EEx RC 15
EEx RC 13,5
EEx RC M20

- 1 reed contact
- Nickel-plated brass enclosure
- Cylindrical shape
- Switching distance
NC, change-over contact: up to 25 mm
NO contact: up to 30 mm
- Pre-wired cable
- Highly resistant to vibration
- IP 67

Note

Technical data are shown in tabular form in chapter 6.4.

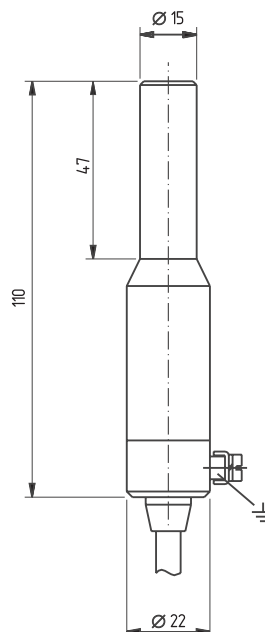
6.

6.1

Ex switchgear

Magnetic sensors

EEx RC 15 range



Features

- Nickel-plated brass enclosure
- II 2G EEx m II T6
II 2D IP 67 T80°C
- Long life
- Proximity switch
- 1 reed contact
- Particularly resistant to vibration
- Available for actuation from front
- Any direction of operation possible
- Actuating distance up to 25 mm depending on actuating magnet
- Pre-wired cable
- IP 67

Cable length	1 metre long	ordering suffix	-1m
	2 metres long	ordering suffix	-2m
	5 metres long	ordering suffix	-5m
	Please always state cable length in orders		

Contacts

BU ——— BN

1 NC

BU ——— BN

1 NO

BN ——— BK
BN ——— BU

1 Change-over

Actuation from front

EEx RC 15 1Ö

EEx RC 15 1S

EEx RC 15 1W

Note

The actuating magnets are not included with the sensors.
For selection, see chapter 6.3.

Approvals

EC Type Test Certificate:
DMT 01 ATEX E 058 X

Info

Version for equipment categories 3G and 3D
(gas-Ex zone 2 and dust-Ex zone 22) available,
Ordering suffix: -3G/D

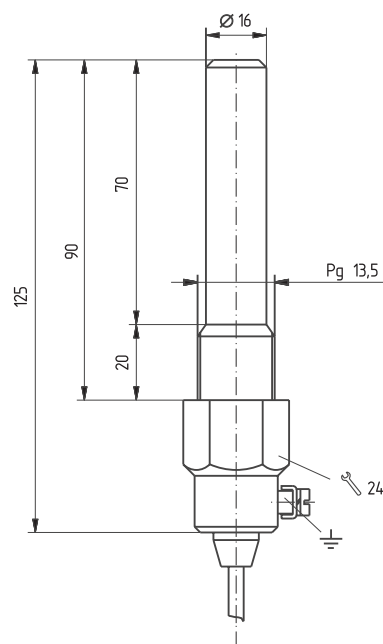
6. 6.2

Ex switchgear Magnetic sensors Ex RC 13,5 range



Features

- Nickel-plated brass enclosure
- II 2G EEx m II T6
II 2D IP 67 T80°C
- Long life
- Proximity switch
- 1 reed contact
- Particularly resistant to vibration
- Available for actuation from front
- Any direction of operation possible
- Actuating distance up to 30 mm depending on actuating magnet
- Pre-wired cable
- IP 67



Cable length	1 metre long	ordering suffix	-1m
	2 metres long	ordering suffix	-2m
	5 metres long	ordering suffix	-5m
	Please always state cable length in orders		

Contacts

BU BN

1 NC

BU BN

1 NO

BN BK
BU

1 Change-over

Actuation from front

EEx RC 13,5 1Ö

EEx RC 13,5 1S

EEx RC 13,5 1W

Note

The actuating magnets are not included with the sensors.
For selection, see chapter 6.3.

Approvals

DMT 01 ATEX E 058 X

Info

Version for equipment categories 3G and 3D
(gas-Ex zone 2 and dust-Ex zone 22) available,
Ordering suffix: -3G/D

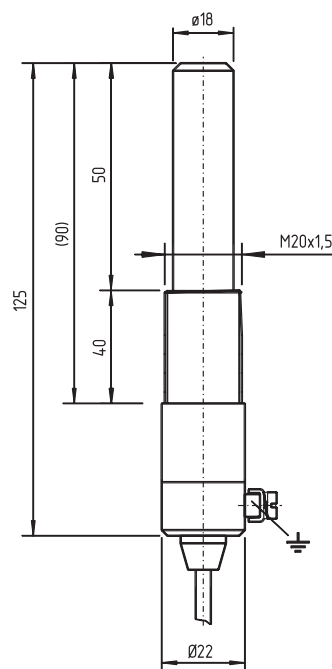
6.

