

Extreme

Ex switchgear



// SWITCH CONTROL UNDER EXTREME CONDITIONS

Catalogue





#### 4 The Company

### PRODUCTS



#### 8 Ex wireless switchgear

- 8 sWave® technology
- 12 Ex wireless position switches
- 16 Ex wireless universal transmitter
- 18 Ex inductive sensors
- 20 Wireless transmitters/repeaters

- 28 EnOcean® technology
- 30 Ex wireless position switches
- 40 Ex wireless command devices
- 48 Ex wireless foot switches
- 50 Ex wireless pull-wire switches
- 52 Wireless transmitters/repeaters



#### 66 Ex solenoid interlocks

- 70 Series Ex STM 295
- 74 Series Ex AZM 415
- 77 Series Ex AZP 415



#### 86 Ex safety switches with separate actuator

- 90 Series Ex ST 14
- 94 Series Ex 14 AZ 95
- 96 Series Ex 97 AZ
- 98 Series Ex AZ 16
- 108 Series Ex 99 ST
- 109 Series Ex 98 ST
- 110 Series Ex 355 AZ
- 114 Series Ex ST 61



#### 116 Ex safety sensors

- 120 Series Ex RC Si M30
- 122 Series Ex RC Si 56
- 124 Series Ex HS Si 4
- 126 Series SRM 21 RT2
- 128 Series SRM 21 Multi



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

- 134 Series Ex 13 SB
- 135 Series Ex 95 SB
- 136 Series Ex 98 SB
- 137 Series Ex 355 V.S



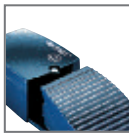
#### 140 Ex position switches with/without safety function

- 148 Series Ex 13
- 160 Series Ex/ExM 14
- 170 Series Ex 97
- 178 Series Ex 99
- 184 Series Ex T 356
- 188 Series Ex 12
- 200 Series Ex 98
- 206 Series Ex 355
- 212 Series Ex/ExM 61



#### 220 Ex command devices

- 224 Series Ex 14
- 232 Series Ex BF 80



#### 238 Ex foot switches

- 242 Series Ex GF
- 244 Series Ex GFS
- 246 Series Ex GFI Extreme
- 247 Series Ex GFSI Extreme
- 248 Series Ex GF 2
- 250 Series Ex GFS 2
- 252 Series Ex GF 3
- 253 Series Ex GFS 3



#### 254 Ex emergency pull-wire switches

- 262 Series Ex ZS 71
- 266 Series Ex ZS 73
- 270 Series Ex ZS 75
- 274 Series Ex ZS 80
- 276 Series Ex ZS 73 S
- 278 Series Ex ZS 75 S



#### 282 Ex belt-alignment switches

- 286 Series Ex 98 SR
- 287 Series Ex 355 4VSR
- 288 Series Ex ZS 73 SR
- 289 Series Ex ZS 75 SR



#### 290 Ex pull-wire switches

- 295 Series Ex 95 WH/90°
- 296 Series Ex/ExM 61 Z
- 298 Series Ex ZS 71 Z



### 300 Ex magnetic sensors

- 304 Series Ex RC 12
- 306 Series Ex RC 13,5
- 308 Series Ex RC M14
- 310 Series Ex RC 15
- 312 Series Ex RC M20
- 315 Series Ex RC M20 KST-60°C
- 322 Series Ex RC 2580



### 324 Ex inductive sensors

- 328 Series Ex IS M8
- 329 Series Ex IS M12
- 330 Series Ex IS M18
- 331 Series Ex IS M30



### 332 Ex Junction / Terminal boxes

- 334 Series Ex AD

Legend



# // SAFE SWITCHGEAR FOR DEMANDING AND CRITICAL APPLICATIONS



»Safe switchgear for demanding and critical applications«. True to this motto, steute has been providing its customers with innovative, practical and durable switchgear solutions – for over 50 years.

When our customers are successful, so are we. Because we always focus on our customers, our company has grown steadily and sustainably over the last decades. Steute is committed to continuing this growth – in close cooperation with our customers.

We are situated in East Westphalia, a key region for machine building and electrical goods manufacturing. It is home to qualified specialists committed to developing and manufacturing innovative products. It is also the location of renowned universities, research and educational institutions to which we maintain healthy contacts.

Markets are no longer restricted by national borders. This is why our products are developed and tested for extreme conditions all over the world. We take care to ensure that our products are always certified according to the latest international standards. In every industrial or emerging nation in the world, steute has access to qualified specialists who can guarantee competent support and a quick service.

As a medium-sized company we are able to react with speed to customer wishes and market trends. We are continually developing innovative products and using new technologies as we consistently open up new fields of application for our switchgear.

steute is currently active in four different business fields, producing switchgear, sensors and control units for use in industry and in medical equipment:

## **Wireless**

Cable free switchgear and sensors for use in machinery and process plants. These industrial-strength wireless switches communicate with higher level control systems via reliable radio transmission. »Energy harvesting« can play a major role in these products.

## **Automation**

Standard and customised switchgear for machinery and process plants. Tried and tested electromechanical and non-contact technologies for classical applications in industrial automation and process control – always with a view to the latest global requirements.

## **Extreme**

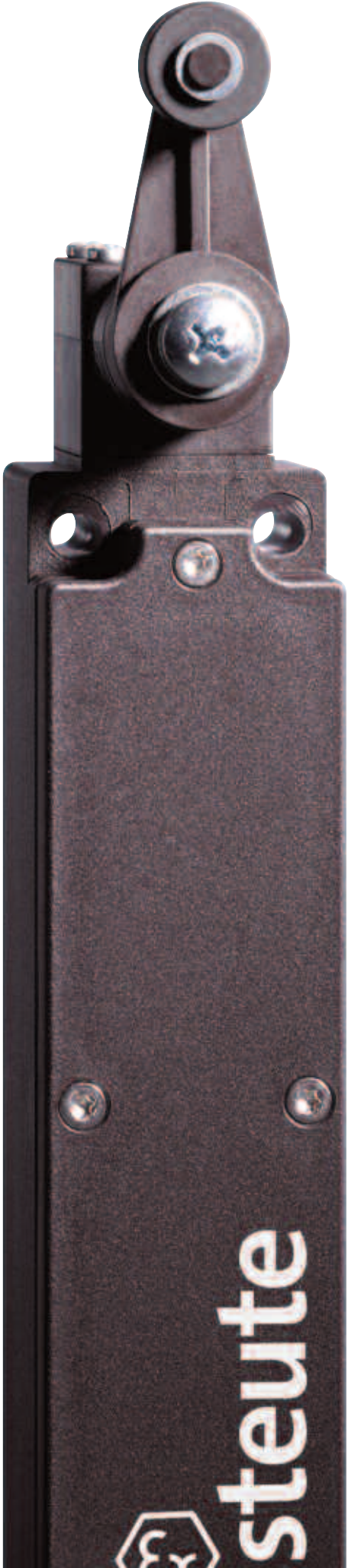
Switchgear and sensors for use in extreme environments or under extreme conditions. Certified products for use in hazardous areas worldwide (e. g. ATEX, IECEx, EAC).

## **Meditec**

A comprehensive range of standard and customised foot and hand controls for medical devices, meeting the highest ergonomic and availability requirements. Produced in accordance with the certified EN ISO 13485 quality management system for medical products.

The following information provides an overview of our standard range of switchgear for complex and demanding applications. We will be happy to provide you with any additional information you require. If you cannot find the solution for your application: just get in touch. We have already helped numerous customers by developing »tailor-made« switchgear for their individual needs.

**Marc Stanesby**  
Managing Director  
steute Schaltgeräte GmbH & Co. KG



steute



Ex wireless switchgear  
sWave® 868 MHz / sWave® 915

Ex wireless position switches

// Series Ex RF 96

from page 12

// Series ExM 14

from page 17

Ex wireless universal transmitter

// Series Ex RF 96 ST

from page 16

Ex inductive sensors

// Series Ex RF IS

from page 18

Wireless transmitters/repeaters

// Series RF Rx SW868/SW915-1W

from page 20

// Series RF Rx SW868/SW915-2W RS232

from page 21

// Series RF Rx SW868/SW915-4S

from page 22

// Series RF Rx SW868/SW915-4W

from page 23

// Series RF Rx SW868/SW915-TCP/IP

from page 24

// Series RF RxT SW868/SW915-USB

from page 25

// Series RF RxT SW868/SW915-1K

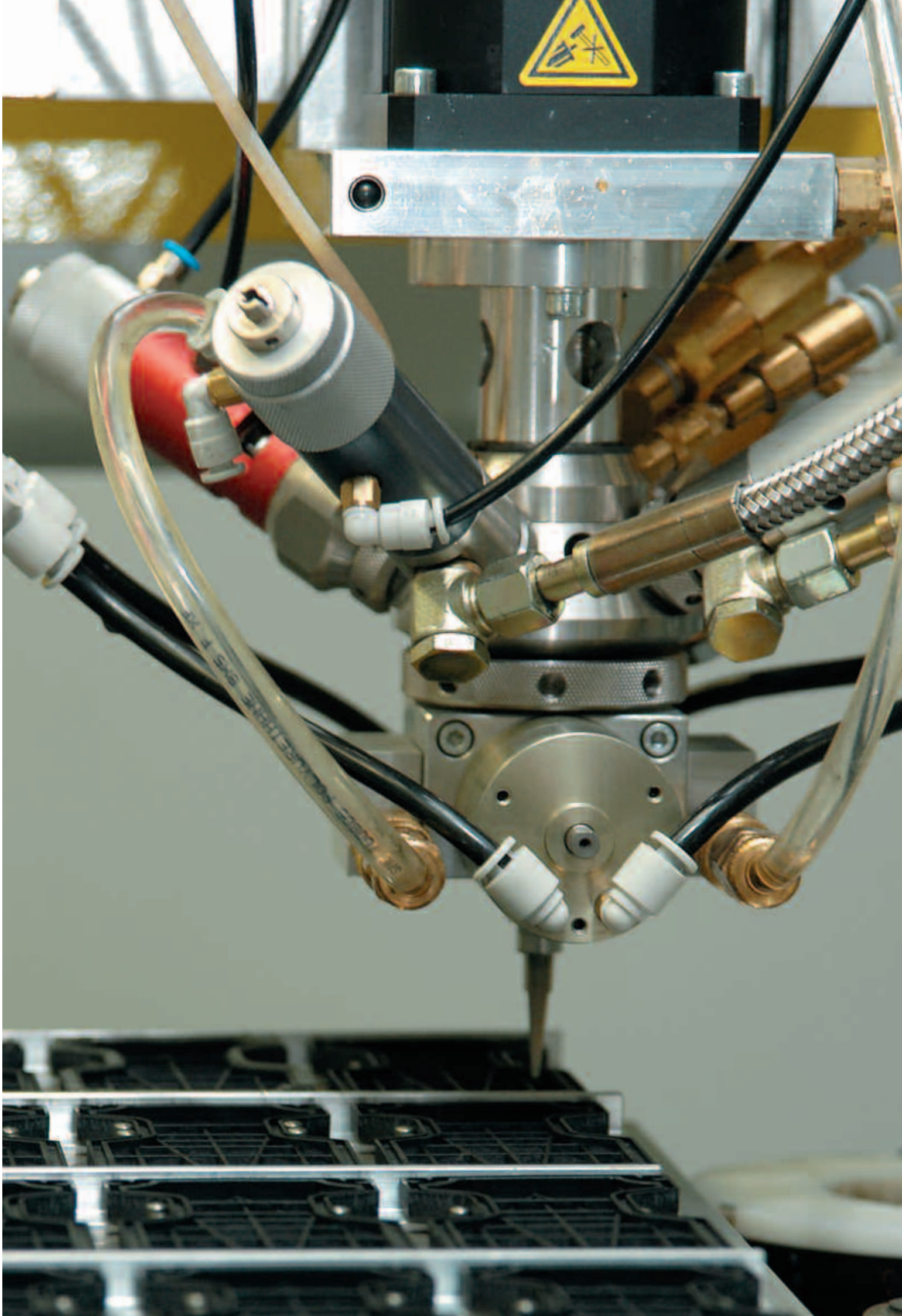
from page 26

// Series RF RxT SW868/SW915-2K

from page 27

Accessories

from page 60



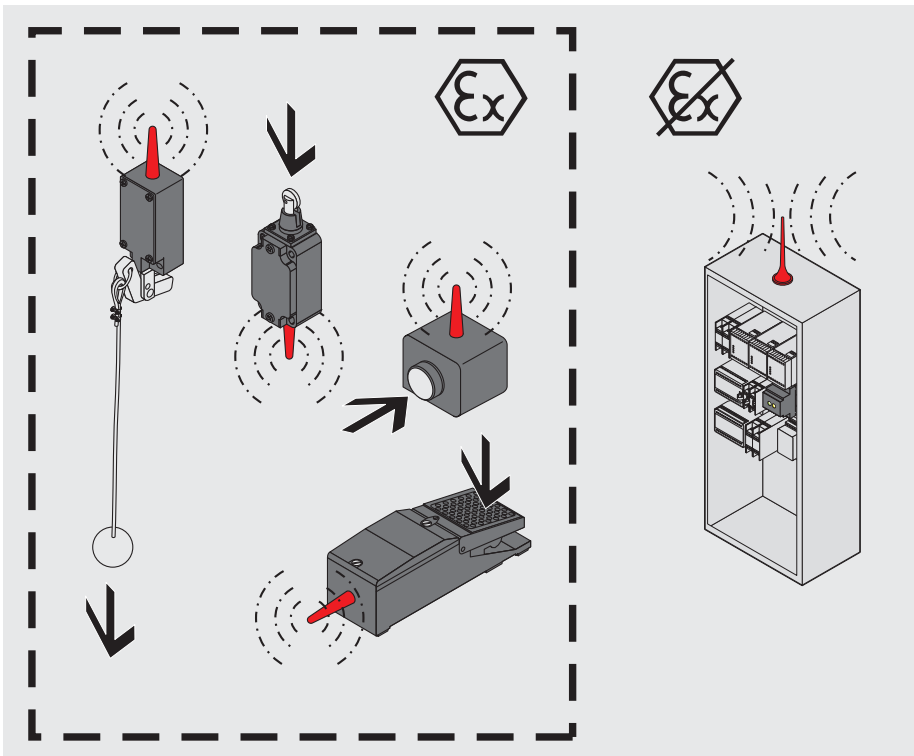
# Ex wireless switchgear

## Range of application

The Ex wireless switchgear are suitable for the most various indoor and outdoor applications. There are position, pull-wire, foot switches and command in different versions available. The wireless switchgear can be used for endstop functions, command signals or security tasks in explosive-endangered areas. All applications where wireless is of big advantage. Wireless and self-sufficient switches possess a high potential to optimize the entire machinery and plant industry, e.g. more flexible constructions for movable or self-sufficient plant parts, as well as easier, more favourable installations, especially upgrades. In potentially explosive atmospheres, wireless switchgear devices offer particular advantages for every wired connection is a potential risk. The switchgear with EnOcean® wireless technology transmits signals wireless and generates the necessary energy itself, according to the »Energy Harvesting« principle. This means: no cable, no connectors, no battery! The wireless switchgear with sWave wireless technology are equipped with a replaceable battery. The battery status and the signal state are transmitted.

The Ex switches are suitable for application in zone 1 and 2, as well as zone 21 and 22 according to ATEX 2014/34/EU.

## Application



## Design and operating principle

The Ex wireless switchgear is based on the EnOcean® and sWave® wireless technology. The energy required for the wireless technology is generated from the electro-dynamic energy generator. For example the energy is drawn from the actuation of the switch itself. Through this method switchgear can be operated without any batteries. They are self-sufficient and are therefore wireless and maintenance-free. The wireless switchgear with sWave® wireless technology transmits the battery status and the status signal.

The signal transmission is carried out on the licence-free SRD band (Short Range Devices) at 868 MHz at 10 mW transmission power. On actuation of the switchgear a very short telegram is spontaneously sent out that contains an individual 32 bit identification number and the usable information. The wireless signals are processed by receiver units. The degree of protection of all the Ex wireless switchgear is IP 65/67. The wireless switchgear can be fitted in any desired mounting position.

All Ex wireless switchgear shown in this chapter bear the CE mark according to ATEX 2014/34/EU.

# Ex wireless switchgear

## // Ex wireless position switches series Ex RF 96

### Features/options

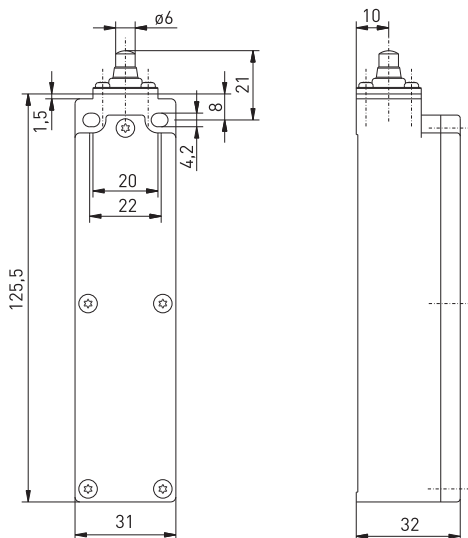
- Ex zone 1 and 21
- sWave® wireless technology
- Power supply by ex-proof Lithium battery (exchange inside Ex areas possible)
- Thermoplastic enclosure
- Mounting details to EN 50047
- No wiring and pipe laying required
- Easy programming of receiver
- Output signal can be individually configured at the receiver

## // EX RF 96



### Technical Data

<b>Standards</b>	EN 60947-5-1; EN 61000-6-2; EN 301 489-1, -3; EN 300 220-1, -2; EN 60079-0, -11
<b>Enclosure</b>	Glassfibre reinforced thermoplastic, self-extinguishing UL 94-V0
<b>Tightening torque</b>	M4 mounting screw enclosure: max 1.2 Nm, M2.5 cover screws: approx. 0.45 Nm
<b>Switching system</b>	micro switch
<b>Degree of protection</b>	IP 20 to IEC/EN 60079-11, IP 67 to IEC/EN 60529
<b>Protocol</b>	sWave®
<b>Ambient temperature</b>	-20 °C ... +60 °C
<b>Switching frequency</b>	approx. 12000 telegrams at repetitions/h
<b>Voltage supply</b>	Ex approved and certified batteries, manufacturer Friwo, type: M52 Ex SVKP/036, II 2G Ex ib IIC T4, II 2D Ex ib IIIC T135°C, ZELM 13 ATEX 0512X, IECEx ZLM 13.0003X, 3 V Lithium Manganese Dioxide (replaceable), permiss. ambient temperature: -40 °C ... +72 °C
<b>Frequency</b>	868.3 MHz or 915 MHz (USA, Canada and Australia)
<b>Transmission power</b>	<b>SW868:</b> < 25 mW; <b>SW915:</b> < 10 mW
<b>Data rate</b>	66 kbps
<b>Channel bandwidth</b>	<b>SW868:</b> 266 kHz; <b>SW915:</b> 400 kHz
<b>Sensing range</b>	max. 450 m outside, max. 40 m inside
<b>Mechanical life</b>	> 1 million operations
<b>Actuating time</b>	min. 80 ms
<b>Battery life</b>	depending on the switching frequency 1 s approx. 1000 days, 10 s approx. 3500 days, 100 s approx. 3500 days
<b>Note</b>	Transmission of battery voltage and switching condition
<b>Ex marking</b>	⊕ II 2G Ex ib IIC T4 Gb, II 2D Ex ib IIIC T135 °C Db IECEx Ex ib IIC T4 Gb, Ex ib IIIC T135 °C Db
<b>Approvals</b>	ZELM 13 ATEX 0515 X, IECEx ZLM 13.0006X



### Type code

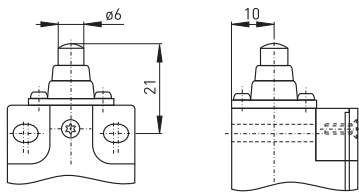
**Ex RF 95 WH SW868**

Wireless frequency 868 MHz (SW915 915 MHz)  
sWave® standard  
Actuator H (W, D, DS, etc. ...)  
Watertight collar  
Series  
Wireless technology  
Ex certified component

## Ex wireless switchgear

### // Ex wireless position switches series Ex RF 96, actuators

#### // Plunger with collar W



#### Features/options

- Actuator type B per EN 50 047
- Watertight collar for protection against penetration of dirt

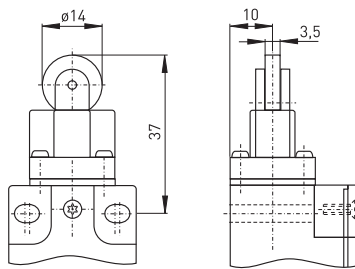
#### Part number

Ex RF 96 W SW868  
Ex RF 96 W SW915

#### Material number

1391412  
1391414

#### // Long roller plunger RL



#### Features/options

- Wear-resistant thermoplastic roller
- Metal roller available on request
- Actuator can be repositioned by 90°

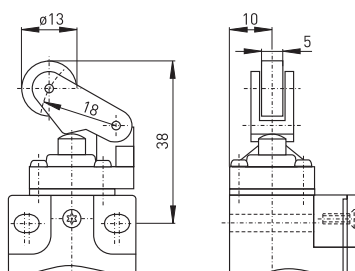
#### Part number

Ex RF 96 RL SW868  
Ex RF 96 RL SW915

#### Material number

1391416  
1391418

#### // Roller lever with collar WH



#### Features/options

- Actuating speed 0.5 m/s with a vertical actuating angle of  $\alpha = 40^\circ$  and  $\beta = 25^\circ$
- Actuator type E to EN 50 047
- Watertight collar for protection against penetration of dirt
- Wear-resistant thermoplastic roller
- Actuator head can be repositioned by 4 x 90°
- Metal roller available on request

#### Part number

Ex RF 96 WH SW868  
Ex RF 96 WH SW915

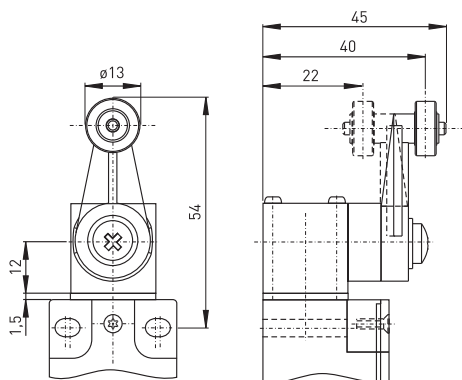
#### Material number

1391420  
1391422

# Ex wireless switchgear

## // Ex wireless position switches series Ex RF 96, actuators

### // Rocking lever D



#### Features/options

- Lever angle adjustable in  $10^\circ$  steps
- Wear-resistant thermoplastic roller
- Actuator head can be repositioned by  $4 \times 90^\circ$
- Metal roller available on request

#### Part number

Ex RF 96 D SW868

Ex RF 96 D SW915

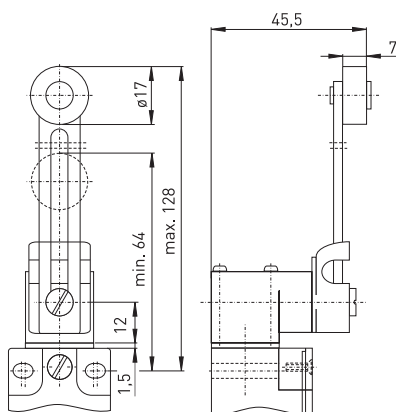
#### Material number

1391424

1391426

14

### // Adjustable rocking lever DS



#### Features/options

- Position of roller can be adjusted
- Wear-resistant thermoplastic roller
- Actuator can be repositioned by  $4 \times 90^\circ$
- Metal roller available on request

#### Part number

Ex RF 96 DS SW868

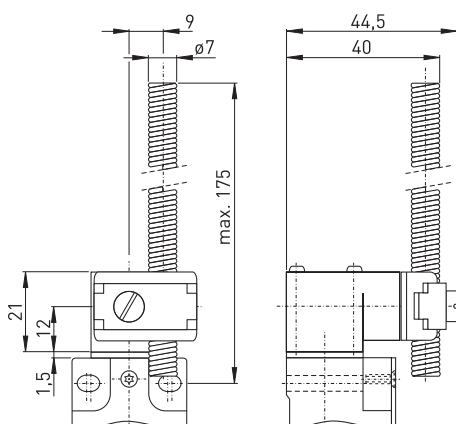
Ex RF 96 DS SW915

#### Material number

1391428

1391430

### // Spring-rod lever DF



#### Features/options

- Lever angle adjustable in  $10^\circ$  steps
- Actuator can be repositioned by  $4 \times 90^\circ$

#### Part number

Ex RF 96 DF SW868

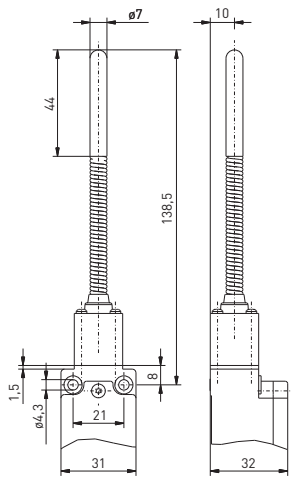
Ex RF 96 DF SW915

#### Material number

on request

on request

## // Spring rod with plastic tip TK



### Features/options

- 10 s status signal
- Enclosure with stainless steel sleeves
- Wear-resistant thermoplastic tip

### Part number

Ex RF 96 TK SW868  
Ex RF 96 TK SW915

### Material number

1433978  
on request

# Ex wireless switchgear

## // Ex universal transmitter series Ex RF 96 ST

### Features/options

- Ex zone 1 and 21
- sWave® wireless technology
- Power supply by ex-proof Lithium battery (exchange inside Ex areas possible)
- Thermoplastic enclosure
- Mounting details to EN 50047
- No wiring and pipe laying required
- Easy programming of receiver
- Output signal can be individually configured at the receiver

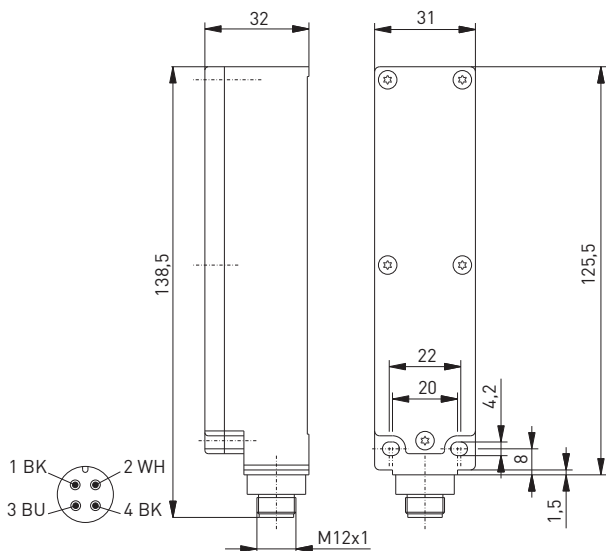
## // EX RF 96 ST



### Technical Data

<b>Standards</b>	EN 60947-5-1; EN 61000-6-2; EN 301 489-1; EN 301 489-3; EN 300 220-1, EN 300 220-2; EN 60079-0, -11
<b>Enclosure</b>	Glassfibre reinforced thermoplastic, self-extinguishing UL 94-V0
<b>Connection</b>	Plug-in connector M12 x 1, 4-pole
<b>Suitable sensors</b>	corresp. sensors type: Ex RF IS or approved intrinsic safe sensors. Peak values: $U_o = 3,7 V$ ; $I_o = 0,177 A$ ; $P_o = 0,108 W$ (linear characteristics) with max. perm. outer capacity $C_o = 757 \mu F$ , max. perm. induct. $L_o = 0.89 mH$
<b>Degree of protection</b>	IP 20 to IEC/EN 60079-11, IP 67 to IEC/EN 60529
<b>Protocol</b>	sWave®
<b>Ambient temperature</b>	-20 °C ... +60 °C
<b>Switching frequency</b>	approx. 12000 telegrams at repetitions/h
<b>Voltage supply</b>	Ex appr. and cert. batteries, manuf. Friwo, type: M52 Ex SVKP/036, II 2G Ex ib IIC T4, II 2D Ex ib IIIC T135°C, ZELM 13 ATEX 0512X, IECEx ZLM 13.0003X, 3 V Lithium Manganese Dioxide (replac.), permiss. amb. temper. -40 °C ... +72 °C
<b>Frequency</b>	868.3 MHz or 915 MHz (USA, Canada, Austr.)
<b>Transmission power</b>	<b>SW868:</b> < 25 mW; <b>SW915:</b> < 10 mW
<b>Data rate</b>	66 kbps
<b>Channel bandwidth</b>	<b>SW868:</b> 266 kHz; <b>SW915:</b> 400 kHz
<b>Sensing range</b>	max. 450 m outside, max. 40 m inside
<b>Actuating time</b>	min. 80 ms
<b>Battery life</b>	depending on the switching frequency 1 s approx. 500 days, 10 s approx. 1000 days, 100 s approx. 1100 days
<b>Note</b>	Transmission of battery voltage and switching condition
<b>Ex marking</b>	Ⓔ II 2G Ex ib IIC T4 Gb, II 2D Ex ib IIIC T135 °C Db IECEX Ex ib IIC T4 Gb, Ex ib IIIC T135 °C Db
<b>Approvals</b>	ZELM 13 ATEX 0515 X, IECEx ZLM 13.0006X

<b>Type code</b>	<b>Ex RF 96 ST SW868</b>
	Wireless frequency 868 MHz (SW915 915 MHz)
	sWave® standard
	M12 x 1 plug-in connector
	Series
	Wireless technology
	Ex certified component





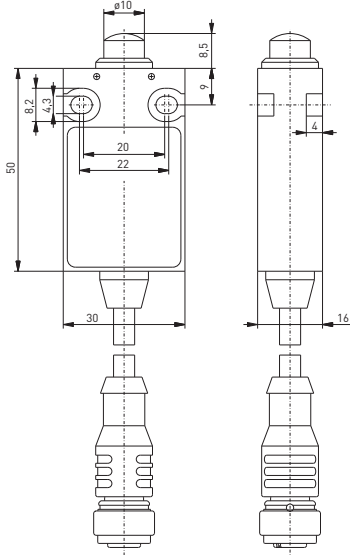
# Ex wireless switchgear

## // Ex inductive sensors series Ex RF IS

### Features/Options

- Ex zone 1 and 21 in combination with universal transmitter Ex RF 96 ST
- Thermoplastic enclosure
- Double insulated
- Snap action, NO function
- Simple electrical equipment acc. to EN 60079-11 section 5.7
- Mounting details to EN 50047
- Suitable for in-line mounting

### // EXM 14



### Contact variants: switch travel/contacts

	Snap action	Material number
1 NO contact	ExM 14 1S ST 2m	1393883

### Technical data

<b>Standards</b>	EN 60947-5-1; EN 60079-11 section 5.7
<b>Enclosure</b>	glass-fibre reinforced, shock-proof thermoplastic, self-extinguishing UL 94-V0
<b>Degree of protection</b>	IP 65 to IEC/EN 60529
<b>Contact material</b>	silver, gold-plated
<b>Switching system</b>	snap action
<b>Switching elements</b>	1 NO contact
<b>Connection</b>	Coupling M12 x 1, 4-pole
<b>Cable length</b>	2 m
<b>Ambient temperature</b>	-20 °C ... +60 °C
<b>Mechanical life</b>	> 1 million operations
<b>Operation cycles</b>	1800/h
<b>Repeat accuracy of switching points</b>	± 0.1 mm
<b>Measured values contact</b>	Li = 0.0416 μH Ci = 0.171 pF
<b>2 m cable</b>	Li = 0.968 μH Ci = 228 pF
<b>Total</b>	Li = 1.0096 μH Ci = 228.171 pF
<b>Note</b>	The position switch may only be used in combination with an Ex RF 96 ST SW!

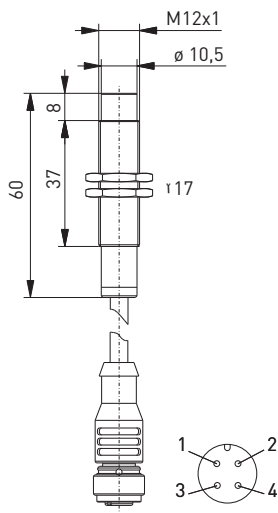
# Ex wireless switchgear

## // Ex inductive sensors series Ex RF IS

### Features/options

- Ex zone 1 and 21 in combination with universal transmitter Ex RF 96 ST
- Metal enclosure
- Non-flush mounting
- With M12 coupling, 4-pole

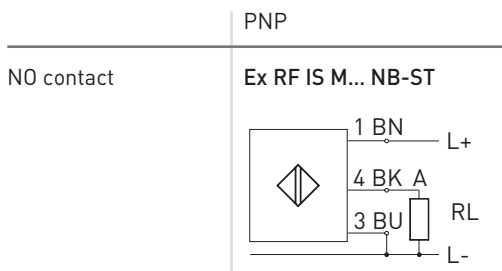
### // EX RF IS M12 NB-ST



### Technical Data

Standards	EN 60947-5-2
Enclosure	Brass nickeled
Cap	PVC black
Connection	Coupling M12x1, 4-pole
Cable length	0.5, 1 or 2 m
Degree of protection	IP 67 to IEC/EN 60529
Ambient temperature	-25 °C ... +70 °C
Rated isolation voltage $U_i$	75 VDC
Rated operating current $I_e$	0.2 mA
Rated operating voltage $U_e$	3 ... 5 VDC
Switching distance	RF IS M12: $s_n$ 4 mm, $s_a$ 0 ... 3.24 mm, $s_r$ 3.6 mm ... 4.4 mm RF IS M18: $s_n$ 8 mm, $s_a$ 0 ... 6.48 mm, $s_r$ 7.2 mm ... 8.8 mm RF IS M30: $s_n$ 15 mm, $s_a$ 0 ... 12.15 mm, $s_r$ 13.5 mm ... 16.5 mm
Hysteresis	approx. 10 %
Repeatability	< 5 %
Mounting	non-flush
Operating cycles	see RF 96 ST; RF I/O
Correction factors	Steel (St37) = 1; V2A approx. 0.7; Brass approx. 0.5; Al approx. 0.4; Cu approx. 0.4
Target	M12: 12 x 12 mm x 1 mm; M18: 24 x 24 mm x 1 mm; M30: 45 x 45 mm x 1 mm material: Steel (FE 360)
Note	The sensors can only be used in conjunction with Ex RF 96 ST

### Contact variants: switch travel/contacts



### Type code

Ex RF IS M30 nb-ST

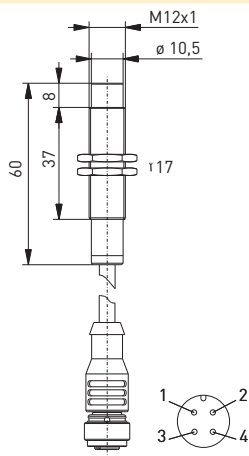
M12 coupling  
non-flush mounting  
M30 thread (M12 or M18)  
Inductive sensor  
Wireless technology  
Ex certified component

Two mounting nuts are provided.

# Ex wireless switchgear

## // Ex inductive sensors series Ex RF IS

### // Ex RF IS M12 nb-ST



#### Features/options

- non-flush mounting
- M12 thread

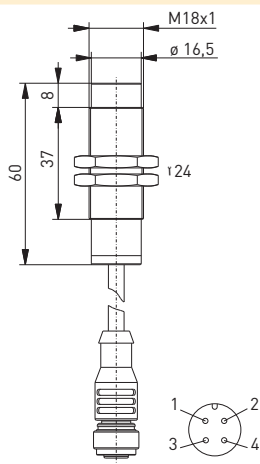
#### Inductive sensors

RF IS M12 nb-ST 2m

#### Material number

✓ 1355979

### // Ex RF IS M18 nb-ST



#### Features/options

- non-flush mounting
- M18 thread

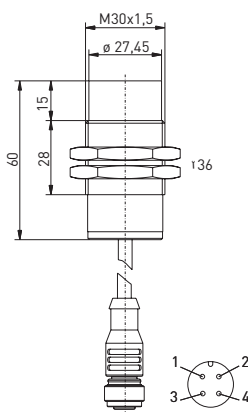
#### Inductive sensors

RF IS M18 nb-ST 2m

#### Material number

✓ 1355982

### // Ex RF IS M30 nb-ST



#### Features/options

- non-flush mounting
- M30 thread

#### Inductive sensors

RF IS M30 nb-ST 2m

#### Material number

✓ 1355984

Wireless receivers sWave®  
 // Series RF Rx SW868/SW915-1W

Features/options

- sWave® technology
- 1 potential-free relay output
- 1 change-over contact, max. 6 A
- Transmitter/receiver assignment by teaching mode
- LEDs for indication of switching state
- SW868: SMA plug-in connector, SW915: SMA reverse plug-in connector for external antenna

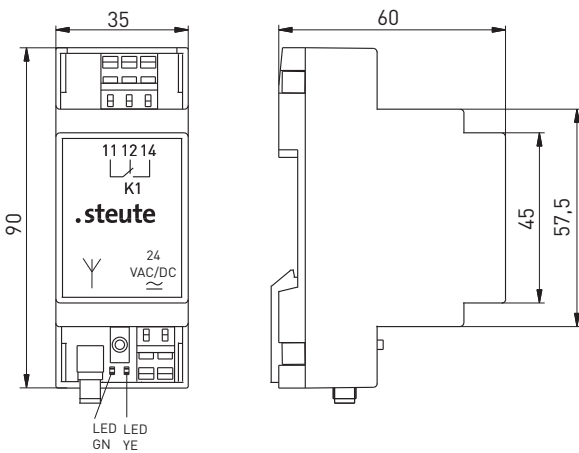
// RF RX SW868/SW915



Technical Data

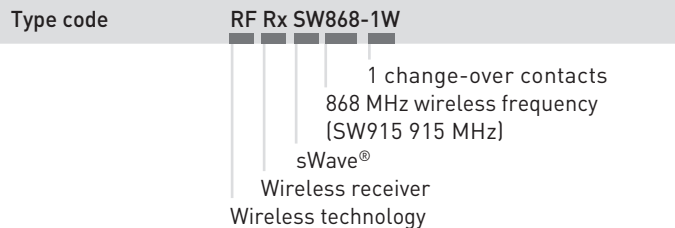
Standards	EN 60947-5-1; EN 61000-6-2, -6-3, EN 61000-4-2, -4-20, -4-4, -4-5, -4-6; EN 60068-2-6, EN 60068-2-27; EN 301 489-1; EN 301 489-3; EN 300 220-1; EN 300 220-2
Number of channels	1
Mounting	DIN rail mounting
Connection	terminals with CAGE CLAMP WAGO Series 236: 0.08 ... 2.5 mm <sup>2</sup> / AWG 28-12, AWG 12: THHN, THWN, stripp. length 5 ... 6 mm/0.22 in
Degree of protection	IP 20 to IEC/EN 60529
Inputs	1 wireless channel, max. 10 transmitters per channel
Outputs	1 change-over contact (Relay)
Rated operating current I <sub>e</sub>	24 VDC: max. 0.03 A; 24 VAC: max. 0.07 A
Rated operating voltage U <sub>e</sub>	24 VAC/DC -15% ... +10%
I <sub>e</sub> /U <sub>e</sub> outputs	6 A / 250 VAC; 2 A / 24 VDC
Utilisation category	AC-15; DC-13
U <sub>i</sub>	250 VAC
U <sub>imp</sub>	2.5 kV
Frequency	868.3 MHz or 915 MHz (USA, Canada and Australia)
Display	green LED: operating state, orange LED: switching conditions
Switching frequency	approx. 12000 telegrams at repetitions/h
Degree of pollution	2 per IEC/EN 60664-1
Ambient temperature	0 °C ... +55 °C
Note	inductive loads (contactors, relays etc.) are to be suppressed by suitable circuitry.
Approvals	SW915 c <sub>UL</sub>

20



Wireless receiver  
 RF Rx SW868-1W 24 VAC/DC  
 RF Rx SW915-1W 24 VAC/DC

Material Number  
 ✓ 1190427  
 ✓ 1190428



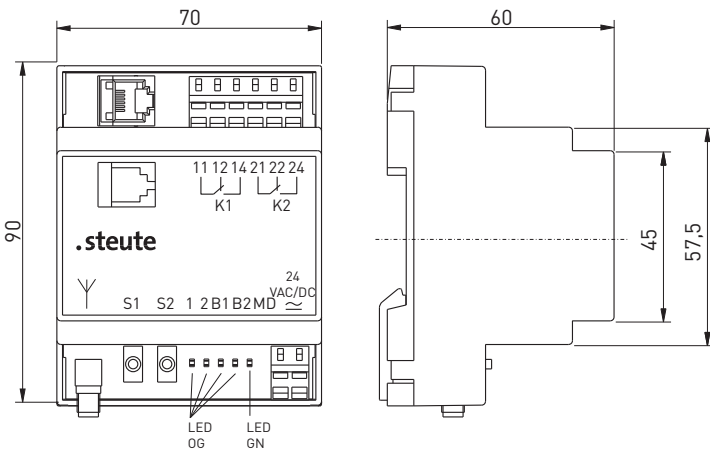
RF magnet antenna with SMA plug-in connector available as accessory, for SW868 material No. 1188958 and for SW915 material No. 1188987 required for optimum sensing range.

Mobile field strength indicator swView 868 or 915 MHz for wireless field planning is available.

# Wireless receivers sWave®

## // Series RF Rx SW868/SW915-2W-RS232

### // RF RX SW868/SW915-2W-RS232



#### Wireless receiver

RF Rx SW868-2W-RS232 24 VAC/DC  
RF Rx SW915-2W-RS232 24 VAC/DC

#### Material Number

1226183  
1226339

#### Features/options

- sWave® technology
- 2 potential-free relay outputs
- 2 change-over contacts, max. 6 A
- RS 232 interface
- Version with Power-down function available, suffix -s
- Transmitter/receiver assignment by teaching mode
- LEDs for indication of switching state
- SW868: SMA plug-in connector, SW915: SMA reverse plug-in connector for external antenna

### Technical Data

Standards	EN 60947-5-1; EN 61000-6-2, -6-3, EN 61000-4-2, -4-20, -4-4, -4-5, -4-6; EN 60068-2-6, EN 60068-2-27; EN 301 489-1; EN 301 489-3; EN 300 220-1; EN 300 220-2
Number of channels	2
Mounting	DIN rail mounting
Connection	terminals with CAGE CLAMP WAGO Series 236: 0.08 ... 2.5 mm <sup>2</sup> / AWG 28-12, AWG 12: THHN, THWN, stripp. length 5 ... 6 mm/0.22 in
Degree of protection	IP 20 to IEC/EN 60529
Inputs	2 wireless channels, max. 10 transmitters per channel
Outputs	2 change-over contacts (relays), RS 232 interface
Rated op. current I <sub>e</sub>	24 VDC: max. 0.1 A; 24 VAC: max. 0.25 A
Rated op. voltage U <sub>e</sub>	24 VAC/DC -15 % ... +10 %
I <sub>e</sub> /U <sub>e</sub> output	6 A/250 VAC; 2 A/24 VDC
Utilisation category	AC-15; DC-13
U <sub>i</sub>	250 VAC
U <sub>imp</sub>	2.5 kV
Frequency	868.3 MHz or 915 MHz (USA, Canada and Australia)
Display	green LED: operating state, orange LEDs: switching conditions and baud rate setting
Switching frequency	approx. 12000 telegrams at repetitions/h
Degree of pollution	2 to IEC/EN 60664-1
Ambient temperature	0 °C ... +55 °C
Baudrate	9600 Bd to 57600 Bd
Data bits	8
Stop bit	1
Parity	None
Flow control	None
Note	Inductive loads (contactors, relays etc.) are to be suppressed by suitable circuitry.