6.3

Ex switchgear

Magnetic sensors

EEx RC M20 range



Features

- Nickel-plated brass enclosure
- II 2G EEx m II T6
II 2D IP 67 T80°C
- Long life
- Proximity switch
- 1 reed contact
- Particularly resistant to vibration
- Available for actuation from front, from side only with bistable type
- Any direction of operation possible
- Actuating distance up to 30 mm depending on actuating magnet
- Pre-wired cable
- IP 67
- Stainless steel type available

Cable length	1 metre long	ordering suffix	-1m
	2 metres long	ordering suffix	-2m
	5 metres long	ordering suffix	-5m
	Please always state cable length in orders		

Contacts	1 NO bistable	1 Change-over	1 Change-over bistable
Actuation from side	EEx RC M20 1S-R	EEx RC M20 1W	EEx RC M20 1W-R

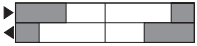
Note The actuating magnets are not included with the sensors. For selection, see chapter 6.3.

Bistable function The opening and closing functions depend on the direction of actuation, the actuating magnets and the polarity of the actuating magnets.

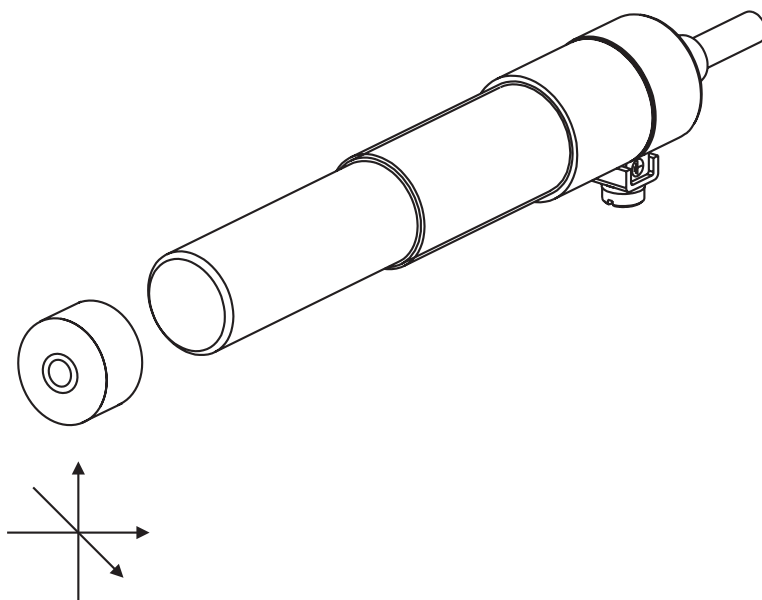
Approvals DMT 01 ATEX E 058 X

Info Version for equipment categories 3G and 3D (gas-Ex zone 2 and dust-Ex zone 22) available, Ordering suffix: -3G/D

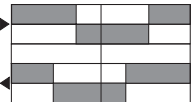
Actuating magnets for actuation from front

Part number	EEx RC 15 1Ö EEx RC 13,5 1Ö		EEx RC 15 1S EEx RC 13,5 1S		EEx RC 15 1W EEx RC 13,5 1W EEx RC M20 1W	
Contact travel						
Contacts	1 NC		1 NO		1 Change-over	
Actuation type	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	12	24	17	20
M 300 U	17	20	12	24	17	20
M 400 U	33	37	28	43	33	37
M 700	30	35	25	40	30	35

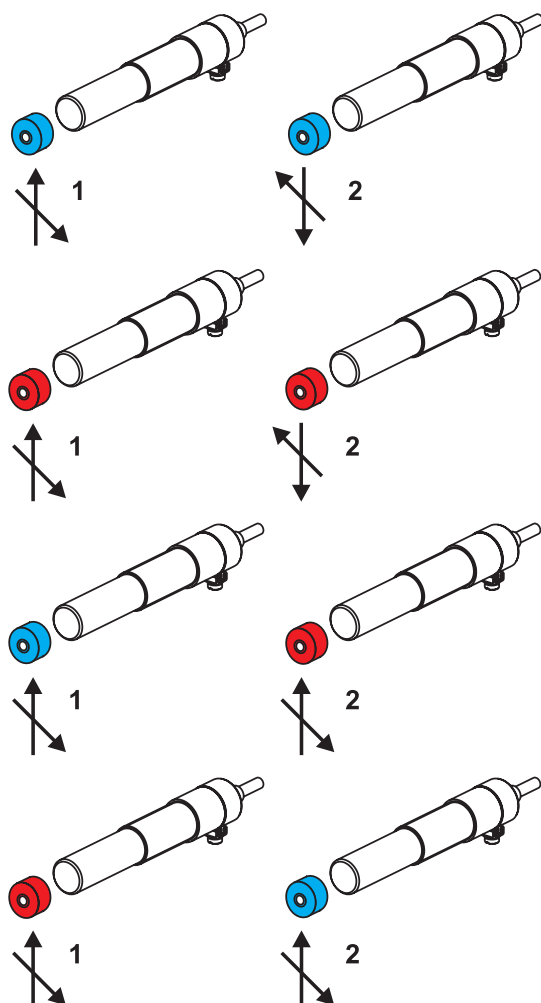
Actuation
from front



Actuating magnets for actuation from front bistable types

Part number	EEx RC M20 1S-R		EEx RC M20 1W-R	
Contact travel				
Contacts	1 Bistable		1 Bistable change-over	
Actuation type	N/S		N/S	
Actuating magnet	Switching distance [mm] on off		Switching distance [mm] on off	
M 50 U	12	6	–	–
M 100	22	12	20	40
M 100 U	22	12	20	40
M 200	30	30	25	50
M 200 U	30	30	25	50
M 300	37	23	30	60
M 300 U	37	23	30	60
M 400 U	63	43	50	90
M 700	60	40	50	75