#### Approvals

SW915 c<sub>us</sub>

#### Type code

RF Rx SW868-2W-RS232

RF Rx SW868-2W-RS232  
 RS 232 interface  
 2 change-over contacts  
 868 MHz wireless frequency  
 (SW915 915 MHz)  
 sWave®  
 Wireless receiver  
 Wireless technology

RS 232 cable provided with receiver.

RF magnet antenna with SMA plug-in connector available as accessory, for SW868 material No. 1188958 and for SW915 material No. 1188987 required for optimum sensing range.

Mobile field strength indicator swView 868 or 915 MHz for wireless field planning is available.

# Wireless receivers sWave®

// Series RF Rx SW868/SW915-4S

## Features/options

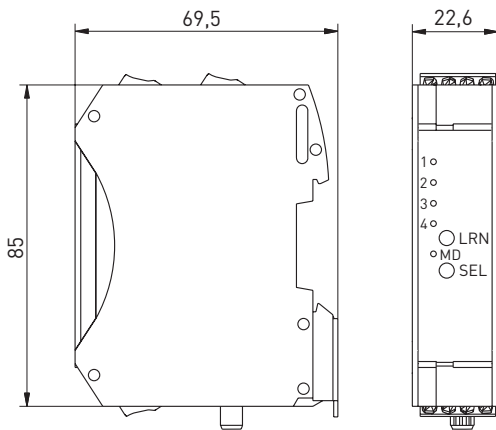
- sWave® technology
- 4 potential-free relay outputs
- 4 NO contacts, max. 3 A
- Transmitter/receiver assignment by teaching mode
- LEDs for indication of switching state
- SW868: SMA plug-in connector, SW915: SMA reverse plug-in connector for external antenna

// RF RX SW868/SW915-4S



## Technical Data

<b>Standards</b>	EN 60947-5-1; EN 61000-6-2, -6-3, EN 61000-4-2, -4-20, -4-4, -4-5, -4-6; EN 60068-2-6, EN 60068-2-27; EN 301 489-1; EN 301 489-3; EN 300 220-1; EN 300 220-2
<b>Number of channels</b>	4
<b>Mounting</b>	DIN rail mounting
<b>Connection</b>	screw clamps 0.14 mm² - 2.5 mm², stripping length 8 mm
<b>Degree of protection</b>	IP 20 to IEC/EN 60529
<b>Inputs</b>	4 wireless channels, max. 40 transmitters per channel
<b>Outputs</b>	4 NO contacts (relays)
<b>Rated operating current I<sub>e</sub></b>	24 VDC: max. 0.1 A
<b>Rated operating voltage U<sub>e</sub></b>	24 VDC -15% ... +10%
<b>I<sub>e</sub>/U<sub>e</sub> outputs</b>	3 A / 250 VAC; 3 A / 24 VDC
<b>Utilisation category</b>	AC-15; DC-13
<b>U<sub>i</sub></b>	250 VAC
<b>U<sub>imp</sub></b>	2.5 kV
<b>Frequency</b>	868.3 MHz or 915 MHz (USA, Canada and Australia)
<b>Display</b>	green LED: operating state, orange LED: switching conditions
<b>Switching frequency</b>	approx. 12000 telegrams at repetitions/h
<b>Degree of pollution</b>	2 per IEC/EN 60664-1
<b>Ambient temperature</b>	0 °C ... +55 °C
<b>Note</b>	inductive loads (contactors, relays etc.) are to be suppressed by suitable circuitry.
<b>Approvals</b>	SW915 cULus <b>FC IC</b>



### Wireless receiver

RF Rx SW868-4S 24 VDC

RF Rx SW915-4S 24 VDC

### Material Number

✓ 1373201

✓ 1373187

### Wireless receiver with power-down-function

RF Rx SW868-4S-s 24 VDC

RF Rx SW915-4S-s 24 VDC

### Material Number

1363011

1393796

### Note for RF Rx SW868-4S-s

The current switching status of the device is stored when the power supply is turned off. When the supply voltage returns, the last switching status is restored. When the device is voltage-free, any switching operations are lost. A maximum of 100,000 memory operations are possible.

### Type code

RF Rx SW868-4S

4 NO contacts  
868 MHz wireless frequency (SW915 915 MHz)  
sWave®  
Wireless receiver  
Wireless technology

Mobile field strength indicator swView 868 or 915 MHz for wireless field planning is available.

# Wireless receivers sWave®

// Series RF Rx SW868/SW915-4W

## Features/options

- sWave® technology
- 4 potential-free relay outputs
- 4 change-over contacts
- Transmitter/receiver assignment by teaching mode
- LEDs for indication of switching state
- SMA plug-in connector for external antenna

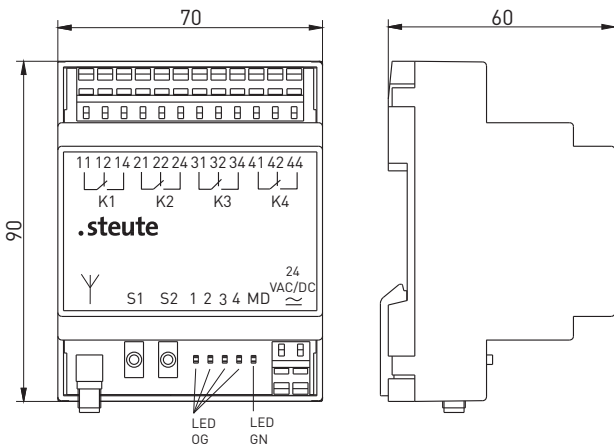
// RF RX SW868/SW915-4W



## Technical Data

<b>Standards</b>	EN 60947-5-1; EN 61000-6-2, -6-3, EN 61000-4-2, -4-20, -4-4, -4-5, -4-6; EN 60068-2-6, EN 60068-2-27; EN 301 489-1; EN 301 489-3; EN 300 220-1; EN 300 220-2
<b>Number of channels</b>	4
<b>Mounting</b>	DIN rail mounting
<b>Connection</b>	terminals with CAGE CLAMP WAGO Series 236: 0.08 ... 2.5 mm <sup>2</sup> / AWG 28-12, AWG 12: THHN, THWN, stripp. length 5 ... 6 mm/0.22 in
<b>Inputs</b>	4 wireless channels, max. 10 transmitters per channel
<b>Outputs</b>	4 change-over contacts (relays)
<b>Degree of protection</b>	IP 20 to IEC/EN 60529
<b>Rated operating current I<sub>e</sub></b>	24 VDC: max. 0.1 A; 24 VAC: max. 0.25 A
<b>Rated operating voltage U<sub>e</sub></b>	24 VDC -15 % ... +10 %
<b>Frequency</b>	868.3 MHz or 915 MHz (USA, Canada and Australia)
<b>Display</b>	green LED: operating state, orange LED: switching conditions
<b>Degree of pollution</b>	2 to IEC/EN 60664-1
<b>Ambient temperature</b>	0 °C ... +55 °C
<b>Approvals</b>	SW915 c <sub>SE</sub> <sup>US</sup> <b>FC IC</b>

23



### Wireless receiver

RF Rx SW868-4W 24 VAC/DC  
RF Rx SW915-4W 24 VAC/DC

### Material Number

✓ 1188654  
✓ 1189618

### Type code

RF Rx SW868-4W

4 change-over contacts  
868 MHz wireless frequency  
(SW915 915 MHz)  
sWave®  
Wireless receiver  
Wireless technology

RF magnet antenna with SMA plug-in connector available as accessory, for SW868 material No. 1188958 and for SW915 material No. 1188987 required for optimum sensing range.

Mobile field strength indicator swView 868 or 915 MHz for wireless field planning is available.

# Wireless receivers sWave®

## // Series RF Rx SW868/SW915-TCP/IP

### Features/options

- sWave® technology
- Communication via UDP or TCP/IP (Server or Client - Mode)
- Webserver based Setup
- Transmitter/receiver assignment by teaching mode
- LEDs for indication of switching state
- SW868: SMA plug-in connector, SW915: SMA reverse plug-in connector for external antenna

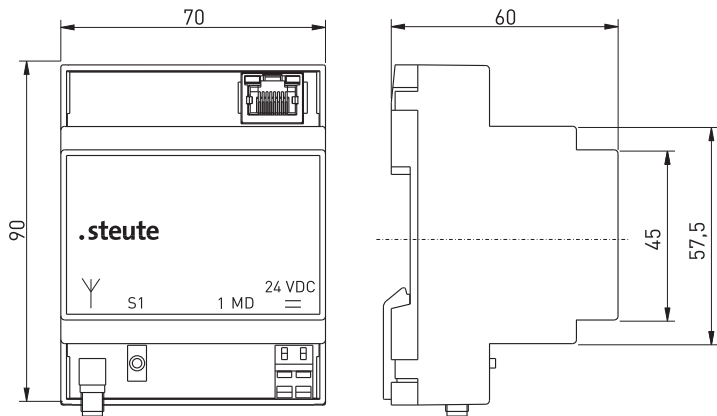
## // RF RX SW868/SW915-TCP/IP



### Technical Data

<b>Standards</b>	EN 60947-5-1; EN 61000-6-2, -6-3, EN 61000-4-2, -4-20, -4-4, -4-5, -4-6; EN 60068-2-6, EN 60068-2-27; EN 301 489-1; EN 301 489-3; EN 300 220-1; EN 300 220-2
<b>Mounting</b>	DIN rail mounting
<b>Connection</b>	terminals with CAGE CLAMP WAGO Series 236: 0.08 ... 2.5 mm² / AWG 28-12, AWG 12: THHN, THWN, stripp. length 5 ... 6 mm/0.22 in
<b>Network interface</b>	10/100 Base-T Ethernet (Auto detection) via RJ 45
<b>Software interface</b>	TCP (Client, Server) / UDP / IP (DHCP)
<b>Degree of protection</b>	IP 20 to IEC/EN 60529
<b>Rated operating current I<sub>e</sub></b>	24 VDC: max. 0.06 A
<b>Rated operating voltage U<sub>e</sub></b>	24 VDC -15 % ... +10 %
<b>Frequency</b>	868.3 MHz or 915 MHz (USA, Canada and Australia)
<b>Display</b>	green LED: Reset state, orange LED: signalisation of telegram
<b>Degree of pollution</b>	2 to IEC/EN 60664-1
<b>Ambient temperature</b>	0 °C ... +55 °C
<b>Approvals</b>	SW915 c <sub>US</sub>

24



Wireless receiver  
 RF Rx SW868-TCP/IP  
 RF Rx SW915-TCP/IP

Material Number  
 ✓ 1266818  
 1266820

Type code	RF Rx SW868-TCP/IP
	TCP/IP interface
	868 MHz wireless frequency (SW915 915 MHz)
	sWave®
	Wireless receiver
	Wireless technology

RF magnet antenna with SMA plug-in connector available as accessory, for SW868 material No. 1188958 and for SW915 material No. 1188987 required for optimum sensing range.

Mobile field strength indicator swView 868 or 915 MHz for wireless field planning is available.

✓ in stock



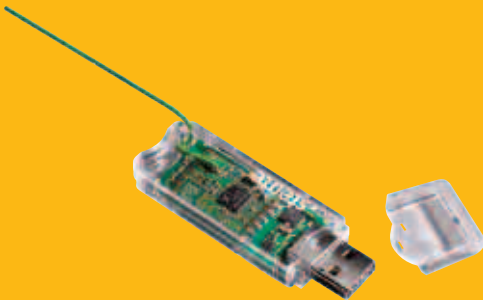
# Wireless receivers / repeaters sWave®

## // Series RF RxT SW868/SW915-USB

### Features/options

- Thermoplastic enclosure
- Different operating modes
- USB Standard Receiver Mode
- USB Gateway Mode
- Sniffer Mode
- 1-level repeater: for the signal gain between transmitter and receiver
- 2-level repeater: for the signal gain of one 1-level repeater
- Virtual COM Port driver for Microsoft Windows, Linux, Apple Mac

## // RF RXT SW868/SW915-USB



### Technical Data

<b>Standards</b>	EN 60947-5-1; EN 61000-6-2, -6-3, EN 61000-4-2, -4-20, -4-4, -4-6; EN 301 489-1; EN 301 489-3; EN 300 220-1; EN 300 220-2
<b>Connection</b>	USB 2.0
<b>Degree of protection</b>	IP 30 to IEC/EN 60529
<b>Receiver mode</b>	40 sWave transmitters
<b>Gateway mode</b>	indefinite number of transmitters
<b>Power supply</b>	via USB interface
<b>I<sub>e</sub></b>	< 60 mA
<b>U<sub>e</sub></b>	5 VDC (USB interface)
<b>Frequency</b>	868.3 MHz or 915 MHz (USA, Canada and Australia)
<b>Display</b>	green LED: operating state, orange LED: switching conditions
<b>Switching frequency</b>	approx. 12000 telegrams at repetitions/h
<b>Ambient temperature</b>	0 °C ... +55 °C
<b>Dimensions</b>	70 x 23 x 9 mm (incl. transportation cap)
<b>Note</b>	no external antenna required
<b>Approvals</b>	SW915 <b>FC IC</b>

25

Wireless receiver / Wireless repeater

RF RxT SW868-USB

RF RxT SW915-USB

Material Number

✓ 1278188

✓ 1278205

Type code

RF RxT SW868-USB

USB connector  
868 MHz wireless frequency  
(SW915 915 MHz)  
sWave®  
Wireless receiver / Wireless repeater  
Wireless technology

Mobile field strength indicator swView 868 or 915 MHz for wireless field planning is available.

# Wireless repeaters sWave®

## // Series RF RxT SW868/SW915-1K

### Features/options

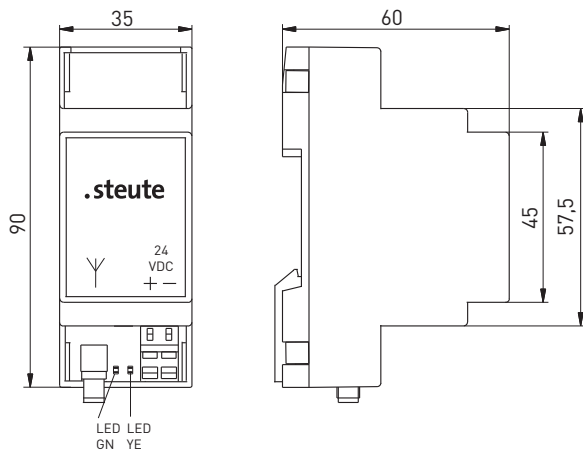
- sWave® technology
- LEDs for indication of operating state
- 1-level repeater: for the signal gain between transmitter and receiver
- SW868: SMA plug-in connector, SW915: SMA reverse plug-in connector for external antenna

## // RF RXT SW868/SW915-1K



## Technical Data

<b>Standards</b>	EN 60947-5-1; EN 61000-6-2, -6-3, EN 61000-4-2, -4-20, -4-4, -4-5, -4-6; EN 60068-2-6, EN 60068-2-27; EN 301 489-1; EN 301 489-3; EN 300 220-1; EN 300 220-2
<b>Mounting</b>	DIN rail mounting
<b>Connection</b>	terminals with CAGE CLAMP WAGO Series 236: 0.08 ... 2.5 mm² / AWG 28-12, AWG 12: THHN, THWN, stripp. length 5 ... 6 mm/0.22 in
<b>Degree of protection</b>	IP 20 to IEC/EN 60529
<b>Rated operating current I<sub>e</sub></b>	24 VDC: max. 0.02 A; 24 VAC: max. 0.03 A
<b>Rated operating voltage U<sub>e</sub></b>	24 VAC/DC -15 % ... +10 %
<b>Utilisation category</b>	AC-15; DC-13
<b>U<sub>i</sub></b>	250 VAC
<b>U<sub>imp</sub></b>	2.5 kV
<b>Frequency</b>	868.3 MHz or 915 MHz (USA, Canada and Australia)
<b>Display</b>	green LED: operating state, orange LED: signalisation of telegram
<b>Degree of pollution</b>	2 to IEC/EN 60664-1
<b>Ambient temperature</b>	0 °C ... +55 °C
<b>Storage and shipping temperature</b>	-25 °C ... +85 °C
<b>Approvals</b>	SW915 c <sub>SP</sub> US <b>FC IC</b>



Wireless repeater  
RF RxT SW868-1K  
RF RxT SW915-1K

Material Number  
1253727  
1253729

<b>Type code</b>	<b>RF RxT SW868-1K</b>
	1 channel
	868 MHz wireless frequency (SW915 915 MHz)
	sWave®
	Wireless repeater
	Wireless technology

RF magnet antenna with SMA plug-in connector available as accessory, for SW868 material No. 1188958 and for SW915 material No. 1188987 required for optimum sensing range.

Mobile field strength indicator swView 868 or 915 MHz for wireless field planning is available.

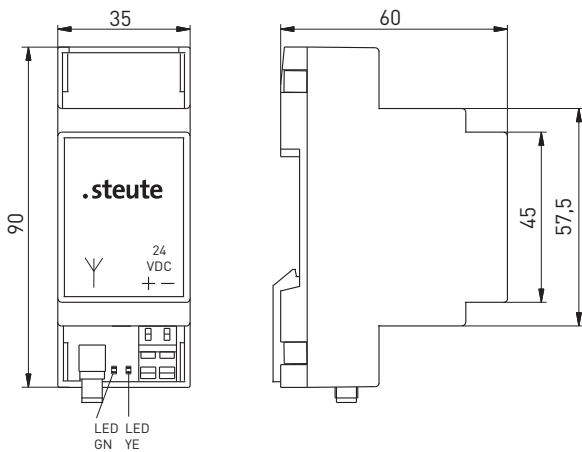
# Wireless repeaters sWave®

## // Series RF RxT SW868/SW915-2K

### Features/options

- sWave® technology
- LEDs for indication of operating state
- 1-level repeater: for the signal gain between transmitter and receiver
- 2-level repeater: for the signal gain of one 1-level repeater
- SW868: SMA plug-in connector , SW915: SMA reverse plug-in connector for external antenna

## // RF RXT SW868/SW915-2K



Wireless repeater  
RF RxT SW868-2K  
RF RxT SW915-2K

Material Number  
1260294  
1262442

## Technical Data

Standards	EN 60947-5-1; EN 61000-6-2, -6-3, EN 61000-4-2, -4-20, -4-4, -4-5, -4-6; EN 60068-2-6, EN 60068-2-27; EN 301 489-1; EN 301 489-3; EN 300 220-1; EN 300 220-2
Mounting	DIN rail mounting
Connection	terminals with CAGE CLAMP WAGO Series 236: 0.08 ... 2.5 mm <sup>2</sup> / AWG 28-12, AWG 12: THHN, THWN, stripp. length 5 ... 6 mm/0.22 in
Degree of protection	IP 20 to IEC/EN 60529
Rated operating current I <sub>e</sub>	24 VDC: max. 0.02 A; 24 VAC: max. 0.03 A
Rated operating voltage U <sub>e</sub>	24 VAC/DC -15 % ... +10 %
Utilisation category	AC-15; DC-13
U <sub>i</sub>	250 VAC
U <sub>imp</sub>	2.5 kV
Frequency	868.3 MHz or 915 MHz (USA, Canada and Australia)
Display	green LED: operating state, orange LED: signalisation of telegram
Degree of pollution	2 to IEC/EN 60664-1
Ambient temperature	0 °C ... +55 °C
Storage and shipping temperature	-25 °C ... +85 °C
Approvals	SW915 c

27

### Type code

RF RxT SW868-2K

2 channels  
868 MHz wireless frequency  
(SW915 915 MHz)  
sWave®  
Wireless receiver  
Wireless technology

RF magnet antenna with SMA plug-in connector available as accessory, for SW868 material No. 1188958 and for SW915 material No. 1188987 required for optimum sensing range.

Mobile field strength indicator swView 868 or 915 MHz for wireless field planning is available.



Ex wireless switchgear  
EnOcean® 868 MHz

Ex wireless position switches

// Series Ex RF 95

from page 30

// Series Ex RF 335

from page 36

Ex wireless command devices

// Series Ex RF BF 80

from page 40

// Series Ex RF 95

from page 44

Ex wireless foot switches

// Series Ex RF GFI

from page 48

// Series Ex RF GFSI

from page 49

Ex wireless pull-wire switches

// Series Ex RF 95 WH/90°

from page 50

Wireless receivers/repeater

// Series RF Rx EN868-1/-2

from page 52/53

// Series RF Rx EN868-2W-RS232

from page 54

// Series RF RxT EN868-4/-TCP/IP

from page 55/56

// Series RF RxT EN868-USB

from page 57

// Series RF Rx EN868-230VAC

from page 58

Accessories

from page 60

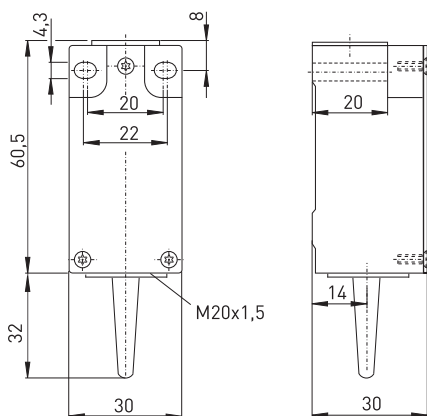
# Ex wireless switchgear

## // Ex wireless position switches series Ex RF 95

### Features/options

- Ex zone 1 and 21
- Thermoplastic enclosure
- Transversely slotted mounting holes
- To EN 50 047
- Output signal can be individually configured at the receiver
- EnOcean® protocol
- Data rate 120 kbps
- No power supply, no wiring and pipe laying required
- Multi-network capable
- Easy programming of receiver

### // EX RF 95



### Technical Data

<b>Standards</b>	EN 60947-5-1; EN 61000-6-1, 2, -3, -4; EN 301 489-1; EN 301 489-3; EN 300 220-1, -2; EN 60079-0; EN 60079-11
<b>Enclosure</b>	Glassfibre reinforced thermoplastic, self-extinguishing UL 94-V0 mounting screw enclosure:
<b>Tightening torque</b>	max. 1.2 ... 1.3 Nm
<b>Degree of protection</b>	IP 67 to IEC/EN 60529
<b>Protocol</b>	EnOcean®
<b>Ambient temperature Ta</b>	-20 °C ... +60 °C
<b>Switching frequency</b>	approx. 9000 telegrams at repetitions/h
<b>Voltage supply</b>	Electrodynamic energy generator
<b>Frequency</b>	868.3 MHz
<b>Transmission power</b>	max. 10 mW
<b>Data rate</b>	120 kbps
<b>Channel bandwidth</b>	280 kHz
<b>Sensing range</b>	max. 300 m outside, max. 30 m inside
<b>Mechanical life</b>	> 1 million operations
<b>Actuating time</b>	min. 80 ms
<b>Impact energy</b>	max. 7 J
<b>Note</b>	no status signal available
<b>Ex marking</b>	⊕ II 2G Ex ib IIC T6 Gb, II 2D Ex ib IIIC T80°C Db IECEX Ex ib IIC T6 Gb, Ex ib IIIC T80°C Db
<b>Approvals</b>	BVS 08 ATEX E111; IECEX BVS 08.0048

### Type code

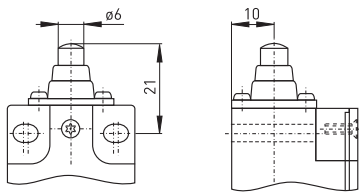
Ex RF 95 WR EN868

Wireless frequency 868 MHz  
 EnOcean® wireless technology  
 Actuator R (H, D, DS, etc. ...)  
 Watertight collar  
 Series  
 Wireless technology  
 Ex certified component

## Ex wireless switchgear

### // Ex wireless position switches series Ex RF 95, actuators

#### // Plunger W



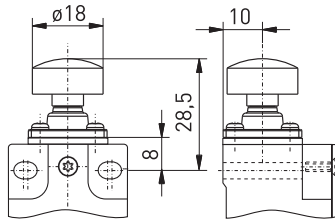
#### Features/options

- Actuator type B per EN 50 047
- Watertight collar for protection against penetration of dirt

Part number  
Ex RF 95 W EN868

Material number  
✓ 1181618

#### // Cap WK



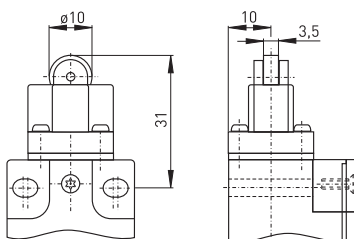
#### Features/options

- Cap made of thermoplastic
- Suitable for manual actuation

Part number  
Ex RF 95 WK EN868

Material number  
1183949

#### // Roller plunger R



#### Features/options

- Actuator type C per EN 50 047
- Wear-resistant thermoplastic roller
- Metal roller available on request
- Actuator head can be repositioned by 4 x 90°

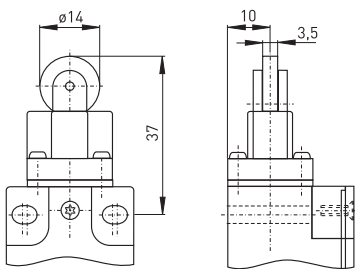
Part number  
Ex RF 95 R EN868

Material number  
1184948

## Ex wireless switchgear

### // Ex wireless position switches series Ex RF 95, actuators

#### // Long Roller plunger RL



#### Features/options

- Wear-resistant thermoplastic roller
- Metal roller available on request
- Actuator can be repositioned by 90°

#### Part number

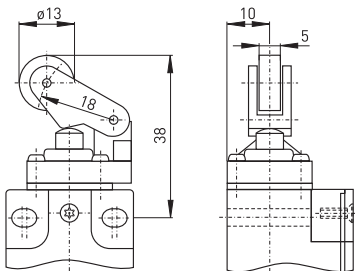
Ex RF 95 RL EN868

#### Material number

1189358

32

#### // Roller lever WH



#### Features/options

- Actuating speed 0.5 m/s with a vertical actuating angle of  $\alpha = 40^\circ$  and  $\beta = 25^\circ$
- Actuator type E to EN 50 047
- Watertight collar for protection against penetration of dirt
- Wear-resistant thermoplastic roller
- Actuator head can be repositioned by 4 x 90°
- Metal roller available on request

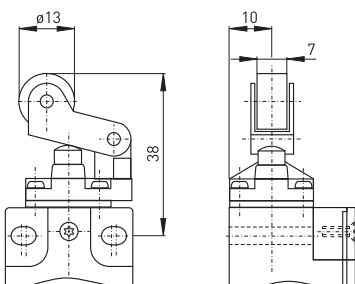
#### Part number

Ex RF 95 WH EN868

#### Material number

1181827

#### // Metal roller lever WHM



#### Features/options

- Actuating speed 0.5 m/s with a vertical actuating angle of  $\alpha = 40^\circ$  and  $\beta = 25^\circ$
- Watertight collar for protection against penetration of dirt
- Wear-resistant thermoplastic roller
- Actuator head can be repositioned by 4 x 90°
- Metal roller available on request

#### Part number

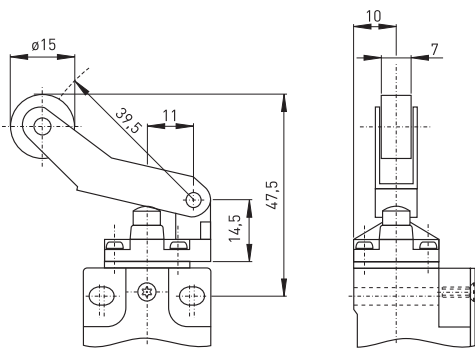
Ex RF 95 WHM EN868

#### Material number

1188438



## // Long metall roller lever WHLM



### Features/options

- Actuating speed 0.5 m/s with a vertical actuating angle of  $\alpha = 40^\circ$
- Watertight collar for protection against penetration of dirt
- Wear-resistant thermoplastic roller
- Actuator head can be repositioned by 4 x 90°
- Metal roller available on request

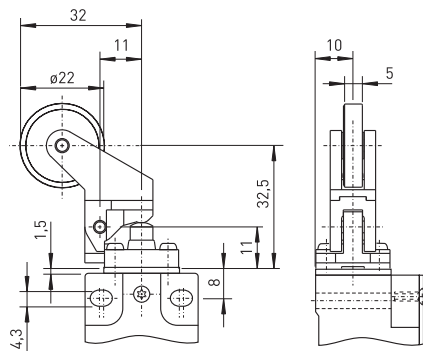
### Part number

Ex RF 95 WHLM EN868

### Material number

1190402

## // Thermoplastic roller lever 4K



### Features/options

- Actuating speed 0.5 m/s with a vertical actuating angle of  $\alpha = 40^\circ$
- Watertight collar for protection against penetration of dirt
- Actuator head can be repositioned by 4 x 90°
- Metal roller available on request

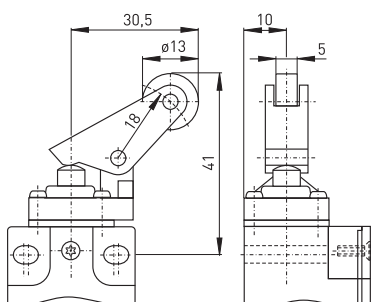
### Part number

Ex RF 95 4K EN868

### Material number

1363581

## // Parallel roller lever WPH



### Features/options

- Actuating speed 0.5 m/s with a vertical actuating angle of  $\alpha = 30^\circ$
- Watertight collar for protection against penetration of dirt
- Wear-resistant thermoplastic roller
- Actuator head can be repositioned by 4 x 90°
- Actuation from below parallel to plunger axis
- Metal roller available on request

### Part number

Ex RF 95 WPH EN868

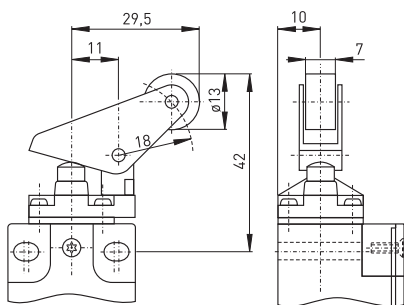
### Material number

on request

## Ex wireless switchgear

### // Ex wireless position switches series Ex RF 95, actuators

#### // Metal parallel roller lever WPHM



#### Features/options

- Actuating speed 0.5 m/s with a vertical actuating angle of  $\alpha = 30^\circ$
- Watertight collar for protection against penetration of dirt
- Wear-resistant thermoplastic roller
- Actuator head can be repositioned by  $4 \times 90^\circ$
- Actuation from below parallel to plunger axis
- Metal roller available on request

#### Part number

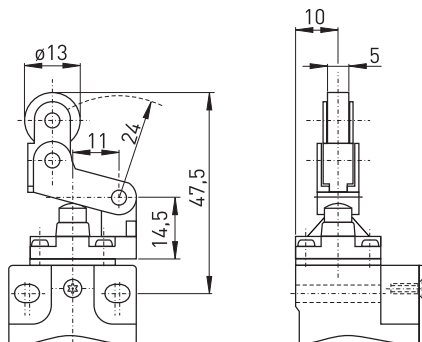
Ex RF 95 WPHM EN868

#### Material number

on request

34

#### // Rocking offset roller lever WHKM



#### Features/options

- Actuating speed 0.5 m/s with a vertical actuating angle of  $\alpha = 30^\circ$
- Watertight collar for protection against penetration of dirt
- Wear-resistant thermoplastic roller
- Actuator head can be repositioned by  $4 \times 90^\circ$
- Actuation only possible from one side
- Free movement of actuator from other side
- Metal roller available on request

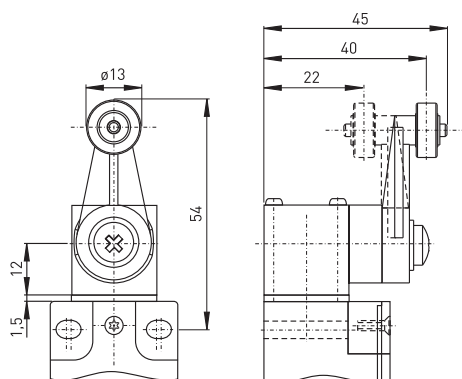
#### Part number

Ex RF 95 WHKM EN868

#### Material number

on request

#### // Rocking roller lever D



#### Features/options

- Lever angle adjustable in  $10^\circ$  steps
- Wear-resistant thermoplastic roller
- Actuator head can be repositioned by  $4 \times 90^\circ$
- Metal roller available on request

#### Part number

Ex RF 95 D EN868

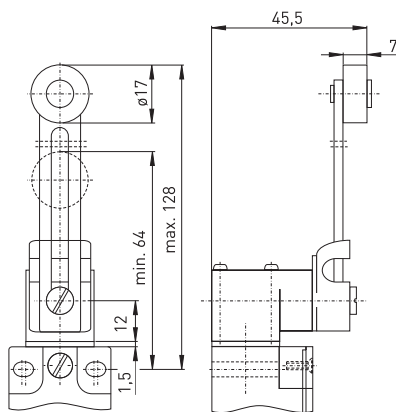
#### Material number

✓ 1181620

✓ in stock

.steute

## // Adjustable rocking lever DS



### Features/options

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

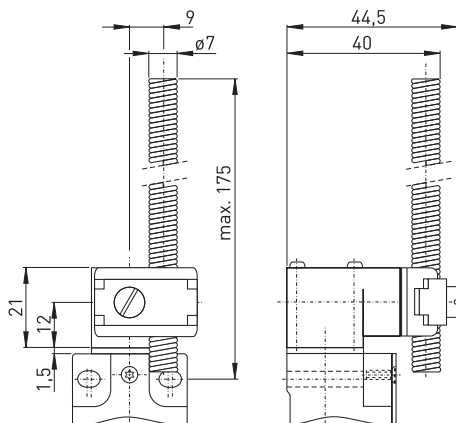
### Part number

Ex RF 95 DS EN868

### Material number

1184834

## // Spring-rod lever DF



### Features/options

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

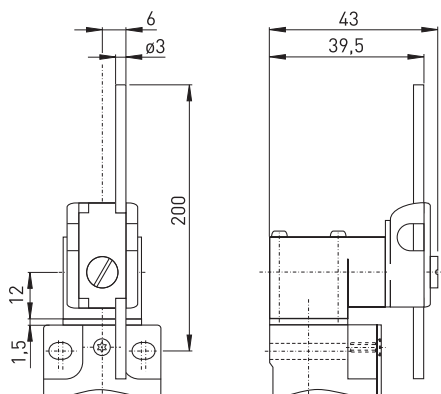
### Part number

Ex RF 95 DF EN868

### Material number

1184946

## // Rod lever DD



### Features/options

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

### Part number

Ex RF 95 RL EN868

### Material number

on request

# Ex wireless switchgear

## // Ex wireless position switches series Ex RF 335

### Features/options

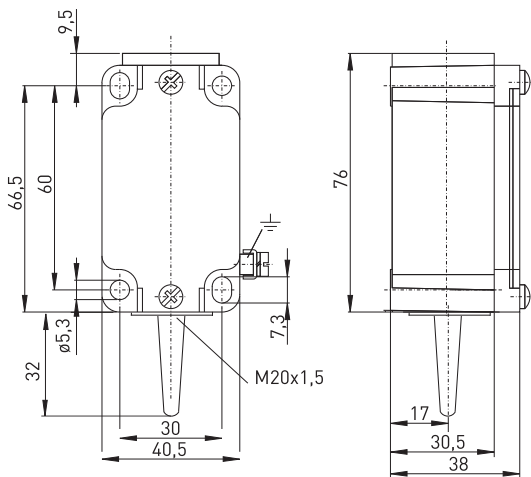
- Ex zone 1 and 21
- Metal enclosure
- To EN 50041
- Output signal can be individually configured at the receiver
- EnOcean® protocol
- Data rate 120 kbps
- No power supply, no wiring and pipe laying required
- Multi-network capable
- Easy programming of receiver

### // EX RF 335



### Technical Data

<b>Standards</b>	EN 60947-5-1; EN 61000-6-2; EN 301 489-1; EN 301 489-3; EN 300 220-3; EN 60079-0; EN 60079-11; EN 61241-11
<b>Enclosure</b>	Zinc die-cast, enamelled
<b>Cover</b>	steel, enamelled
<b>Degree of protection</b>	IP 67 to IEC/EN 60529
<b>Protocol</b>	EnOcean®
<b>Ambient temperature Ta</b>	-20 °C ... +60 °C
<b>Switching frequency</b>	approx. 9000 telegrams at repetitions/h
<b>Voltage supply</b>	Electrodynamic energy generator
<b>Frequency</b>	868.3 MHz
<b>Transmission power</b>	max. 10 mW
<b>Data rate</b>	120 kbps
<b>Bandwidth channel</b>	280 kHz
<b>Sensing range</b>	max. 300 m outside, max. 30 m inside
<b>Mechanical life</b>	> 1 million operations
<b>Actuating time</b>	min. 80 ms
<b>Impact energy</b>	max. 7 J
<b>Note</b>	no status signal available
<b>Ex marking</b>	⊕ II 2G Ex ib IIC T6 Gb, II 2D Ex ib IIIC T80°C Db IECEX Ex ib IIC T6 Gb, Ex ib IIIC T80°C Db
<b>Approvals</b>	BVS 09 ATEX E 003; IECEX BVS 09.0001



### Type code

Ex RF 335 S EN868

Wireless frequency 868 MHz  
EnOcean® wireless technology  
Actuator R (S, 1 K, 3 K etc. ...)  
Series  
Wireless technology  
Ex certified component

# Ex wireless switchgear

## // Ex wireless position switches series Ex RF 335, actuators

### // Plunger S

#### Features/options

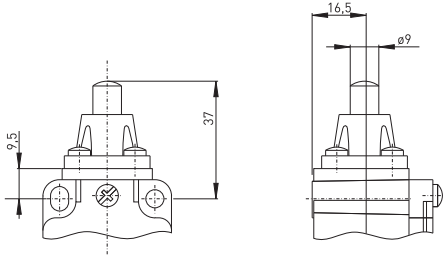
- Actuator type B to EN 50 041
- Actuating speed 0.5 m/s with an actuating angle of  $\alpha = 0^\circ$

#### Part number

Ex RF 335 S EN868

#### Material number

1182927



### // Roller plunger R

#### Features/options

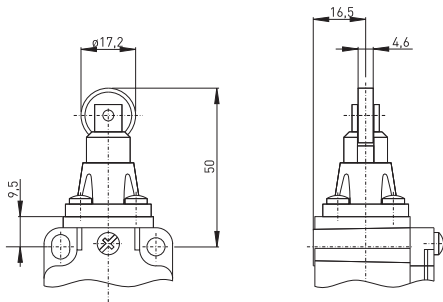
- Actuator type C to EN 50 041
- Actuating speed 0.5 m/s with an actuating angle of  $\alpha = 30^\circ$

#### Part number

Ex RF 335 R EN868

#### Material number

1188271



### // Roller lever 1K

#### Features/options

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

#### Note

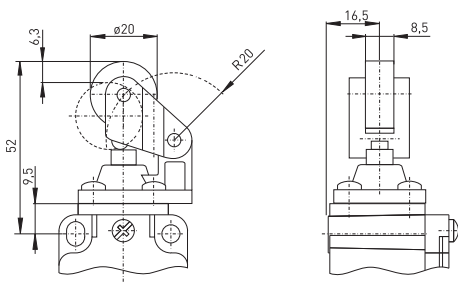
Actuation from the left should be avoided since this reduces the mechanical life of the position switch.

#### Part number

Ex RF 335 1K EN868

#### Material number

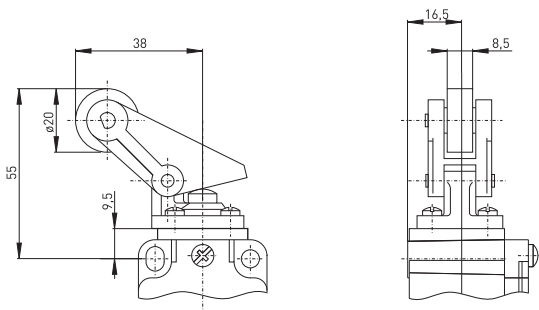
1188272



## Ex wireless switchgear

### // Ex wireless position switches series Ex RF 335, actuators

#### // Angled roller lever 3K



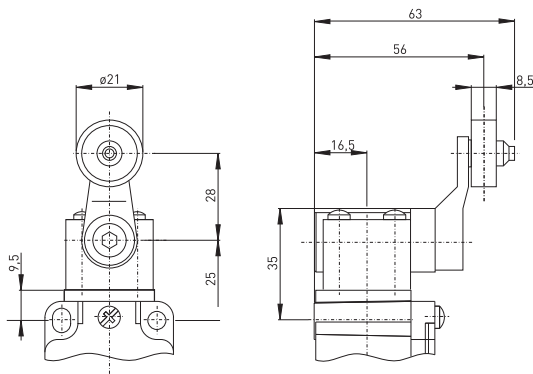
#### Features/options

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

Part number  
Ex RF 335 3K EN868

Material number  
1186589

#### // Rocking roller lever 4VH



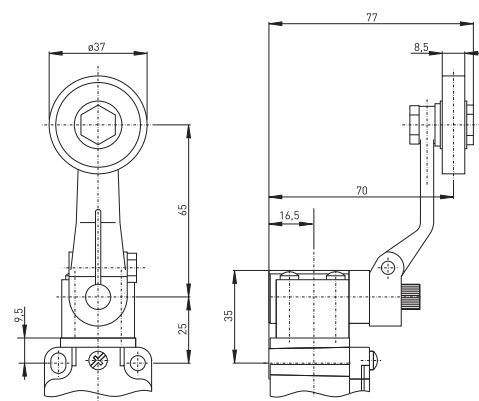
#### Features/options

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

Part number  
Ex RF 335 4VH EN868

Material number  
1188273

#### // Long rocking roller lever 4V3H



#### Features/options

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

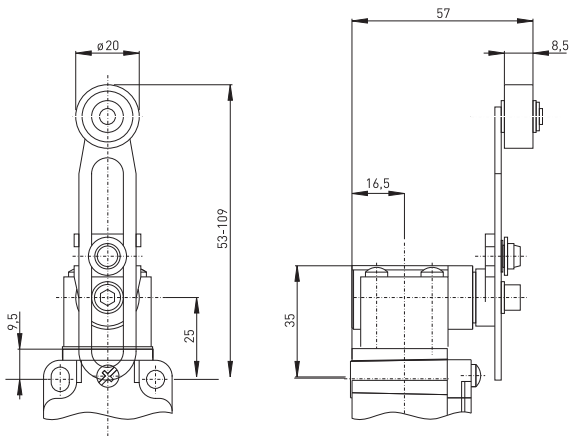
Part number  
Ex RF 335 4V3H EN868

Material number  
1188276

✓ in stock

.steute

## // Adjustable rocking lever 4V7H



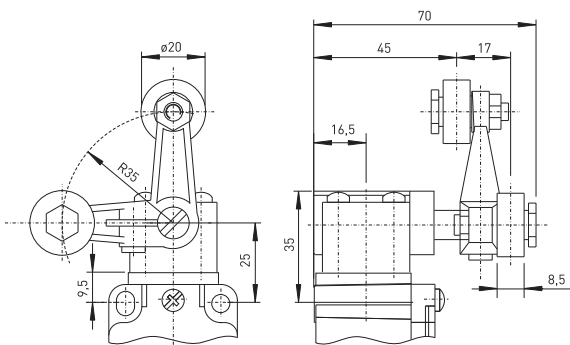
### Features/options

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

Part number  
Ex RF 335 4V7H EN868

Material number  
1188274

## // Forked lever latching 3V4D



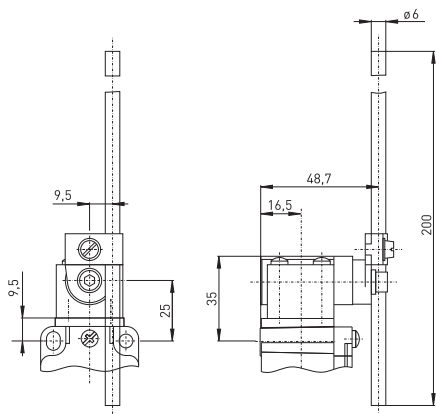
### Features/options

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

Part number  
Ex RF 335 3V4D EN868

Material number  
1188277

## // Rod lever 4V10H



### Features/options

- Actuating speed 2.5 m/s
- Actuator type D to EN 50041

Part number  
Ex RF 335 4V10H EN868

Material number  
1188275

# Ex wireless switchgear

## // Ex wireless command devices series Ex RF BF 80

### Features/options

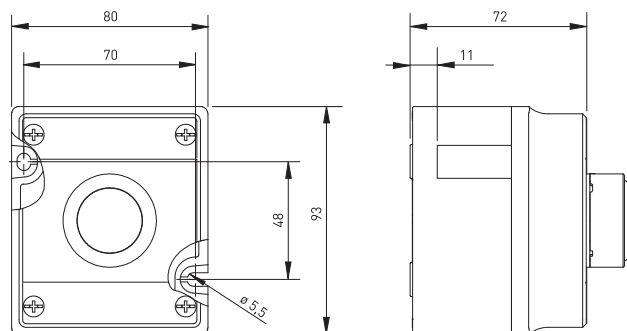
- Ex zone 1 and 21
- Polyester resin enclosure
- Output signal can be individually configured at the receiver
- EnOcean® protocol
- Data rate 120 kbps
- No power supply, no wiring and pipe laying required
- Multi-network capable
- Easy programming of receiver