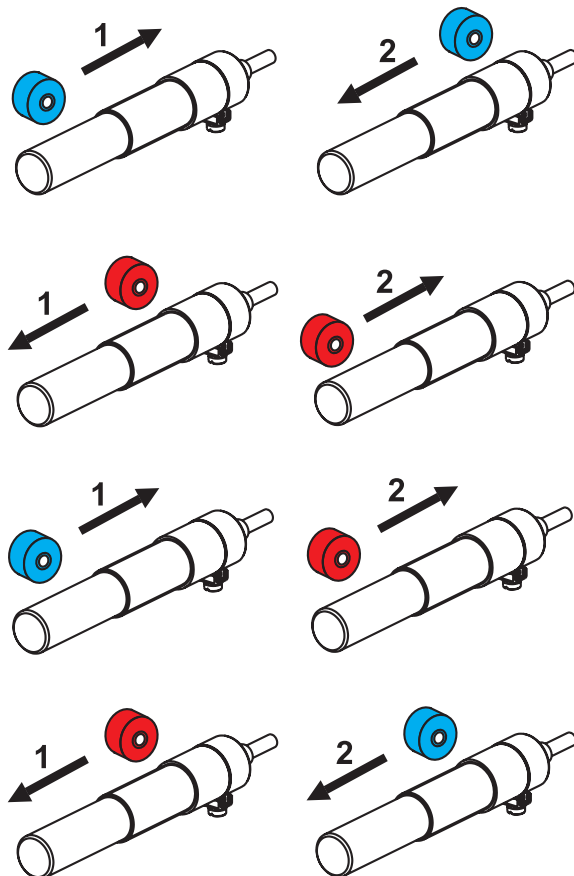
Actuation
from front



Actuating magnets for actuation from side bistable types

Part number	EEx RC M20 1S-R		EEx RC M20 1W-R	
Contact travel				
Contacts	1 Bistable		1 Bistable change-over	
Actuation type	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

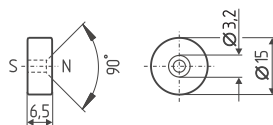
Actuation
from side



M 100

M 100 U

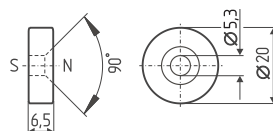
- Unenclosed
- Barium ferrite
- Ambient temperature:
–20 °C ... +80 °C



M 100

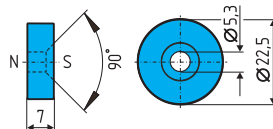
M 100 U

- Unenclosed
- Barium ferrite
- Ambient temperature:
–20 °C ... +80 °C

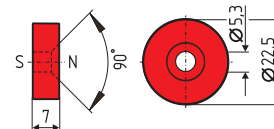


M 100

- Thermoplastic enclosure
blue or red
- Barium ferrite
- Ambient temperature:
–20 °C ... +80 °C



M 100 S

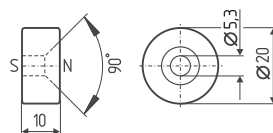


M 100 N

M 200

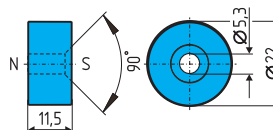
M 200 U

- Unenclosed
- Barium ferrite
- Ambient temperature:
–20 °C ... +80 °C

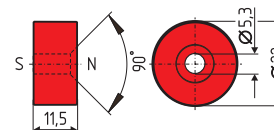


M 200

- Thermoplastic enclosure,
blue or red
- Barium ferrite
- Ambient temperature:
–20 °C ... +80 °C



M 200 S

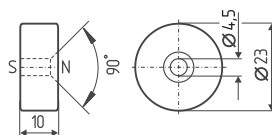


M 200 N

M 300

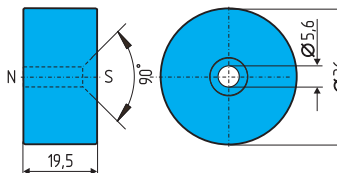
M 300 U

- Unenclosed
- Colour coding of northpole (red spot)
- Barium ferrite
- Ambient temperature: -20 °C ... +80 °C

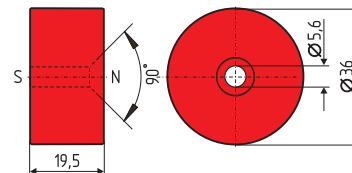


M 300

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



M 300 S

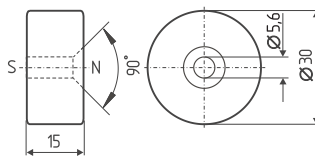


M 300 N

M 400

M 400 U

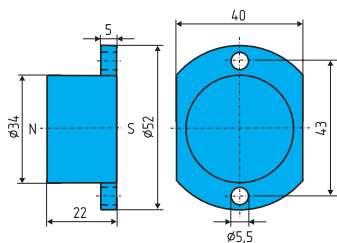
- Unenclosed
- Barium ferrite
- Ambient temperature: -20 °C ... +80 °C



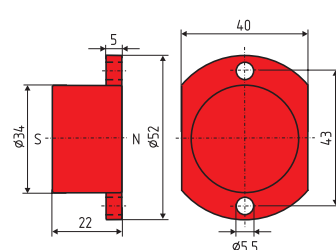
M 700

M 700

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



M 700 S



M 700 N

6.

6.6

Ex switchgear

Magnetic sensors

Technical data



	EEx RC 15	EEx RC 13,5	EEx RC M20
Standards:	EN 50014; EN 50028; EN 50281-1-1		
Ex marking:	Ⓔ II 2G EEx m II T6 II 2D IP 67 T80°C		
Certification:	DMT 01 ATEX E 058 X		
Enclosure material:	Nickel-plated brass		
Actuators:	M range magnets		
Protection class:	IP 67 to IEC/EN 60529		
Contact type:	NC, NO or change-over contacts		NO or change-over contacts, NO or change-over contacts bistable
Switching system:	sensors		
Termination:	Cable, 2 m long; 1S: H05VV-F 3 x 0.75 mm ² or MNZ 45 MC 3 x 0.75 mm ² ; 1Ö, 1W: H05VV-F 4 x 0.5 mm ² or MNZ 45 M 4 x 0.75 mm ²		
Utilisation category:	AC-15; DC-13		
Switching voltage:	1Ö, 1S, 1W: 250 VAC		
Switching current:	1Ö, 1S, 1W: max. 1.5 A		
Switching capacity:	1Ö, 1W: max. 50 VA/W 1S: max. 100 VA/W		
Bounce duration:	0.3 ... 0.6 ms		
Ambient temperature:	-20 °C ... +70 °C		
Mechanical life:	>1 million operations		
Electrical life:	10 ⁶ ... 10 ⁹ operations		
Switching frequency:	1S: 140/s; 1W: 85/s		
Switching speed:	–		
Switching time "Close":	3.5 ... 4.5 ms		
Switching time "Open":	0.2 ... 2.5 ms		
Repeat accuracy of switching points:	–		
Resistance to vibration:	1S: 50 ... 100g, 1W: 10 ... 50g		



Explosion: An explosion is a suddenly occurring energy reaction based on the extension behaviour of gases, steams and dusts in connection with oxygene and an ignition source.

A

Additional transistor output: An indication output which shows the condition of the evaluation unit or the guard device or gives an error code.

Appliance safety law: The appliance safety law forms the basis for putting the EC Recommendations regarding Article 100a of the Articles of Rome into effect in national law. The individual EC Recommendations are put into effect by decrees. These apply to manufacturers and importers.

B

Bi-stable contact/latching contact: Direction of actuation and switching function (NO/NC) can be determined by the choice of actuating magnet (N or S magnet)

C

Cam disk: A positioning element which positively operates a position switch. Cam disks are driven by door hinges, for example.

Capacitive proximity switch: A sensor which electronically switches with neither physical contact nor moving parts, but when solid or liquid materials, e.g. glass, wood, paper, metal, plastic, food or liquids are brought into its sensing range.

Cascading: Series-parallel circuits, e.g. of safety switching devices.

Change-over switch/contact: Switch with one NC and one NO contact, see contact diagrams regarding IEC 60617.

Change-over contact with double break: On actuation, opens and closes an electrical circuit at two contact points in each case, see contact diagrams.

Change-over contact with single break: On actuation, opens and closes an electrical circuit at one contact point in each case, see contact diagrams.

Coded actuating magnet: By means of the coded actuating magnets, the coded magnetic safety sensors are protected against manipulation by simple means. Actuation using conventional magnets and tools is thus eliminated.

Coded magnetic safety sensors: These devices are coded to protect against manipulation by simple means. They cannot be actuated using a normal magnet.

Concealed mounting: Devices without coding are intended only for concealed mounting. They can be actuated by any magnet of the BP range.

Contact diagrams to IEC 60617:

Single break contact with 2 terminals

Symbol	Illustration	Type
		A
		B

Double-break contact with 2 terminals

Symbol	Illustration	Type
		X
		Y

Change-over contact with single break, with 3 terminals

Symbol	Illustration	Type
		C

Change-over contact with double break, with 4 terminals

Note: The contacts have same polarity

Symbol	Illustration	Type
		Za

Change-over contact with double break, with 4 terminals

The two contact bridges are galvanically separated from each other

Symbol	Illustration	Type
		Zb

Contact/switch travel: The contact/switch travel details shown in the catalogue illustrate the switching behaviour on actuation from position 0 (= unactuated) up to the maximum end position. Closed contacts are represented by dark shading and open contacts by white areas. Other features are shown by means of symbols which are explained inside the back cover.

Contactor check: See feedback circuit.

Contactor with positive-guided contacts:

Contactor or relay on which the NC and NO contacts are galvanically separated from each other but mechanically connected together.