### // EX RF BF 80



### Technical Data

<b>Standards</b>	EN 60947-5-1; EN 60079-0; EN 60079-11; EN 61241-0; EN 61241-11
<b>Enclosure</b>	glass-fibre reinforced polyester resin
<b>Degree of protection</b>	IP 66 to IEC/EN 60529
<b>Protocol</b>	EnOcean®
<b>Ambient temperature Ta</b>	- 20 °C ... + 60 °C
<b>Switching frequency</b>	approx. 9000 telegrams at repetitions/h
<b>Voltage supply</b>	Electrodynamic energy generator
<b>Frequency</b>	868.3 MHz
<b>Transmission power</b>	max. 10 mW
<b>Data rate</b>	120 kbps
<b>Bandwidth channel</b>	280 kHz
<b>Sensing range</b>	max. 300 m outside, max. 30 m inside
<b>Actuating time</b>	min. 80 ms
<b>Mech. life</b>	> 1 million operations
<b>Impact energy</b>	max. 7 J
<b>Note</b>	no status signal available
<b>Ex marking</b>	Ⓢ II 2G Ex ib IIC T6 Gb, II 2D Ex ib IIIC T80°C Db IECEx Ex ib IIC T6 Gb, Ex ib IIIC T80°C Db
<b>Approval</b>	BVS 10 ATEX E 075, IECEx BVS 12.0020



### Type code

Ex RF BF 80 3 DT/DT/DT EN868

868 MHz wireless frequency  
EnOcean® wireless technology  
Actuator DT (WS, SLS, PZDTSW)  
3 enclosure (1=single, 2=double, 3=triple)  
Series  
Command device  
Wireless technology  
Ex certified component



## Ex wireless switchgear

// Ex wireless command devices series Ex RF BF 80, actuators

### // Push-button DT



Push-button  
Ex RF BF 80 1 DT EN868

Material number  
✓ 1186769

### // Black mushroom push-button PZDTSW



Features/Options  
- Black mushroom push-button

Mushroom push-button  
Ex RF BF 80 1 PZDTSW EN868

Material number  
1186770

### // Key switch SLS



Version 0 -I  
Ex RF BF 80 1 SLS 0 - I EN868

Material number  
1186771

# Ex wireless switchgear

// Ex wireless command devices series Ex RF BF 80, actuators

## // Selector switch WS

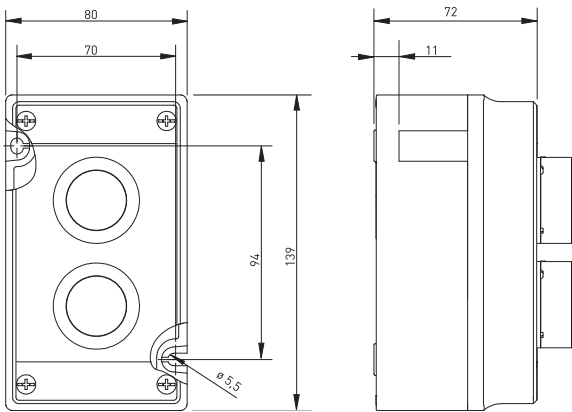


Version 0 -I  
Ex RF BF 80 1 WS 0 - I EN868

Material number  
1186772

42

## // Version with 2 push-buttons

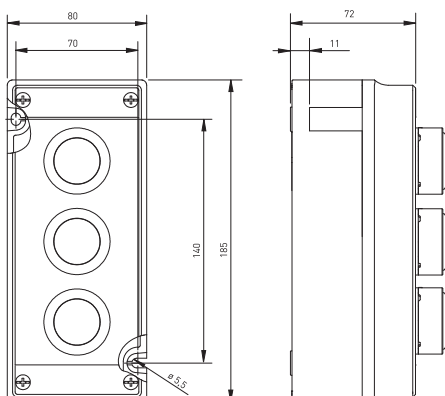


Features/Options  
- 1 radio switch insert per push-button

2 push-buttons  
Ex RF BF 80 2 DT/DT EN868

Material number  
1186773

## // Version with 3 push-buttons



Features/Options  
- 1 radio switch insert per push-button

3 push-buttons  
Ex RF BF 80 3 DT/DT/DT EN868

Material number  
1186774

✓ in stock

PRODUCTION PROCESS  
ASSEMBLY OF COMPONENTS



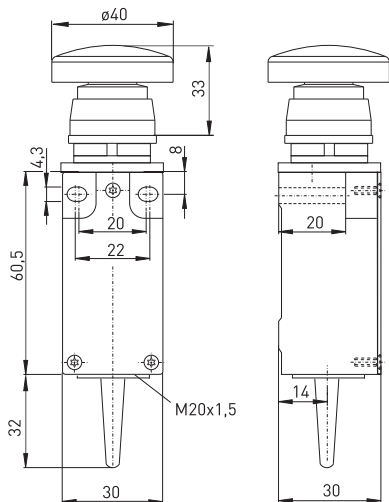
# Ex wireless switchgear

## // Ex wireless command devices series Ex RF 95

### Features/options

- Ex zone 1 and 21
- Thermoplastic enclosure
- Mountings to EN 50 047
- Output signal can be individually configured at the receiver
- Data rate 120 kbps
- No power supply, no wiring and pipe laying required
- Multi-network capable
- Easy programming of receiver

### // EX RF 95 RS SW



### Technical Data

Standards	EN 60947-5-1; EN 61000-6-1, 2, -3, -4; EN 301 489-1; EN 301 489-3; EN 300 220-1, -2; EN 60079-0; EN 60079-11
Enclosure	Glassfibre reinforced thermoplastic, self-extinguishing UL 94-V0
Tightening torque	mounting screw enclosure: max. 1.2 ... 1.3 Nm
Degree of protection	IP 65 to IEC/EN 60529
Protocol	EnOcean®
Ambient temperature Ta	-20 °C ... +60 °C
Switching frequency	approx. 9000 telegrams at repetitions/h
Voltage supply	Electrodynamic energy generator
Frequency	868.3 MHz
Transmission power	max. 10 mW
Data rate	120 kbps
Channel bandwidth	280 kHz
Sensing range	max. 300 m outside, max. 30 m inside
Mechanical life	> 1 million operations
Actuating time	min. 80 ms
Impact energy	max. 7 J
Note	no status signal available
Ex marking	⊕ II 2G Ex ib IIC T6 Gb, II 2D Ex ib IIIC T80°C Db IECEX Ex ib IIC T6 Gb, Ex ib IIIC T80°C Db
Approvals	BVS 08 ATEX E111; IECEx BVS 08.0048

### Type code

Ex RF 95 RS SW EN868

868 MHz wireless frequency  
EnOcean® wireless technology  
Actuator RS SW (different push-buttons available)  
Series  
Wireless technology  
Ex certified component

## Ex wireless switchgear

// Ex wireless command devices series Ex RF 95, actuators

### // Push-button RT

#### Features/Options

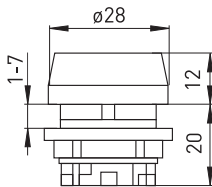
- IP 67 for actuators with diaphragm RTM
- Available with actuator made of stainless steel

#### Push-button

Ex RF 95 RT EN868  
Ex RF 95 RTM EN868

#### Material number

on request  
1184506



### // Control switch RST

#### Features/Options

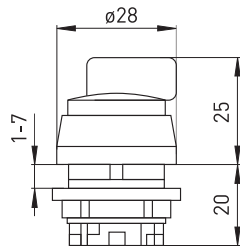
- IP 65
- RST with spring return

#### Control switch

Ex RF 95 RSTA 0<-I EN868

#### Material number

on request



### // Key switch RSSA

#### Features/Options

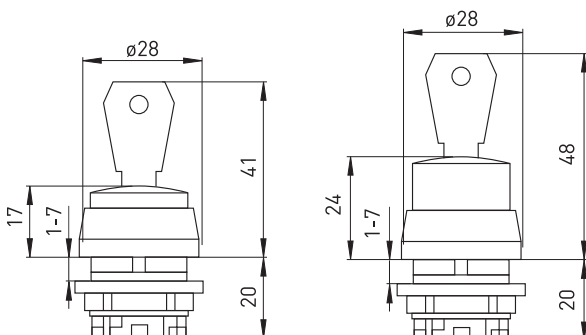
- IP 65
- RSSA key switch with safety cylinder lock (locks against turning)
- Standard version always has same key number

#### Key switch

Ex RF 95 RSSA 14 EN868

#### Material number

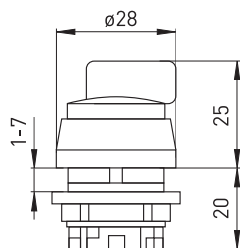
on request



## Ex wireless switchgear

### // Ex wireless command devices series Ex RF 95, actuators

#### // Selector switch RW



#### Features/Options

- IP 65

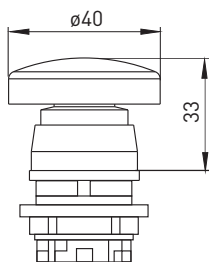
#### Selector switch

Ex RF 95 RWA 0-I EN868

#### Material number

1253657

#### // Push-button RS SW



#### Features/Options

- IP 65

- Actuator RV with latching function

#### Push-button

Ex RF 95 RS SW EN868

#### Material number

1182181

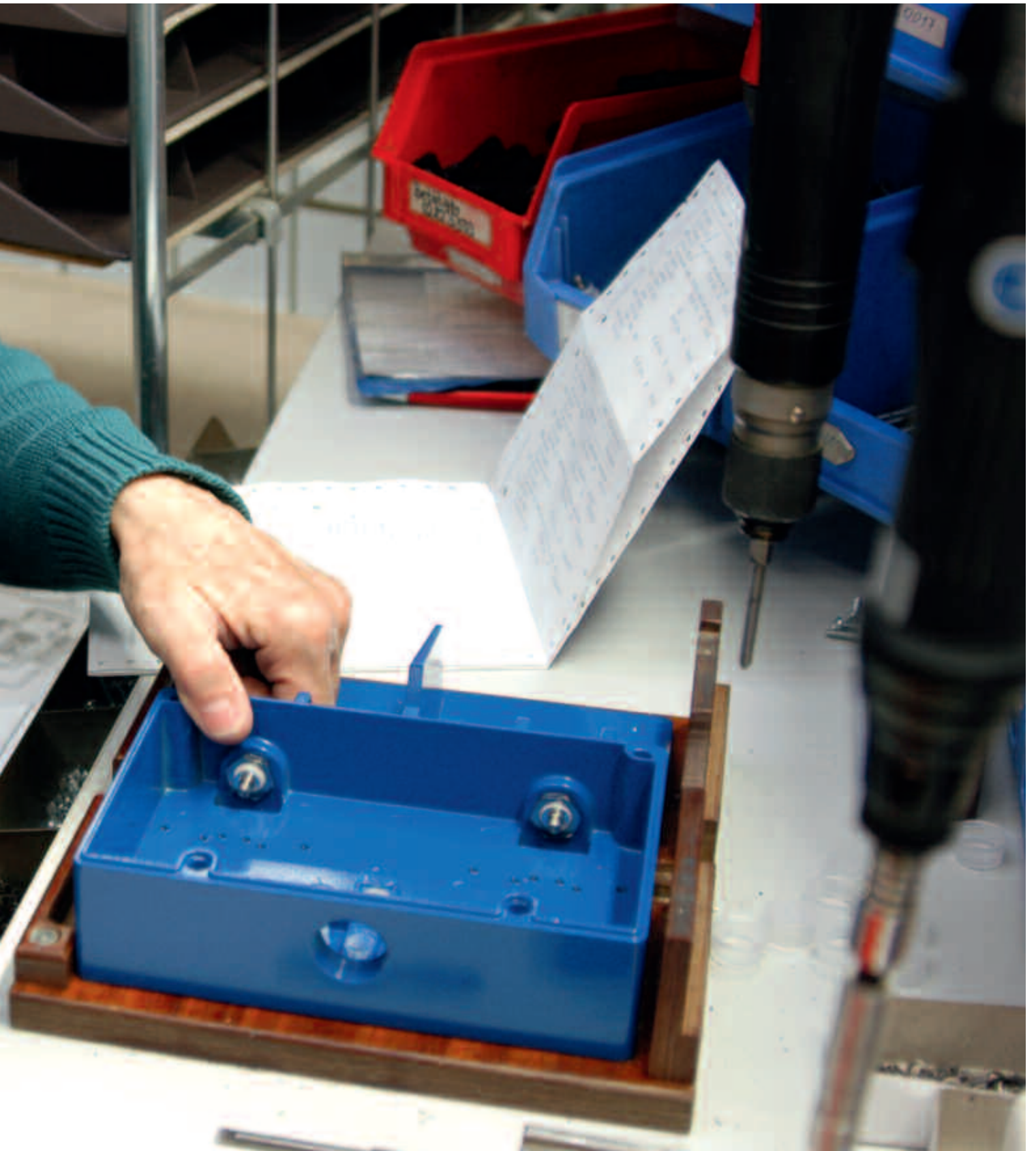
#### Push-button with latching function

Ex RF 95 RV SW EN868

#### Material number

on request

PRODUCTION PROCESS  
ASSEMBLY OF A FOOT SWITCH



# Ex wireless switchgear

## // Ex wireless foot switches series Ex RF GFI

### Features/options

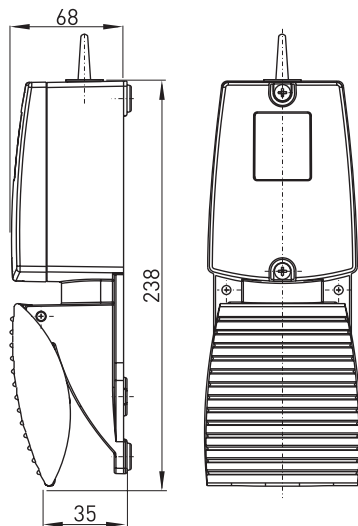
- Ex zone 1 and 21
- Metal enclosure
- Available with special finish in RAL colour tones
- Data rate 120 kbps
- No power supply, no wiring and pipe laying required
- Multi-network capable
- Easy programming of receiver

### // EX RF GFI



### Technical Data

<b>Standards</b>	EN 60947-5-1; EN 61000-6-2; EN 301 489-1; EN 301 489-3; EN 300 220-3; EN 60079-0; EN 60079-11; EN 61241-0; EN 61241-11
<b>Enclosure</b>	aluminium die-cast, powder-coated, RAL 5011
<b>Cover</b>	aluminium die-cast, powder-coated, RAL 2004
<b>Pedal</b>	aluminium die-cast, powder-coated, RAL 5011
<b>Protective shield</b>	-
<b>Degree of protection</b>	IP 67 to IEC/EN 60529
<b>Protocol</b>	EnOcean®
<b>Ambient temperature</b>	-20 °C ... +60 °C
<b>Switching frequency</b>	approx. 9000 telegrams at repetitions/h
<b>Voltage supply</b>	Electrodynamic energy generator
<b>Frequency</b>	868.3 MHz
<b>Transmission power</b>	max. 10 mW
<b>Data rate</b>	120 kbps
<b>Bandwidth channel</b>	280 kHz
<b>Sensing range</b>	max. 300 m outside, max. 30 m inside
<b>Mechanical life</b>	> 1 million operations
<b>Actuating time</b>	min. 80 ms
<b>Impact energy</b>	max. 7 J
<b>Note</b>	no status signal available
<b>Ex marking</b>	Ⓔ II 2G Ex ib IIC T6, II 2D Ex ibD 21 T80°C
<b>Approvals</b>	BVS 09 ATEX E149



Part number  
Ex RF GFI EN868

Material number  
1182180

### Type code

Ex RF GFI EN868

868 MHz wireless frequency  
EnOcean® wireless technology  
Series  
Wireless technology  
Ex certified component



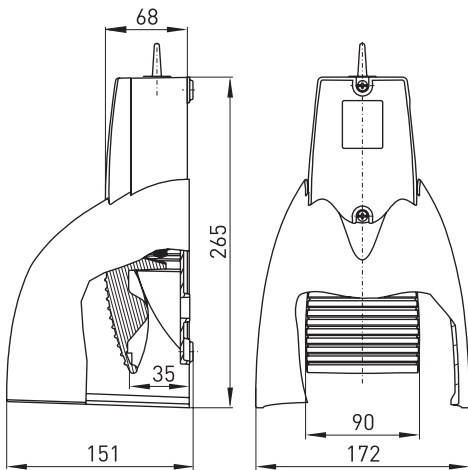
## Ex wireless switchgear

### // Ex wireless foot switches series Ex RF GFSI

#### Features/options

- Ex zone 1 and 21
- Metal enclosure
- Available with special finish in RAL colour tones
- Data rate 120 kbps
- No power supply, no wiring and pipe laying required
- Multi-network capable
- Easy programming of receiver

### // EX RF GFSI



Part number  
Ex RF GFSI EN868

Material number  
✓ 1184418

### Technical Data

<b>Standards</b>	EN 60947-5-1, EN 61000-6-2, EN 301 489-1, EN 301 489-3, EN 300 220-3; EN 60079-0, EN 60079-11; EN 61241-0, EN 61241-11
<b>Enclosure</b>	aluminium die-cast, powder-coated, RAL 5011
<b>Pedal</b>	aluminium die-cast, powder-coated, RAL 5011
<b>Protective shield</b>	aluminium die-cast, powder-coated, RAL 2004
<b>Degree of protection</b>	IP 67 to IEC/EN 60529
<b>Protocol</b>	EnOcean®
<b>Ambient temperature</b>	-20 °C ... +60 °C
<b>Switching frequency</b>	approx. 9000 telegrams at repetitions/h
<b>Voltage supply</b>	Electrodynamic energy generator
<b>Frequency</b>	868.3 MHz
<b>Transmission power</b>	max. 10 mW
<b>Data rate</b>	120 kbps
<b>Bandwidth channel</b>	280 kHz
<b>Sensing range</b>	max. 300 m outside, max. 30 m inside
<b>Mechanical life</b>	> 1 million operations
<b>Actuating time</b>	min. 80 ms
<b>Impact energy</b>	max. 7 J
<b>Note</b>	no status signal available
<b>Ex marking</b>	⊕ II 2G Ex ib IIC T6, II 2D Ex ibD 21 T80°C
<b>Approvals</b>	BVS 09 ATEX E149

49

#### Type code

Ex RF GFSI EN868

868 MHz Funkfrequenz  
EnOcean® wireless technology  
Series  
Wireless technology  
Ex certified component

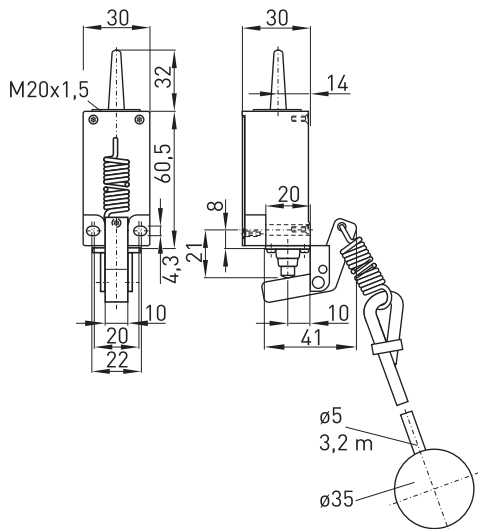
# Ex wireless switchgear

## // Ex wireless pull-wire switch series Ex RF 95 WH/90°

### Features/options

- Ex zone 1 and 21
- Thermoplastic enclosure
- Transversely slotted mounting holes
- Mountings to EN 50 047
- Output signal can be individually configured at the receiver
- EnOcean® protocol
- Data rate 120 kbps
- No power supply, no wiring and pipe laying required
- Multi-network capable
- Easy programming of receiver

### // EX RF 95 WH/90°



### Part number

Ex RF 95 WH/90° EN868

### Material number

✓ 1182208

### Technical Data

Standards	EN 60947-5-1; EN 61000-6-1, 2, EN 301 489-1; EN 301 489-3; EN 300 220-1, -2; EN 60079-0; EN 60079-11
Enclosure	Glassfibre reinforced thermoplastic, self-extinguishing UL 94-V0 mounting screw enclosure:
Tightening torque	max. 1.2 ... 1.3 Nm
Degree of protection	IP 67 to IEC/EN 60529
Protocol	EnOcean®
Ambient temperature Ta	-20 °C ... +60 °C
Switching frequency	approx. 9000 telegrams at repetitions/h
Voltage supply	Electrodynamic energy generator
Frequency	868.3 MHz
Transmission power	max. 10 mW
Data rate	120 kbps
Channel bandwidth	280 kHz
Sensing range	max. 300 m outside, max. 30 m inside
Mechanical life	> 1 million operations
Actuating time	min. 80 ms
Impact energy	max. 7 J
Note	no status signal available
Ex marking	⊕ II 2G Ex ib IIC T6 Gb, II 2D Ex ib IIIC T80°C Db IECEX Ex ib IIC T6 Gb, Ex ib IIIC T80°C Db
Approvals	BVS 08 ATEX E111; IECEx BVS 08.0048