Control category: For the risk assessment to EN 954-1 for safety-relevant electrical circuits, there are five categories for safety related parts of control systems. These categories B, 1, 2, 3 and 4 describe the "resistance" of a control system to faults.

Conventional relay technology: The unit is not equipped with microprocessors. Control and evaluation, e.g. of a guard door monitor, is carried out using relays.

Cross-wire monitoring of two adjacent contacts or switches, e.g. between S13 and S22. A safety monitoring module can monitor this condition.

D

Danger: This word often appears in the Machinery Directive and in standards but without comment or definition. It stands for an undetermined and non-oriented (i.e. not directed to humans and/or things) hazard.

Dangerous area: Every area in or around a machine in which a person is at hazard of injury or damage to health. Note: The hazard which brings this risk is either always present or can occur unexpectedly. In newer proposals, the term "Hazard zone" is also mentioned.

Declaration of Conformity: Declaration of the manufacturer for the use of a product within the European Community according to the appropriate standards.

Differential travel/hysteresis: Distance (differential) between the points at which a contact makes and breaks the circuit

Double leaf-spring system: Snap action system with two galvanically separated contact bridges

E

Equipment group: The European standards distinguish – as the IEC recommendations – between two equipment groups:

Group I: Electrical equipment for mining.

Group II: Electrical equipment for all other explosive endangered areas.

For electrical equipment of group II a further division into explosion groups and temperature classes can be made. The ability to ignite and the strength of the ignition of an explosive mixture is a material-specific characteristic. The requirements for the production of electrical equipment can be classified according to the present gases or steams occurring in the future application field. This concerns e.g. the required gap dimensions for flameproof enclosures. Also the maximum allowed current and voltage values in intrinsic safety circuits are different for each gas mixture. Therefore the gases and steams are divided into several explosion groups. Division criteria are the limit gap dimension and the minimum ignition current value which are determined for different gas mixtures in a set experiment. Accordingly, the determined explosion group is indicated on the electrical equipment. The danger of gases increases from explosion group II A to II C. The requirements of electrical equipment for these explosion groups are higher. Of course, electrical equipment approved for II C can also be applied in all other explosion groups.

Electro-sensitive **position switches:** Safety sensors (Proximity switches for safety functions)

EMC Directive: Law on electromagnetic compatibility. The EMC Directive applies to appliances which contain electrical and/or electronic components able to cause electro magnetic interference or to operations which can be affected by such interference.

Emergency stop EN 60204-1:

"Actions in case of emergency"

Stopping in an emergency: An action in a case of emergency which is determined to stop a process or movement which is dangerous.

Switching off in an emergency: An action in a case of emergency which is determined to cut off the electrical supply to a complete or part electrical installation, if there is a risk of an electric shock or some other risk of electrical origin.

EN 50014: Electrical equipment for explosive endangered areas

EN 50015: Electrical equipment for explosive endangered areas – oil immersion "o"

EN 50016: Electrical equipment for explosive endangered areas – pressurized "p"

EN 50017: Electrical equipment for explosive endangered areas – sand encapsulation "q"

EN 50018: Electrical equipment for explosive endangered areas – flameproof enclosure "d"

EN 50019: Electrical equipment for explosive endangered areas – increased safety "e"

EN 50020: Electrical equipment for explosive endangered areas – intrinsic safety "i"

EN 50021: Electrical equipment for explosive endangered areas – Method of protection "n"

EN 50028: Electrical equipment for explosive endangered areas – encapsulation "m"

EN 50281-1-1: Electrical equipment for application in areas with flammable dust – part 1-1: Electrical equipment with protection by enclosure, design and examination

Enable delay time: On backlash of guard devices, the end position of a position switch with safety function is often "overrun", so that the NC contact opens and the NO contact remains open. This leads to a fault indication from the safety monitoring module. In order to avoid this, jumper connections can be used to bring about an extension of the enable delay time.

Enabling path: An enabling path is the safe output of the safety monitoring module which can be integrated in the safety circuit of the machine. In the safe switched-off condition, this circuit must always be open, since the safe condition must always be reached by switching off the electrical supply ("fail-safe" mode of operation). The enabling path is formed by the NO contacts of the safety relays wired in series.

E

Enabling output: Safety output which is monitored for correct function by the safety monitoring module

Encapsulation m: Parts which can cause an ignition of an explosive atmosphere are moulded in an environmentally resistant compound so that an ignition is not possible, neither by sparks nor by heat occurring inside the encapsulation.

Equipment category: There are the categories 1D, 2D, 3D with D = Dust and 1G, 2G, 3G with G = Gas.
1: Equipment must be so designed and constructed that sources of ignition do not become active, even in the event of rare incidents relating to equipment. It must be equipped with means of protection such that: either, in the event of failure of one means of protection, at least an independent second means provides the requisite level of protection, or, the requisite level of protection is ensured in the event of two faults occurring independently of each other.
2: Equipment must be so designed and constructed as to prevent ignition sources arising, even in the event of frequently occurring disturbances or equipment operating faults, which normally have to be taken into account.
3: Equipment must be so designed and constructed as to prevent foreseeable ignition sources which can occur during normal operation.