### Type code

Ex RF 95 WH/90° EN868

868 MHz wireless frequency  
EnOcean® wireless technology  
Actuator H/90°  
Watertight collar  
Series  
Wireless technology  
Ex certified component

QUALITY MANAGEMENT PROCESS

VERIFICATION OF DIMENSION OF DELIVERED COMPONENTS



# Ex wireless switchgear

## // Wireless receiver series RF Rx EN868-1

### // RF RX EN868-1

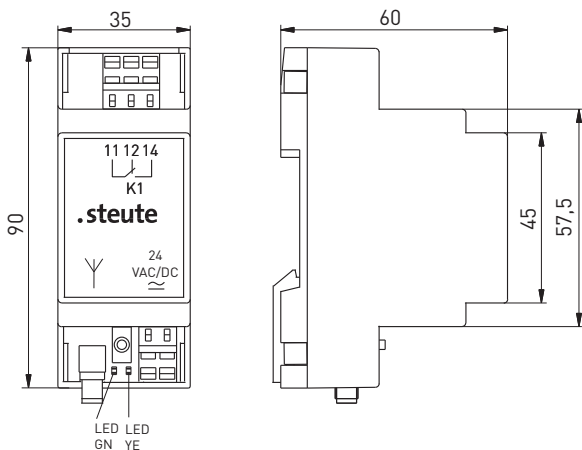


#### Features/options

- Thermoplastic enclosure
- EnOcean® wireless technology
- 1-channel: potential-free relay outputs
- DC version: 1 change-over contacts, NPN- or PNP output
- AC version: 1 change-over contacts
- Transmitter/receiver assignment by teaching mode
- LEDs for indication of switching state
- SMA plug-in connector for external antenna

#### Technical Data

<b>Standards</b>	EN 60947-5-1; EN 61000-6-2, -6-3, -4-2, -4-20, -4-4, -4-5, -4-6; EN 60068-2-6, -2-27; EN 301 489-1, -3; EN 300 220-1, -2
<b>Number of channels</b>	1
<b>Mounting</b>	DIN rail mounting
<b>Connection</b>	terminals with CAGE CLAMP WAGO Series 236: 0.08 ... 2.5 mm <sup>2</sup> / AWG 28-12, AWG 12: THHN, THWN, stripp. length 5 ... 6 mm/0.22 in
<b>Degree of protection</b>	IP 20 per IEC/EN 60529
<b>Inputs</b>	1 radio channel, max. 10 transmitters per channel
<b>Outputs</b>	1 change-over contact (Relay), NPN or PNP (transistor)
<b>Rated operating current I<sub>e</sub></b>	max. 0.08 A
<b>Rated operating voltage U<sub>e</sub></b>	24 VAC/DC -15% ... +10%
<b>I<sub>e</sub>/U<sub>e</sub> of output contacts</b>	6A / 250 VAC; 2A / 24 VDC
<b>Utilisation category</b>	AC-15; DC-13
<b>U<sub>i</sub></b>	250 VAC
<b>U<sub>imp</sub></b>	2.5 kV
<b>Frequency</b>	868.3MHz
<b>Display</b>	green LED: control voltage, orange LED: switching conditions
<b>Switching frequency</b>	approx. 9000 telegrams at repetitions/h
<b>Degree of pollution</b>	2 per IEC/EN 60664-1
<b>Ambient temperature</b>	0 °C ... +55 °C
<b>External antenna</b>	always required for optimum sensing range inductive loads (contactors, relays etc.) are to be suppressed by suitable circuitry.
<b>Note</b>	



#### Part number

- RF Rx EN868-1W 24 VDC
- RF Rx EN868-PNP 24 VDC
- RF Rx EN868-NPN 24 VDC

#### Material number

- ✓ 1186059
- 1182582
- 1182581

#### Type code

RF Rx EN868-1W

- Change-over contact (NPN, PNP transistor output)
- Radio frequency 868 MHz
- EnOcean® wireless technology
- Radio receiver
- Radio technology

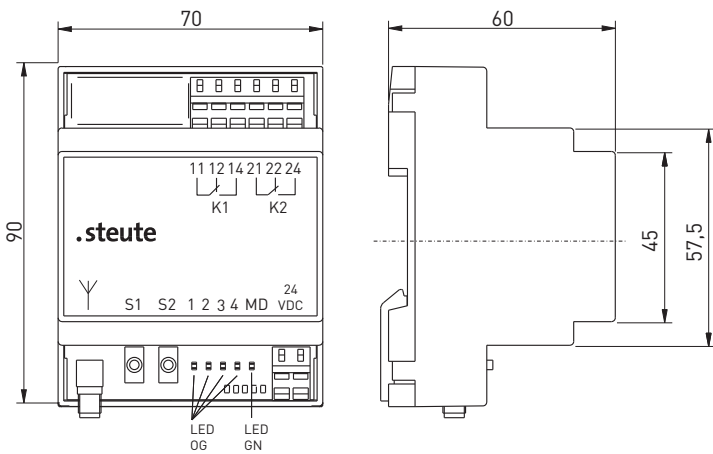
RF magnet antenna with SMA plug-in connector available as accessory, material No. 1186143.

Mobile field strength indicator EPM 300 for radio field planning is available, material No. 1187180.

# Ex wireless switchgear

## // Wireless receiver series RF Rx EN868-2

### // RF RX EN868-2



Part number  
RF Rx EN868-2W 24 VAC/DC

Material number  
✓ 1187216

### Features/options

- Thermoplastic enclosure
- EnOcean® wireless technology
- 2-channel: potential-free relay outputs
- 2 change-over contacts, max. 6 A
- Transmitter/receiver assignment by teaching mode
- LEDs for indication of switching state
- SMA plug-in connector for external antenna

### Technical Data

Standards	EN 60947-5-1; EN 61000-6-2, -6-3, -4-2, -4-20, -4-4, -4-5, -4-6; EN 60068-2-6, -2-27; EN 301 489-1, -3; EN 300 220-1, -2
Number of channels	2
Mounting	DIN rail mounting
Connection	terminals with CAGE CLAMP WAGO Series 236: 0.08 ... 2.5 mm <sup>2</sup> / AWG 28-12, AWG 12: THHN, THWN, stripp. length 5 ... 6 mm/0.22 in
Degree of protection	IP 20 per IEC/EN 60529
Inputs	2 radio channels, max. 10 transmitters per channel
Outputs	2 change-over contacts (relays)
Rated operating current $I_e$	24 VDC: max. 0.1 A; 24 VAC: max. 0.25 A
Rated operating voltage $U_e$	24 VAC/DC -15% ... +10%
$I_e/U_e$ of output contacts	6 A / 250 VAC; 2 A / 24 VDC
Utilisation category	AC-15; DC-13
$U_i$	250 VAC
$U_{imp}$	2.5 kV
Radio frequency	868.3 MHz
Display	green LED: supply voltage, orange LED: switching conditions
Switching frequency	approx. 9000 telegrams at repetitions/h
Degree of pollution	2 per IEC/EN 60664-1
Ambient temperature	0 °C ... +55 °C
External antenna	always required for optimum sensing range
Note	inductive loads (contactors, relays etc.) are to be suppressed by suitable circuitry.

53

### Type code

**RF Rx EN868-2W**

RF Rx EN868-2W  
 2 change-over contacts  
 Radio frequency 868 MHz  
 EnOcean® wireless technology  
 Radio receiver  
 Radio technology

RF magnet antenna with SMA plug-in connector available as accessory, material No. 1186143.

Mobile field strength indicator EPM 300 for radio field planning is available, material No.1187180.

# Ex wireless switchgear

## // Wireless receiver series RF Rx EN868-2W-RS232

### Features/options

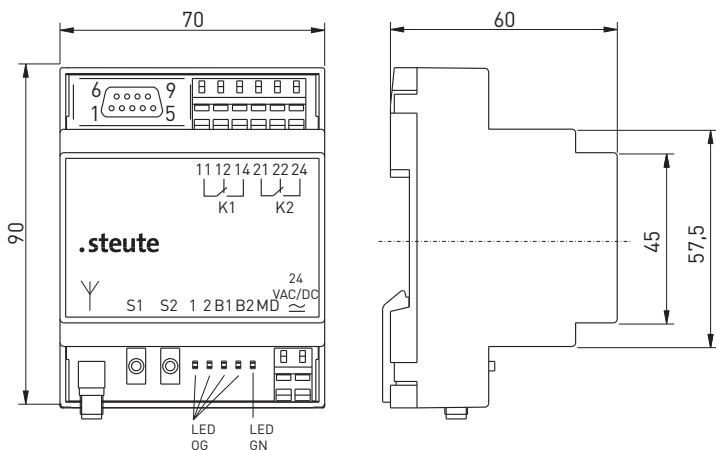
- EnOcean® wireless technology
- 2-channel: potential-free relay outputs
- 2 change-over contacts, max. 10 A
- RS 232 interface
- Transmitter/receiver assignment by teaching mode
- LEDs for indication of switching state
- SMA plug-in connector for external antenna

## // RF RX EN868-2W-RS232



## Technical Data

<b>Standards</b>	EN 60947-5-1; EN 61000-6-2, -6-3, -4-2, -4-20, -4-4, -4-5, -4-6; EN 60068-2-6, -2-27; EN 301 489-1, -3; EN 300 220-1, -2; ANSI/EIA/TIA-232-F-1997
<b>Number of channels</b>	2
<b>Connection</b>	terminals with CAGE CLAMP WAGO Series 236: 0.08 ... 2.5 mm <sup>2</sup> / AWG 28-12, AWG 12: THHN, THWN, stripp. length 5 ... 6 mm/0.22 in
<b>Degree of protection</b>	IP 20 per IEC/EN 60529
<b>Inputs</b>	2 radio channels, max. 10 transmitters per channel
<b>Outputs</b>	2 change-over contacts (relays), RS 232 interface
<b>Rated op. current I<sub>e</sub></b>	24 VDC: max. 0.1 A; 24 VAC: max. 0.25 A
<b>Rated op. voltage U<sub>e</sub></b>	24 VAC/DC -15% ... +10%
<b>I<sub>e</sub>/U<sub>e</sub> of output contacts</b>	6 A / 250 VAC; 2 A / 24 VDC
<b>Utilisation category</b>	AC-15; DC-13
<b>U<sub>i</sub></b>	250 VAC
<b>U<sub>imp</sub></b>	2.5 kV
<b>Radio frequency</b>	868.3MHz
<b>Display</b>	green LED: operating state , orange LED: switching conditions and baud rate setting
<b>Switching frequency</b>	approx. 9000 telegrams at repetitions/h
<b>Degree of pollution</b>	2 per IEC/EN 60664-1
<b>Ambient temperature</b>	0 °C ... +55 °C
<b>Baudrate</b>	9600 Bd to 57600 Bd
<b>Data bits</b>	8
<b>Stop bit</b>	1
<b>Parity</b>	none
<b>Flow control</b>	none
<b>Note</b>	inductive loads (contactors, relays etc.) are to be suppressed by suitable circuitry.



### Part number

- RF Rx EN868-2W-RS232 24 VAC/DC
- RF Rx EN868-2W-s-RS232 24 VDC

### Material number

- 1186804
- ✓ 1189512

### Type code

RF Rx EN868-2W-RS232

- Radio technology
- Radio receiver
- EnOcean® wireless technology
- Radio frequency 868 MHz
- 2 change-over contacts
- RS 232 interface

RF magnet antenna with SMA plug-in connector available as accessory, material No. 1186143.

Mobile field strength indicator EPM 300 for radio field planning is available, material No.1187180.

# Ex wireless switchgear

## // Wireless receiver series RF Rx EN868-4

### Features/options

- Thermoplastic enclosure
- EnOcean® wireless technology
- 4-channel: potential-free relay outputs
- 4 change-over contacts, max. 10 A
- Transmitter/receiver assignment by teaching mode
- LEDs for indication of switching state
- SMA plug-in connector for external antenna

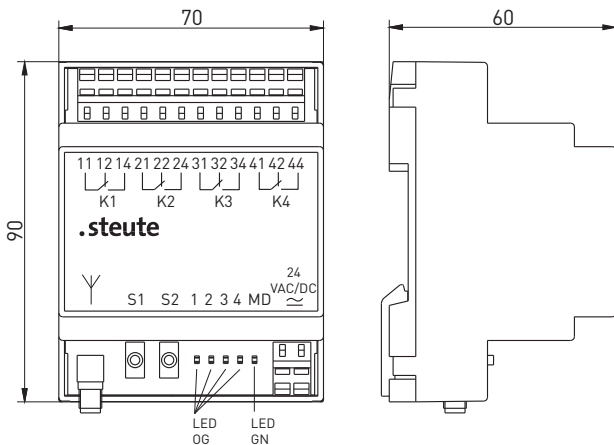
## // RF RX EN868-4



## Technical Data

<b>Standards</b>	EN 60947-5-1; EN 61000-6-2, -6-3, -4-2, -4-20, -4-4, -4-5, -4-6; EN 60068-2-6, -2-27; EN 301 489-1, -3; EN 300 220-1, -2
<b>Standards</b>	4
<b>Mounting</b>	DIN rail mounting
<b>Connection</b>	terminals with CAGE CLAMP WAGO Series 236: 0.08 ... 2.5 mm <sup>2</sup> / AWG 28-12, AWG 12: THHN, THWN, stripp. length 5 ... 6 mm/0.22 in
<b>Degree of protection</b>	IP 20 per IEC/EN 60529
<b>Inputs</b>	4 radio channels, max. 10 transmitters per channel
<b>Outputs</b>	4 change-over contacts (relays)
<b>Rated operating current I<sub>e</sub></b>	24 VDC: max. 0.1 A; 24 VAC: max. 0.25 A
<b>Rated operating voltage U<sub>e</sub></b>	24 VAC/DC -15% ... +10%
<b>I<sub>e</sub>/U<sub>e</sub> of output contacts</b>	6 A / 250 VAC; 2 A / 24 VDC
<b>Utilisation category</b>	AC-15; DC-13
<b>U<sub>i</sub></b>	250 VAC
<b>U<sub>imp</sub></b>	2.5 kV
<b>Radio frequency</b>	868.3 MHz
<b>Display</b>	green LED: operating state, orange LED: switching conditions
<b>Switching frequency</b>	approx. 9000 telegrams at repetitions/h
<b>Degree of pollution</b>	2 per IEC/EN 60664-1
<b>Ambient temperature</b>	0 °C ... +55 °C
<b>External antenna</b>	always required for optimum sensing range
<b>Note</b>	inductive loads (contactors, relays etc.) are to be suppressed by suitable circuitry.

55



### Part number

RF Rx EN868-4W 24 VAC/DC

### Material number

1185835

### Type code

RF Rx EN868-4W

4 change-over contacts  
Radio frequency 868 MHz  
EnOcean® wireless technology  
Radio receiver  
Radio technology

RF magnet antenna with SMA plug-in connector available as accessory, material No. 1186143.

Mobile field strength indicator EPM 300 for radio field planning is available, material No.1187180.

# Ex wireless switchgear

## // Wireless receiver series RF Rx EN868-2TCP/IP

### Features/options

- EnOcean® wireless technology
- Communication via UDP or TCP/IP (Server or Client - Mode)
- Webserver based Setup
- Transmitter/receiver assignment by teaching mode
- LEDs for indication of switching state
- SMA plug-in connector for external antenna

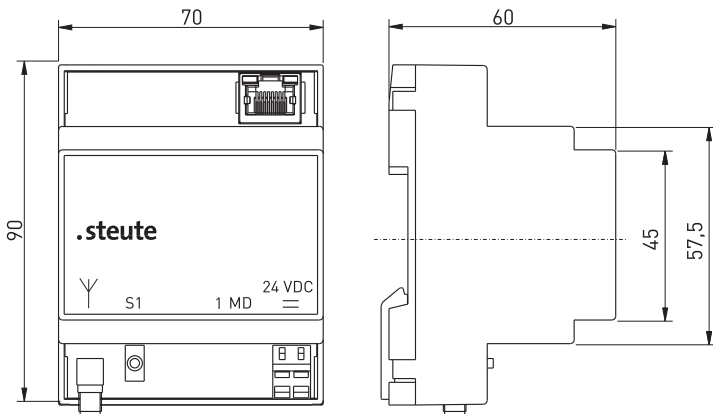
### // RF RX EN868-TCP/IP



### Technical Data

Standards	EN 60947-5-1; EN 61000-6-2, -6-3, -4-2, -4-20, -4-4, -4-5, -4-6; EN 60068-2-6, -2-27; EN 301 489-1, -3; EN 300 220-1, -2
Connection	terminals with CAGE CLAMP WAGO Series 236: 0.08 ... 2.5 mm <sup>2</sup> / AWG 28-12, AWG 12: THHN, THWN, stripp. length 5 ... 6 mm/0.22 in
Network interface	10/100 Base-T Ethernet (Auto detection) via RJ 45
Software interface	TCP (Client, Server) / UDP / IP (DHCP)
Degree of protection	IP 20 per IEC/EN 60529
Rated op. current I <sub>e</sub>	max. 0.06 A
Rated op. voltage U <sub>e</sub>	24 VAC/DC -15% ... +10%
Radio frequency	868.3MHz
Display	green LED: Reset state, orange LED: signalisation of telegram
Degree of pollution	2 per IEC/EN 60664-1
Ambient temperature	0 °C ... +55 °C
External antenna	always required for optimum wireless range

56



### Part number

RF Rx EN868-TCP/IP

### Material number

1266815

### Type code

RF Rx EN868-TCP/IP

TCP/IP interface  
 Radio frequency 868 MHz  
 EnOcean® wireless technology  
 Radio receiver  
 Radio technology

RF magnet antenna with SMA plug-in connector available as accessory, material No. 1186143.

Mobile field strength indicator EPM 300 for radio field planning is available, material No.1187180.

✓ in stock

.steute



## Ex wireless switchgear

### // Wireless receiver series RF RxT EN868-USB

#### Features/options

- Thermoplastic enclosure
- EnOcean® wireless technology
- USB 2.0 transmitter and receiver unit
- Multi-network capable
- Power supply via USB interface
- Support of up to 128 actors and an indefinite number of transmitters

### // RF RXT EN868-USB



#### Technical Data

Standards	EN 301 489-1, -3; EN 300 220-2, -3
Number of channels	max. 128 actors, indefinite number of transmitters
Connection	USB 2.0, cable length 0.6 m (without plug-in connector)
Degree of protection	IP 30 per IEC/EN 60529
Inputs	indefinite number of EnOcean® transmitters
Outputs	max. 128 actors
Power supply	via USB interface
Frequency	868.3 MHz
Switching frequency	approx. 9000 telegrams at repetitions/h
Degree of pollution	2 per IEC/EN 60664-1
Ambient temperature	0 °C ... +55 °C
EMC rating	according to EMC Directive
Dimensions	25 x 125 x 65 mm (H x W x D)
External antenna	no external antenna required

57

Part number  
RF RxT EN868-USB

Material number  
1187937

#### Type code

RF Rx EN868-USB

USB connector  
Radio frequency 868 MHz  
EnOcean® wireless technology  
Radio repeater  
Radio technology

RF magnet antenna with SMA plug-in connector available as accessory, material No. 1186143.

Mobile field strength indicator EPM 300 for radio field planning is available, material No.1187180.

# Ex wireless switchgear

## // Wireless repeater series RF RxT EN868-230VAC

### Features/options

- EnOcean® wireless technology
- On-wall mounting
- FME plug-in connector for external antenna

### Note

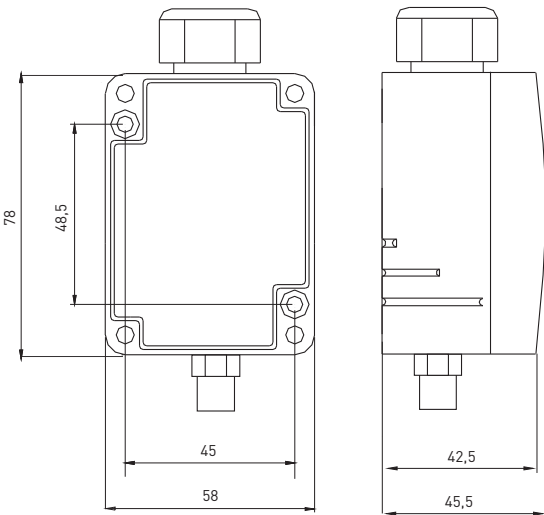
RF magnet antenna with FME plug-in connector (2.5 m) is provided

### // RF RX EN868-230VAC



### Technical Data

<b>Standards</b>	EN 61000-3-2; -3-3; -6-2; -6-3; EN 301 489-1, -3; EN 300 220-2, -3; EN 60950-1; EN 60730-1
<b>Mounting</b>	On-wall mounting
<b>Enclosure</b>	PA6.6, Colour: pure white
<b>Cover</b>	PC transparent, with quick lock screws
<b>Connection</b>	Screw connection terminals max. 1.5 mm <sup>2</sup> (incl. conductor ferrules)
<b>Degree of protection</b>	IP 65 per IEC/EN 60529
<b>Power consumption</b>	max. 1 VA
<b>Rated operating voltage range U<sub>B</sub></b>	15 ... 240 VAC/DC
<b>Mains frequency</b>	50 ... 60 Hz
<b>Radio frequency</b>	868.3 MHz
<b>Degree of pollution</b>	2 per IEC/EN 60664-1
<b>Ambient temperature</b>	-20 °C ... +65 °C
<b>External antenna</b>	always required for optimum wireless range



**Part number**  
RF RxT EN868-230VAC

**Material number**  
1413331

### Type code

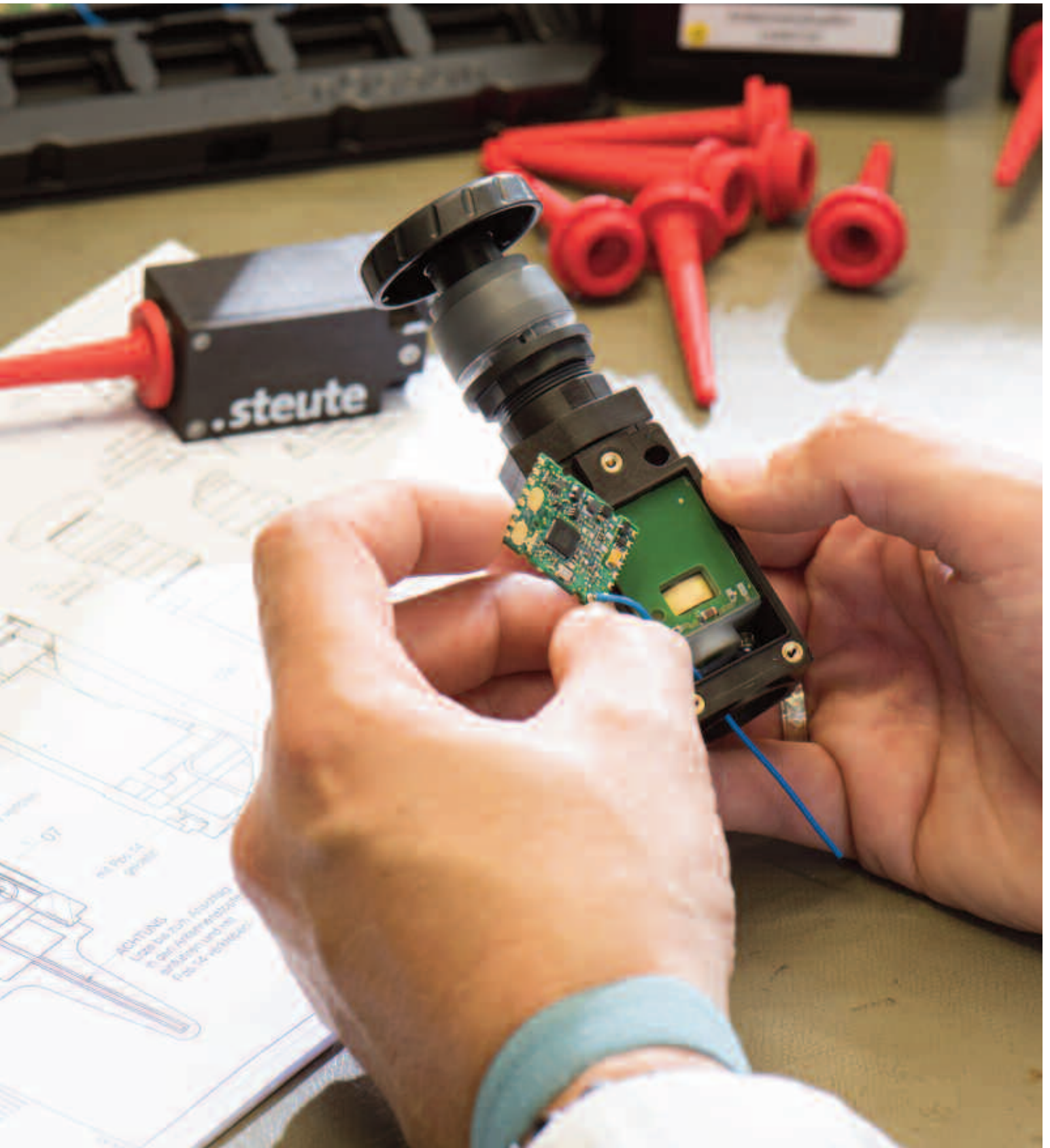
RF RxT EN868-230VAC

230 VAC power supply  
Radio frequency 868 MHz  
EnOcean® wireless technology  
Radio repeater  
Radio technology

RF magnet antenna with FME plug-in connector (2.5 m) is provided.

Mobile field strength indicator EPM 300 for radio field planning is available, material No.1187180.

PRODUCTION PROCESS  
ASSEMBLY OF A WIRELESS COMMAND DEVICE



// Field strength indicator EPM 300 EnOcean®



**Features/options**

- Only suitable for EnOcean® technology
- Mobile field strength indicator for link range testing
- To measure and indicate the electrical field strength
- Battery not included, requires AA/L91 Lithium battery
- Repeater mode can be selected

**Field strength indicators**  
EPM 300

**Material Number**  
1187180

// Field strength indicator swView 868 MHz / swView 915 MHz sWave®



**Features/options**

- Only suitable for sWave® technology
- Mobile field strength indicator for link range testing
- To measure and indicate the electrical field strength
- Battery included: 2 x AA batteries
- Several functions can be selected: Scan-Mode, Repeat-Mode, Rescan-Mode, Radio-Link

**Field strength indicators**  
swView 868  
swView 915

**Material Number**  
1190393  
1221794

// 24 VDC power supply



**Features/options**

- 24 VDC power supply for wireless receivers RF Rx ...

**Power supplies**  
Power supply 24 VDC

**Material Number**  
1188751

// RF Magnet antenna 868 MHz EnOcean®



**Features/options**

- RF magnet antenna with straight SMA plug-in connector without ferrite core
- Cable length 2.5 m

**Antennas**

RF Magnet antenna EN868

**Material Number**

1186143

**Note**

The antenna must be mounted on a metal plate of min. 250 x 250 mm size.

// RF High gain antenna 868 MHz



**Features/options**

- RF high gain antenna suitable for mast mounting up to max. 41 mm diameter
- 260 mm length
- N-connector socket
- 5 dbi gain
- internally grounded as lightning protection

**Antennas**

RF high gain antenna

RF SMA N antenna connecting cable 5 m

RF SMA N antenna connecting cable 10 m

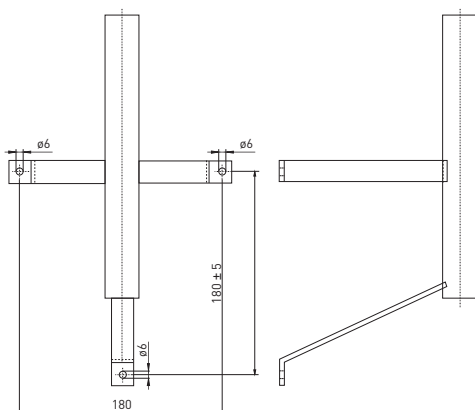
**Material Number**

1187161

1187162

1187254

// RF Mounting bracket for high gain antenna



**Features/options**

- Mounting bracket for wall mounting
- Distance to wall approx. 170 mm
- aluminium welded

**Mounting bracket for wall mounting**

Mounting bracket for high gain antenna

**Material Number**

1187183

// RF Magnet antenna 868 MHz



**Features/options**

- RF magnet antenna with straight SMA plug-in connector without ferrite core
- Cable length 1.5 m

**Antennas**

RF Magnet antenna SW868 5 dB

**Material Number**

1188958

**Note**

The antenna must be mounted on a metal plate of min. 250 x 250 mm size.

// RF Magnet antenna 868 MHz



**Features/options**

- RF magnet antenna with straight TNC plug-in connector
- IP 65 degree of protection
- Cable length 1.5 m

**Antennas**

RF Magnet antenna SW868 5 dB TNC connector IP 65

**Material Number**

1275629

**Note**

The antenna must be mounted on a metal plate of min. 250 x 250 mm size.

// RF Magnet antenna 915 MHz



**Features/options**

- RF magnet antenna with straight RSMA plug-in connector without ferrite core
- Cable length 3.6 m

**Antennas**

RF Magnet antenna SW915 5 dB

**Material Number**

1188987

**Note**

The antenna must be mounted on a metal plate of min. 250 x 250 mm size.

## // RF SMA antenna socket



### Features/options

- Suitable for antenna material No. 1275629
- IP 65 degree of protection
- Cable length 0.5 m

### Antenna sockets

RF SMA antenna socket 0.5 m TNC connector IP 65

### Material Number

1275627

## // RF SMA antenna socket



### Features/options

- Suitable for the antennas material numbers 1186143, 1188958 and 1373199
- Cable length 0.5 m

### Antenna sockets

RF SMA antenna socket

### Material Number

1185712

## // Antenna arrangement

### Arrangement of receiver and switch antenna

Optimum mounting



Possible mounting



Unsuitable mounting



// RF SMA antenna extension



**Features/options**

- RF SMA cable suitable for EnOcean® as well as sWave® 868 technology
- Antenna extension cable with straight SMA plug-in connector

**Antenna extensions**

RF SMA antenna extension cable 3 m

**Material Number**

1186734

// RF SMA N antenna extension for high gain antenna



**Features/options**

- RF SMA N cable for high gain antenna
- Antenna extension cable with straight SMA plug-in connector

**Antenna extensions**

RF SMA N antenna extension cable 5 m

RF SMA N antenna extension cable 10 m

**Material Number**

1187162

1187254

// M12 x 1 female connector for Wireless universal transmitters



**Features/options**

- 4-pole female connector for RF 96 ST and RF I/O
- With straight M12 x 1 female plug-in connector
- Cable length 2 m

**Connector**

Female connector 4-pole M12 x 1 straight, 2 m

**Material Number**

1215497



// M12 x 1 connector for Wireless universal transmitters



**Features/options**

- 4-pole female connector for RF 96 ST and RF I/O
- With straight M12 x 1 female plug-in connector
- Cable length 5 m

**Connector**

Female connector 4-pole M12 x 1 straight, 5 m

**Material Number**

1262873

// RS 232 cable



**Features/options**

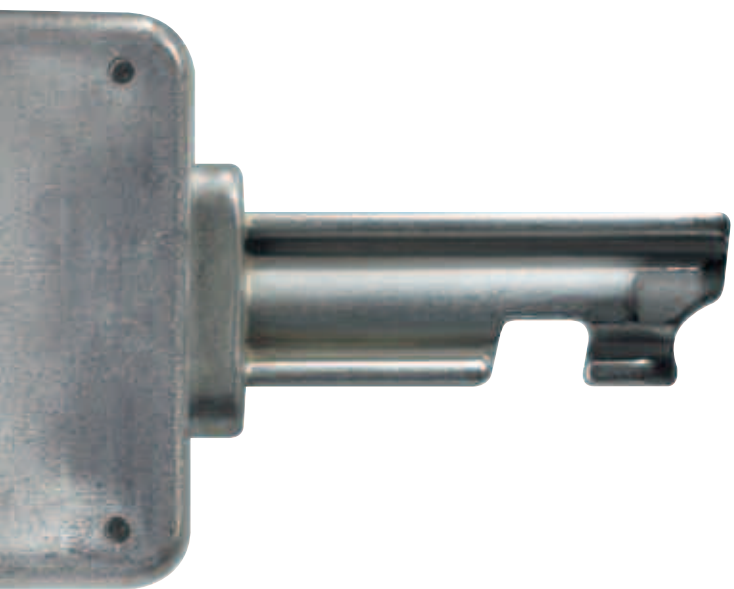
- RS 232 cable for receiver RF Rx EN868-2W-RS232, RF Rx SW868-2W-RS232 and RF Rx SW915-2W-RS232
- Provided with receiver

**Cable**

RS 232 cable

**Material Number**

on request





## Ex solenoid interlocks

### Thermoplastic enclosure

// Series Ex STM 295

from page 70

### Metal enclosure

// Series Ex AZM 415

from page 74

// Series Ex AZP 415

from page 77



# Ex solenoid interlocks

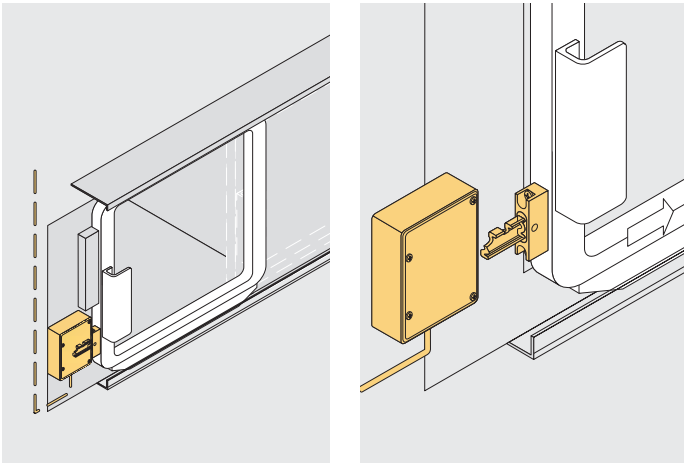
## Range of application

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

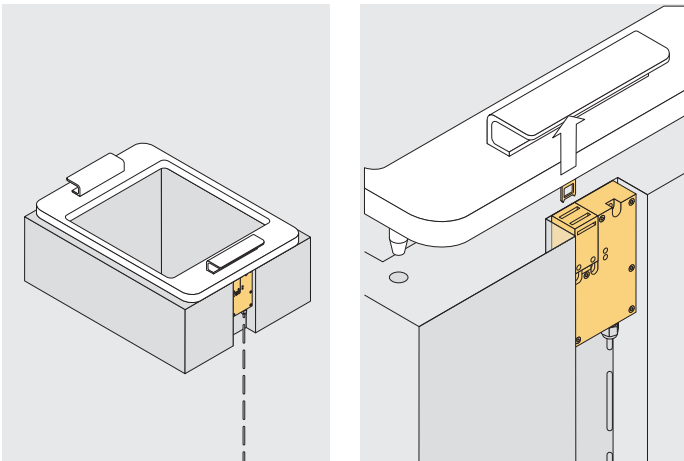
In combination with the SRM range safety relay module, the AZM and AZP range Ex solenoid and pneumatic interlocks achieve PL »e« per EN ISO 13849-1 or up to SIL 3 per EN 62061, subject to suitable circuit arrangements.

## Application

### on sliding guards



### on removable guards

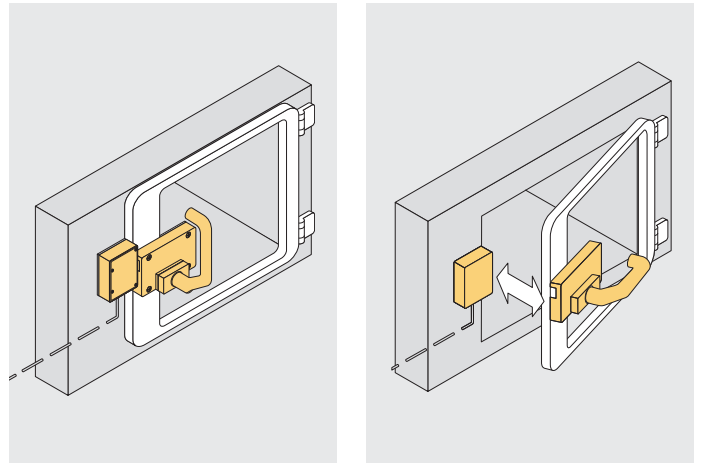


## Design and operating principle

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

The Ex solenoid interlocks shown in this chapter bear the CE mark according to the Machinery Directive 2006/42/EC and according to ATEX 2014/34/EU. The Ex solenoid interlocks per equipment category 3D bear the CE mark without the number of the notified body and have received a CE declaration of manufacturer conformity.

### on hinged guards



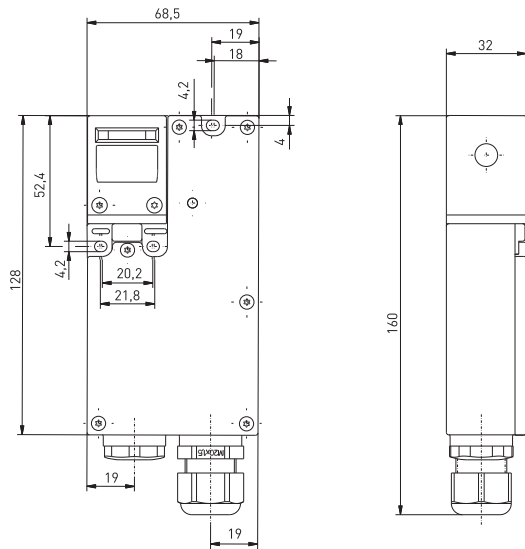
# Ex solenoid interlocks

## // Series Ex STM 295

### Features/Options

- Ex zone 1 and 21
- Thermoplastic enclosure
- Double insulated □
- Two Ex switch inserts in one enclosure
- Spring-to-lock or power-to-lock principle
- Holding force 1000 N
- Wiring compartment
- Special version only for gas Ex zone 2 and dust Ex zone 22 available

## // EX STM 295



## Technical data

<b>Standards</b>	EN 60947-5-1; EN ISO 14119; EN 60079-0, EN 60079-1, EN 60079-7, EN 60079-18; EN 61241-0, EN 61241-1; EN ISO 13849-1
<b>Enclosure</b>	glass-fibre reinforced, shock-proof thermoplastic, self-extinguishing UL 94-V0 stainless steel 1.4301
<b>Actuator</b>	type 2
<b>Switch type</b>	low coding
<b>Coding level</b>	Ex 95
<b>Switch insert</b>	IP 64 to IEC/EN 60529
<b>Protection class</b>	silver
<b>Contact material</b>	slow action, positive break NC contact ⊕
<b>Switching system</b>	2 NC and 2 NO contacts type Zb
<b>Switching elements</b>	screw connection terminals
<b>Connection</b>	max. 1.5 mm <sup>2</sup> (incl. conductor ferrules)
<b>Cable section</b>	2 x M20 x 1.5 for ø 5 ... 9 mm
<b>Cable entries</b>	1 million
<b>B<sub>10d</sub> (10 % load)</b>	max. 20 years
<b>T<sub>M</sub></b>	4 kV
<b>U<sub>imp</sub></b>	250 V
<b>U<sub>i</sub></b>	3 A
<b>I<sub>the</sub></b>	3 A/250 VAC; 0.25 A/230 VDC
<b>I<sub>e</sub>/U<sub>e</sub></b>	AC-15; DC-13
<b>Utilisation category</b>	6 A gG/gN fuse
<b>Max. fuse rating</b>	0.08 A / 24 VDC +10%/-15%
<b>I<sub>e</sub>/U<sub>e</sub> solenoid</b>	max. 47 W (0.25s)
<b>Power consumption</b>	-20 °C ... +55 °C
<b>Ambient temperature</b>	max. 1000 N
<b>Holding force F</b>	> 500 000 operations
<b>Mechanical life</b>	max. 7 J
<b>Impact energy</b>	⊕ II 2G Ex demb IIC T4 Gb, II 2D Ex tD A21 IP64 T100°C
<b>Ex marking</b>	IECEx Ex demb IIC T4, Ex tD A21 IP64 T100°C
<b>Approvals</b>	BVS 10 ATEX E 053 X IECEx BVS 11.0030 X EAC, UL, cULus

### Contact variants: switch travel/contacts

	Spring-to-lock principle	Power-to-lock principle
2 NC/2 NO contact	<p><b>Ex STM 295 2Ö/2S-R</b></p>	<p><b>Ex STM 295 2Ö/2S-A</b></p>

### Type code

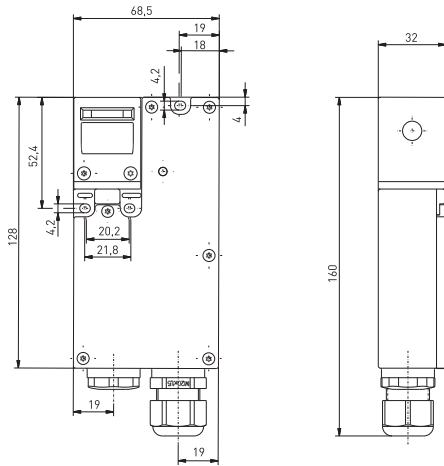
<b>Ex STM 295 2Ö/2S-R-3G/D</b>	Equipment Categ. 3G/D, gas Ex zone 2 and dust Ex zone 22
	R Spring-to-lock principle, (A Power-to-lock principle)
	Contact type 2 NC/2 NO contact
	Series
	Solenoid interlock
	Ex certified component

# Ex solenoid interlocks

## // Series Ex STM 295, actuators

**Note**  
The actuators are not included with the switches.

### // Straight actuator STM 295 AZ-B1



**Features/Options**  
- With Spring-to-lock or power-to-lock principle

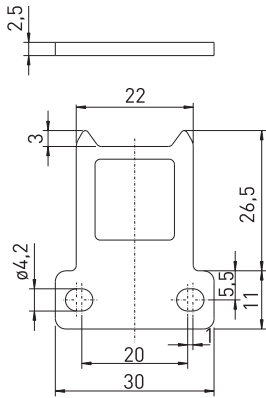
**Spring-to-lock principle**  
Ex STM 295 2Ö/2S-R  
Ex STM 295 2Ö/2S-R/90°  
Ex STM 295 2Ö/2S-R-FE  
Ex STM 295 2Ö/2S-R/90°-FE

**Material number**  
✓ 1186429  
✓ 1188541  
✓ 1186394  
✓ 1188545

**Power-to-lock principle**  
Ex STM 295 2Ö/2S-A  
Ex STM 295 2Ö/2S-A/90°

**Material number**  
✓ 1184799  
1188542

### // Angled actuator STM 295 AZ-B5

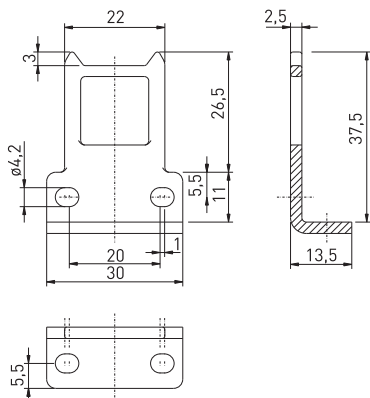


**Features/Options**  
- Actuating radius on hinged guards  
a = 350 mm and b = 700 mm  
- Axial misalignment x = 11 mm

**Actuator**  
STM 295-B1

**Material number**  
✓ 1183481

### // Flexible actuator STM 295 AZ-B6



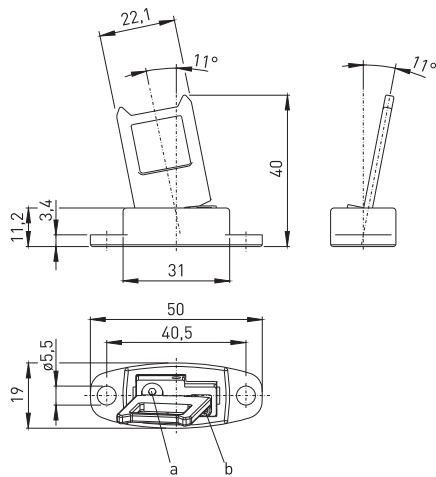
**Features/Options**  
- Especially suitable for hinged guards  
- Actuating radius on hinged guards  
a = 350 mm and b = 700 mm  
- Axial misalignment x = 13.5 mm