Entry/intervention time: Time needed for entry into or intervention in the dangerous area, as calculated based on an approach speed.

Explosion sub-group: Classification of gases and steams in sub-groups with consideration of the temperature classes. There are the groups I, IIA, IIB and IIC.

Ex protection class marking: Ⓔ II 2G EEx d IIC T6

Ⓔ Specific marking of explosive protection
II Equipment group: I mining, II above ground
2G Equipment category
EEx: European explosion protection
d: Ignition protection: "Flameproof enclosure"
IIC: Explosion group, materials: Ethylene, Town gas, Acetaldehyde
T6: Temperature class: 85 °C

F

Fail-safe semiconductor outputs: Monitored semiconductor outputs serve as safety outputs and can be used in the further circuitry to control contactors, emergency stop units or safety PLC systems. The monitored semiconductor outputs are of equal value to positive-guided relay outputs in relation to fault security.

G

Feedback circuit: Electrical circuit to monitor externally connected power contactors, etc., by means of a safety monitoring module. The NC contacts are used to check whether external relays or contactors have taken up their safe condition (switched off) before their renewed energisation. The evaluation unit only gives the enable signal, when the feedback circuit is closed.

Flameproof enclosure d: Parts which can cause an ignition of an explosive atmosphere are inside an enclosure that can stand the pressure of an inside explosion and prevents a transmission to the surrounding atmosphere of the enclosure.

GS-ET...: Testing/inspection principles of the German assessment committee for electrical engineering

Guard device (EN 60204-1): A separating protective device or such as is used as a safety measure in order to protect persons from a present or potential hazard.
Hazard: A source of possible injury or damage to health or "Potential source of damage"

H

Hazard analysis: A complete identification and analysis of all possible hazards for the risk analysis. Also termed hazard analysis in the Machinery Directive. According to Article 100a this stems from the hazard situation and exposure to the hazard, according to Article 118a from the hazard potential based on the operative conditions and surroundings.

Hazard exposure: Probability of the occurrence of an injury or damage to health. This stands in relationship to the frequency of entry or the duration of presence.

Increased safety e: Measurements for an increased degree of safety are taken in order to prevent unallowed high temperatures and the generating of sparks and arcs inside or at the outer parts of electrical equipment, which normally do not occur.

Incremental shaft encoder: Serves the registration of travel, positions or speeds. The encoder gives a definite number of electrical impulses for each revolution.

Inductive proximity switch: A sensor which electronically switches with neither physical contact nor moving parts when ferro-magnetic parts, e.g. metal, are brought into its area of operation.

Input expander: To monitor a number of guard devices; units are connected together by conventional wiring

Integral evaluation: The evaluation electronics to monitor the switching conditions of the contacts is integrated in the switch or safety sensor.

Interlock: A mechanical, electrical or other device to prevent operation of a machine element under pre-determined conditions (usually as long as a separating guard device is not closed).

Intrinsic safety i: The electrical equipment applied in explosive endangered areas only contains intrinsic safety circuits. A circuit is intrinsic when no spark and no thermal effect present at set test conditions (which consist of the normal operation and special fault conditions) can cause the ignition of a certain explosive atmosphere.

Latching: After actuation, the mechanical position switch or safety switch remains in its switching position and must be manually reset.

Latching contact: See bi-stable contact

Machine to EN 292-1; 3.1: The entirety of parts or devices connected together, of which at least one is a moving part, also as applicable drive elements, control and supply circuits, etc., which are brought together for a particular application, such as processing, treating, material handling and preparation of material. The entirety of several machines, which are so arranged and controlled that they operate together as a single unit to achieve one and the same purpose, is also considered to be a "machine".

Magnetic blow-out: Permanent magnets are mounted adjacent to the side of the contacts to deflect the polarised DC switching arc. The arc is thus extinguished more quickly and contact wear reduced.

Manipulation in a simple manner: Intentional overcoming of safety switches either manually or by using readily available items, e.g. screws, keys, coins or tools which are needed for the normal operation of the machine. See protection against manipulation.

MBL....: Code of practice of German industrial assessors, which gives references and suggestions regarding technical products.

Method of protection: In areas where the occurrence of explosive mixtures of flammable materials and air cannot be avoided by means of the primary explosion protection, special measurements for the avoidance of ignition source are required. These measurements are determined in the different methods of protection.

Method of protection n: Non-sparking "n", equipment, where the surface temperature is below the ignition temperature (temperature classes) and no sparks occur during operation. The measuring of this method of protection assumes normal operation, application only in zone 2.

Mushroom-head push button: A manually operated switch, in particular for emergency stop operations, often with latch.

Non-separating protective device: A device without separating function, which eliminates or reduces a risk either alone or in combination with a separating protective device.

Normally closed contact/NC contact: A contact which is closed in the rest condition.

Normally open contact/NO contact: A contact which is open in the rest condition.

Off delay: Voltage-controlled drop-out of relay on de-energisation after a preset or fixed time.

Oil immersion o: The Ex atmosphere is kept apart from the ignition source by insulation with oil.

OSSD (Output Signal Switching Device): The part of an ESPE which is connected to the machine control system and moves to the OFF condition if the sensor section is actuated during normal operation.

Output expander: To provide additional enabling paths; units are connected together by conventional wiring

Overlapping contacts: With overlapping contacts, the NO contact closes before the NC contact opens.

Positive action to EN 60947-5-1: Connection between the actuator and the switch contact by means of which force exerted on the actuator is directly transmitted to the contact.

Positive actuation: When a moving mechanical component automatically moves another with it, either by means of direct contact or via rigid parts.

Positive break $\ominus$ (of a switch contact to EN 60204-1): The version of a contact separation as the direct result of a determined movement of the operating part of the switch via non-flexible parts.

Positive-guided (EN 60204-1): The actuator and NC contact must be connected by a direct linkage without spring parts.

Pressurized p: The insertion of an explosive atmosphere into an enclosure of electrical equipment is prevented by ignition protection gas (air, inert or another suitable gas). This protective gas is held at high pressure. This high pressure is kept either with or without flushing of the ignition protection gas.

Protect: For the "Protect" mode of operation, the enabling of the switching output is carried out automatically after the end of the protected field interruption (or in case of activation of the restart interlock after re-setting) and the end of the protected field interruption.

P

Protection against manipulation: Manipulation is when a safety device or safety switch is made inoperative.

Protection class IP (Ingress Protection):

- Protection against the ingress of solid foreign bodies (foreign body protection)
- Protection of persons against contact with live or moving parts (protection against contact)
- Protection against the ingress of water (water protection)

First figure foreign body protection	Second figure water protection
0 no protection	0 no protection
1 foreign body >50 mm	1 vertically falling water
2 foreign body >12 mm	2 transversely falling dripping water, max. 15° vertically
3 foreign body >2.5 mm	3 spray water
4 foreign body >1.0 mm	4 sprinkling water
5 dust-protected	5 flushing water
6 dust-proof	6 rough sea
	7 dipping into water
	8 under water

Pull-wire emergency stop switches: Emergency-stop switches on which the actuating element is a wire rope. This can be stretched across the hazardous area and is pulled to actuate the switch.

R

Reaction time (EN 61496): The maximum time duration between the response of the sensor function and the OFF condition of the output switching elements, see also response time.

Redundancy (EN 60204-1): Use of more than one device or system, in order to ensure that in case of faulty operation of one unit the function will be carried out by the other one.

Remaining risk: Risk which remains after carrying out protective measures; the remaining tolerable risk in spite of protective measures.

Reset button: This push button is used, for example, to clear all faults stored in the fault memory.

Response time, reaction time: The maximum time duration between actuation of the sensor function and the OFF condition of the output switching elements

Risk (EN 60204-1): A combination of the probability and the severity of the possible injury or damage to health of a dangerous situation, see EN 292-1, 3.7. The risk, in relation to the hazard seen, is also designated as a function of the amount of possible damage and the probability of this damage occurring.

S

Risk analysis: The use of available information with the aim of recognising dangerous incidents and assessing the risk.

Risk assessment: A complete assessment of the probability and the severity of possible injury or damage to health in a dangerous situation, in order to select suitable safety measures. In EN 1050, this term is used as a part of the risk analysis.

Risk evaluation: A process to determine whether a risk is acceptable, based on risk analysis and taking into account factors such as social, commercial and environmental aspects.

Risk judgement: A process of risk analysis and risk evaluation. In EN 292-1, these terms are not used in the same sense.

Safety is present if the risk is justifiably small, or in the absence of unjustifiable risks.

Safety relay: The main characteristic of a safety relay is that it has positive-drive contacts, making it possible to check the position of its NO contacts by means of a NC contact. The contacts are mechanically connected. It is thus ensured that the NC contact is always open when the NO contact is closed.

Sand encapsulation q: Ex atmosphere is kept apart from the ignition source by insulation with sand.

Separating guard device: Part of a machine which is particularly used as a type of physical barrier for protection. Depending on the conditions, a separating guard device can be called an enclosure, a cover, a screen, a door, sheathing, etc.

Slow action contact: Switching system where the switching movement depends on the actuating speed.

Snap action contact: Switching system where the switching movement is carried out by spring action and is independent of the actuating speed.

Soiling monitoring: This monitors whether the surface of an AOPD glass is soiled such as to lead to a reduction in the security of detection.

Solenoid interlock: A solenoid interlock has the function of locking a separating guard device in the closed position. It is connected to the control system in such a way that the machine cannot be operated if the guard device is not closed and interlocked and that the guard device is held closed until there is no longer a risk of injury.

Solenoid locking principle: the latching bolt of a solenoid interlocking device is held in the interlocked position by magnetic force and released by spring force

Spring locking principle: the latching bolt of a solenoid interlocking device is held in the interlocked position by spring force and released by magnetic force

Staggered contacts: With staggered contacts, the contacts close or open one after the other.

Start function: The feedback circuit can also be used to provide a start function by connecting an additional Start push button (NO) into the feedback circuit. The evaluation unit only gives the enable signal when the feedback circuit is closed.

Start-up test: A manual or automatic test to EN 61496-1, which is carried out when an ESPE or a guard door monitor has been switched on, to test the complete safety-related control system before the first machine movement is started.

Stop category 0 to EN 60204-1: Shutdown by immediate switching-off of the power supply (uncontrolled shutdown).

Stop category 1 to EN 60204-1: When switching off, the supply is maintained until the machine has come to a standstill. When standstill has been reached, the power supply is interrupted (controlled shutdown).

Stop category to EN 60204-1: Division to describe the switching-off characteristics relating to actions in emergencies.

Temperature class: The ignition temperature, i.e. the temperature where a heat ignition can be initiated, e.g. by a hot equipment surface, is dependent on the type of gas or steam. This ignition temperature is influenced by several factors and therefore dependent on the structure of the experiment. Further information regarding unlisted materials can be drawn from the directives. The maximum surface temperature of electrical equipment must always be below the ignition temperature of the gas or steam mixture in which it is applied. In order to mark and select electrical equipment according to its maximum surface temperature, it is divided into several temperature classes. Thus the gases can be assigned to these temperature classes according to their ignition temperature, observing that the maximum surface temperature of each class must not reach the ignition temperature of the gases. Electrical equipment marked with a higher temperature class (e.g. T5) is also suitable for lower temperature classes (e.g. T2 or T3).

Test push button: The Test push button can be used to check the switch-off function of an evaluation unit. When the Test button is operated, the enable contacts must open.

Type A standards: The basic safety standards, which lay down the basic terms and the guiding principles for all machines.

Type B standards: Safety group standards, which deal with a particular safety aspect that is applicable to a wide range of machines.

Type B1 standards: Make more concrete statements and offer possible solutions for the safety aspects dealt with generally in the basic standards, such as safe distances, surface temperatures, etc.

Type B2 standards: Include concrete statements or possible solutions for safety equipment, such as two-hand operation circuits, interlocking devices, etc.

Type C standards: Machine safety standards or subject standards which relate to specific safety characteristics of individual types of machine or machine groupings.

Uncoded magnetic safety sensor: can be manipulated using simple items, e.g. an uncoded magnet. Uncoded magnetic safety sensors must therefore be mounted in a concealed position, so that manipulation with simple items is not possible.

Unidirectional light barriers (safety light barriers) comprise an emitter and a receiver. The emitter is aligned such that a maximum proportion of the pulsed light from its diode falls onto the physically and optically separate light receiver. This evaluates the light received such that it can be clearly differentiated from ambient light or other light sources. An interruption of the light beam brings about switching of the output.

Universal current (UC): Devices can be operated on AC or DC supply.

Waiting time: Time until hazard is no longer present, e.g. on motor standstill

Welding-current-resistant proximity switch: Inductive proximity switch which is insensitive to strong electro magnetic fields.

Wire-breakage monitoring: Breakage of the actuating wire on pull-wire switches trips the contacts, thus protecting against unnoticed damage.

T

U

W

Z

Zone division: The division of the gas-Ex zones must be carried out according to EN 60079-10 and the division of dust-Ex zones according to EN 50281-3. If there are special applications or doubts about the classification of explosive endangered areas, the authorities decide (Trade Supervisory Office, if necessary in cooperation with the Employees' Liability Insurance Association or the TÜV).

Zone 0: comprises areas where an explosive atmosphere is present permanently or over a long time. That is inside of containers or apparatus (steamers, reaction tube), when the conditions defining zone 0 are met.

Zone 1: comprises areas where an explosive atmosphere is present sometimes. That is in the closer vicinity of zone 0, of feeding entries, around filling and emptying units, as well as around fragile apparatus or pipes made of glass, ceramics and around insufficiently insulated plugs on pumps and gate valves, etc.

Zone 2: comprises areas where an explosive atmosphere is rarely present and then only for a short time. These are areas surrounding zone 0 or 1 or around Flanschconnectors with standard type flat sealings in closed rooms. Rooms where flammable materials are only transported inside pipes with welded or hard-soldered connections are not explosive endangered areas.

Zone 20: comprises areas where an explosive atmosphere is present often or over a long time. That is inside containers or apparatus (mills, dryers, mixers, pipes, silos etc.), when dust can form explosive mixtures in a dangerous quantity, often or over a long period of time.

Zone 21: comprises areas where an explosive atmosphere is sometimes present for short time because of a raising of settled dust. That is in the vicinity of dust-containing apparatus, where dust leaks and collects in endangering quantities (e.g. mill rooms where dust can escape and deposit).

Zone 22: comprises areas where during normal operation an explosive atmosphere in the form of a cloud containing the flammable dust of the air is present not at all or only sometimes for a short time.

This glossary explains some basic terms which are used in the catalogue but is by no means complete. Suggestions for additions are welcome.

Explanation of symbols

Guard device, sliding to side	
Guard device, hinged	
Guard device, removable	
Emergency Stop function	
Guard device closed	
Guard device open	
Double insulated	
Positive opening NC contact	
Positive opening travel/angle	
Latching point/Rest position	
Wire-breakage monitoring	
Pull-wire monitoring	
Actuated.	
Not actuated.	
Spanner size across flats	
Explosion proof.	
TÜV prototype-tested	
BG prototype-tested	

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