**Actuator**  
STM 295-B5

**Material number**  
✓ 1183470

Ex solenoid interlocks  
 // Series Ex STM 295, actuators

// Flexible actuator STM 295 AZ-B6



Features/Options

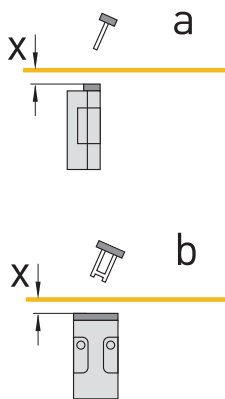
- Especially suitable for hinged guards
- Actuating radius adjustable, min. 100 mm, using a hexagonal key wrench 2.5 mm A/F (a or b)
- Actuating radius on hinged guards a = 100 mm and b = 100 mm
- Axial misalignment x = 13 mm

Actuator  
 STM 295-B6

Material number  
 ✓ 1435030

72

// Actuating radii



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



PRODUCTION PROCESS COMPONENT PRODUCTION  
ENCLOSURE FINISH



# Ex solenoid interlocks

## // Series Ex AZM 415

### Features/Options

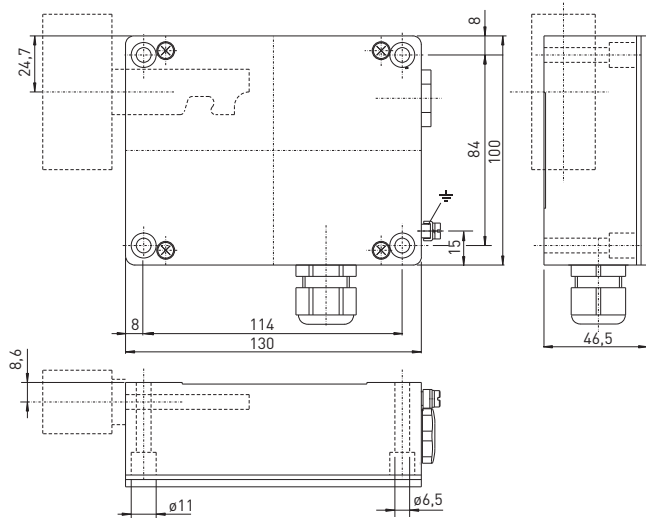
- Ex zone 1 and 21
- Two Ex switch inserts in one enclosure
- Spring-to-lock or power-to-lock principle
- Problem-free opening of stressed doors by means of bell-crank system
- High holding force 3.500 N
- Ball catch
- Special version only for dust Ex zone 22 available

### // EX AZM 415



### Technical data

<b>Standards</b>	EN 60947-5-1; EN ISO 14119; EN 60079-0, EN 60079-1, EN 60079-7, EN 60079-18, EN 60079-31; EN ISO 13849-1
<b>Enclosure</b>	aluminium die casting, enamelled
<b>Cover</b>	steel, enamelled
<b>Actuator/locking bolt</b>	metal zinc/aluminium
<b>Switch type</b>	type 2
<b>Coding level</b>	low coding
<b>Protection class</b>	IP 67; Ex AZM 415-TE, TEI, -FE: IP64 to IEC/EN 60529
<b>Switching system</b>	slow action, positive break NC contact ⊖
<b>Switching elements</b>	2 NC/2 NO or 3 NC/1 NO contacts type Zb
<b>Connection</b>	screw connection terminals
<b>Cable section</b>	max. 2.5 mm <sup>2</sup> (incl. conductor ferrules)
<b>Cable entries</b>	2 x M20 x 1.5 for ø 5 ... 9 mm
<b>B<sub>10d</sub> (10 % load)</b>	2 million
<b>T<sub>M</sub></b>	max. 20 years
<b>U<sub>imp</sub></b>	4 kV
<b>U<sub>i</sub></b>	250 V
<b>I<sub>the</sub></b>	6 A
<b>I<sub>e</sub>/U<sub>e</sub></b>	6 A/250 VAC; 0.25 A/230 VDC
<b>Utilisation category</b>	AC-15; DC-13
<b>Max. fuse rating</b>	6 A gG/gN fuse
<b>I<sub>e</sub>/U<sub>e</sub> solenoid</b>	0.08 A / 24 VDC ±10%
<b>Power consumption</b>	max. 12 W (0.25s)
<b>Amb. temperature T<sub>a</sub></b>	T6: -20 °C ... +40 °C; T5: -20 °C ... +55 °C
<b>Mechanical life</b>	> 1 million operations
<b>Holding force F</b>	max. 3500 N
<b>Holding force of integrated ball catch</b>	50 - 200 N, adjustable
<b>Impact energy</b>	max. 7 J
<b>Ex marking</b>	⊕ II 2G Ex demb IIC T6/T5 Gb, II 2D Ex tb IIIC T80°C/T95°C Db IECEx Ex demb IIC T6/T5 Gb, Ex tb IIIC T80°C/T95°C Db
<b>Approvals</b>	DMT 02 ATEX E 255 X, IECEx BVS 07.0018X 



### Contact variants: switch travel/contacts

	Spring-to-lock principle	Power-to-lock principle
2 NC/2 NO contact	Ex AZM 415 2Ö/2S-R 	Ex AZM 415 2Ö/2S-A 
3 NC/1 NO contact	Ex AZM 415 3Ö/1S-R 	Ex AZM 415 3Ö/1S-A 

### Type code

Ex AZM 415 2Ö/2S-R-TEI-FE-3D

Equipment. Cat. 3D, dust Ex zone 22 auxiliary unlocking emergency unlocking, device inside hazard. area (TE device outside haz. area)  
R Spring-to-lock principle, (A Power-to-lock principle)  
Contact type 2 NC/2 NO contacts  
Series  
Solenoid interlock  
Ex certified component

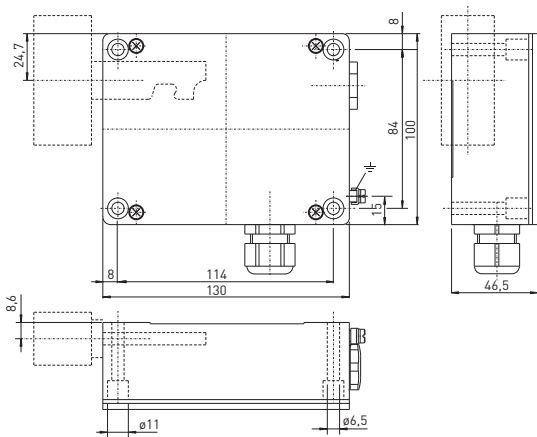
✓ in stock

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# Ex solenoid interlocks

## // Series Ex AZM 415, variants

### // Ex AZM 415



#### Features/Options

- With Spring-to-lock or power-to-lock principle

#### Spring-to-lock principle

Ex AZM 415 20/2S-R  
Ex AZM 415 20/2S-R-HU +90°C-2D

#### Material number

✓ 1169104  
1188501

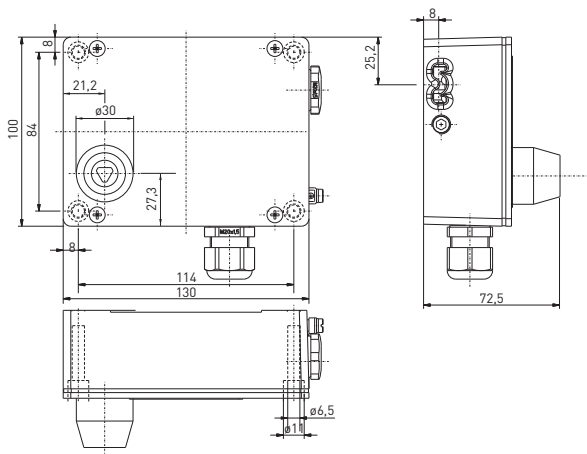
#### Power-to-lock principle

Ex AZM 415 20/2S-A  
Ex AZM 415 30/1S-A

#### Material number

✓ 1169106  
1180752

### // Ex AZM 415-FE



#### Features/Options

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

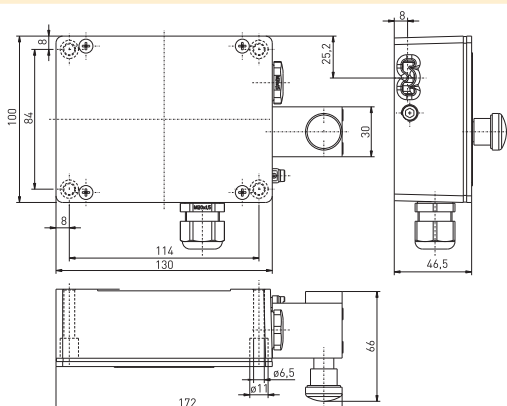
#### Auxiliary unlocking

Ex AZM 415 20/2S R-FE  
Ex AZM 415 30/1S R-FE  
Ex AZM 415 20/2S R-FE-HU +90°C-2D

#### Material number

✓ 1181881  
1183280  
1188502

### // Ex AZM 415-TEI



#### Features/Options

- With emergency release, actuation in case of emergency  
- Unlocking by pressing a push-button  
- Mounting of the device inside a hazardous area

#### Emergency release

Ex AZM 415 20/2S R-TEI

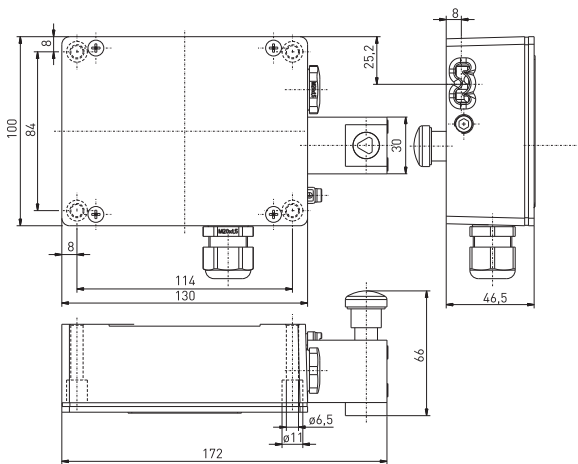
#### Material number

1181882

# Ex solenoid interlocks

## // Series Ex AZM 415, variants

### // Ex AZM 415-TE



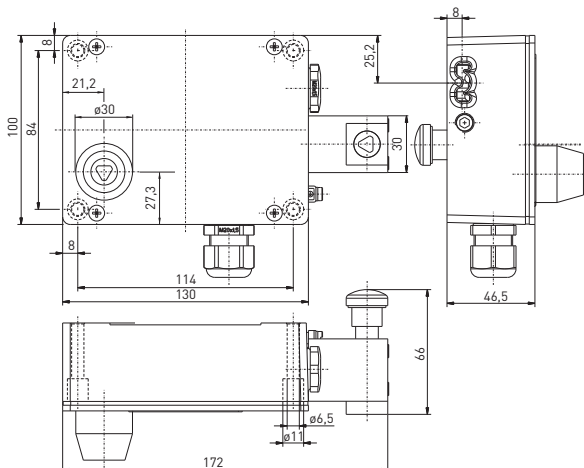
#### Features/Options

- With emergency release, actuation in case of emergency
- Unlocking by pressing a push-button
- Mounting of the device outside a hazardous area

Emergency release  
Ex AZM 415 2Ö/2S R-TE

Material number  
1182000

### // Ex AZM 415-FE/TE



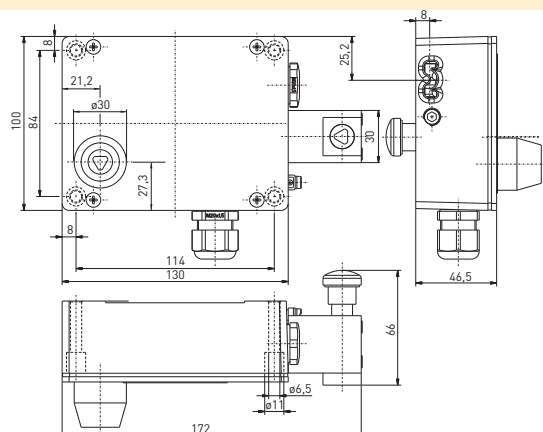
#### Features/Options

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

Emergency release/auxiliary unlocking  
Ex AZM 415 2Ö/2S R-FE/TE

Material number  
1181999

### // Ex AZM 415-FE/TEI



#### Features/Options

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

Emergency release/auxiliary unlocking  
Ex AZM 415 2Ö/2S R-FE/TEI  
Ex AZM 415 3Ö/1S R-FE/TEI

Material number  
1181998  
1184885

✓ in stock

# Ex solenoid interlocks

## // Series Ex AZP 415

### Features/Options

- Ex zone 1 and 21
- Two Ex switch inserts in one enclosure
- Release by means of pneumatic cylinder
- Problem-free opening of stressed doors by means of bell-crank system
- High holding force 3,500 N
- Ball catch
- Special version only for dust Ex zone 22 available

### // EX AZP 415

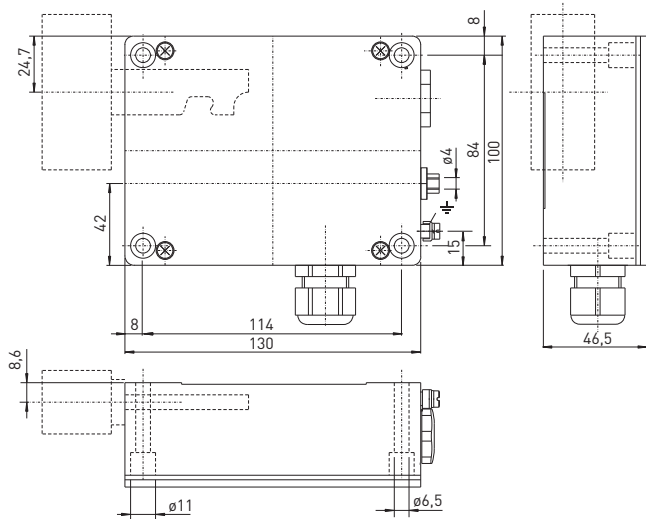


### Technical data

<b>Standards</b>	EN 60947-5-1; EN ISO 14119; EN 60079-0, EN 60079-1, EN 60079-7, EN ISO 13849-1
<b>Enclosure</b>	aluminium die casting, enamelled
<b>Cover</b>	steel, enamelled
<b>Actuator/locking bolt</b>	metal zinc/aluminium
<b>Switch type</b>	type 2
<b>Coding level</b>	low coding
<b>Protection class</b>	IP 67 to IEC/EN 60529
<b>Contact material</b>	silver
<b>Switching system</b>	slow action, positive break NC contact ⊖
<b>Switching elements</b>	2 NC/2 NO contacts type Zb
<b>Connection</b>	screw connection terminals
<b>Cable section</b>	max. 2.5 mm <sup>2</sup> (incl. conductor ferrules)
<b>Cable entries</b>	2 x M20 x 1.5 for ø 5 ... 9 mm
<b>B<sub>10d</sub> (10 % load)</b>	2 million
<b>T<sub>M</sub></b>	max. 20 years
<b>U<sub>imp</sub></b>	4 kV
<b>U<sub>i</sub></b>	250 V
<b>I<sub>the</sub></b>	6 A
<b>Ie/Us</b>	6 A/250 VAC; 0.25 A/230 VDC
<b>Utilisation category</b>	AC-15
<b>Max. fuse rating</b>	6 A gG/gN fuse
<b>Unlocking</b>	Pneumatic cylinder, max. 3 - 7 bar permitted
<b>Ambient temperature</b>	T6: -20 °C ... +40 °C; T5: -20 °C ... +55 °C
<b>Mechanical life</b>	> 1 million operations
<b>Holding force F</b>	max. 3500 N
<b>Holding force of integrated ball catch</b>	50 - 200 N, adjustable
<b>Impact energy</b>	max. 7 J
<b>Ex marking</b>	⊕ II 2G Ex de IIC T6/T5 Gb, II 2D Ex tb IIIC T80°C/T95°C Db IECEx Ex de IIC T6/T5 Gb, Ex tb IIIC T80°C/T95°C Db

### Approvals

DMT 02 ATEX E 255 X; IECEx BVS 07.0018 X

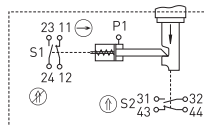


### Contact variants: switch travel/contacts

#### Actuation with air supply off

2 NC/2 NO contact

Ex AZP 415 2Ö/2S



### Type code

Ex AZP 415 2Ö/2S-3D

Equipment Categ. 3D,  
dust Ex zone 22  
Contact type 2 NC/2 NO contacts  
Series  
Solenoid interlock  
Ex certified component

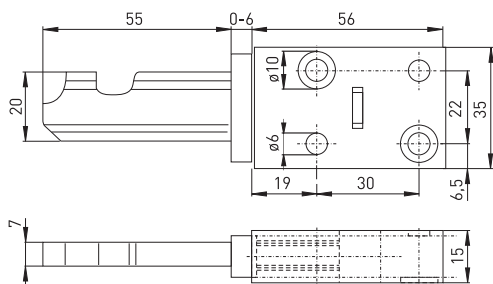
# Ex solenoid interlocks

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

### Note

- The actuators are not included with the switches.
- Removal of the actuator can be prevented by fitting dowel pins in the holes provided.
- The distance between the flange of the actuator and the switch enclosure must be less than 3 mm when the actuator is inserted.
- Adjustment or B2 and B3 or turning hexagonal screw

### // Straight actuator AZM 415-B1



### Features/Options

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

### Actuator

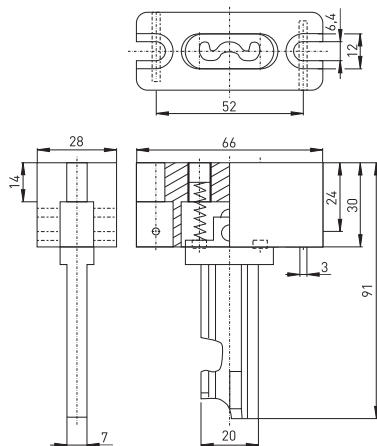
Ex AZM 415-B1

### Material number

✓ 1171889

78

### // Flexible actuator AZM 415-B2



### Features/Options

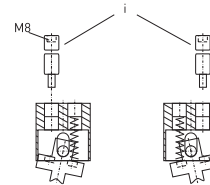
- Especially suitable for sliding and hinged guards
- Actuating radius on hinged guards  
b = 250 mm, axial misalignment x = 36 mm

### Actuator

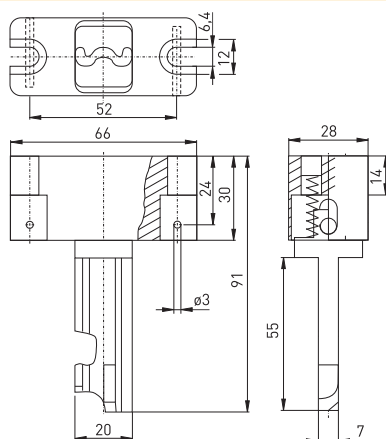
Ex AZM 415-B2

### Material number

✓ 1171890



### // Flexible actuator AZM 415-B3



### Features/Options

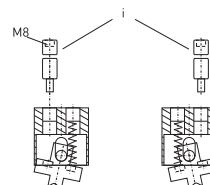
- Especially suitable for sliding and hinged guards
- Actuating radius on hinged guards  
a = 250 mm, axial misalignment x = 36 mm

### Actuator

Ex AZM 415-B3

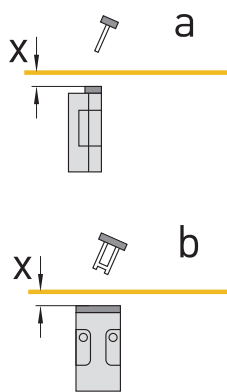
### Material number

✓ 1171892



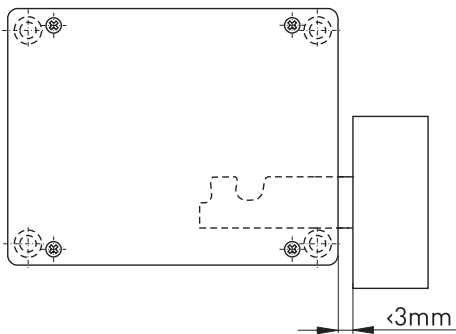
✓ in stock

## // Actuating radii

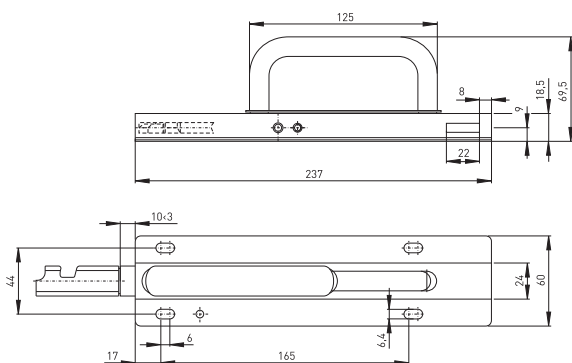


- The axis of the hinge should be  $x$  mm above the top edge of the safety switch and in the same plane
- a Actuating radius to the plane of the actuator
- b Actuating radius in line with the plane of the actuator
- $x$  Axial misalignment

## // Distance between actuator and enclosure



## // Actuator AZM 415-B4pS with grip



### Features/Options

#### AZM 415-B4pS

- Suitable for all types of guards, no further handles required
- Hinge radius not to be observed
- Shearing force 25,000 N/lieferbar

### Actuator

Ex AZM 415-B4pS

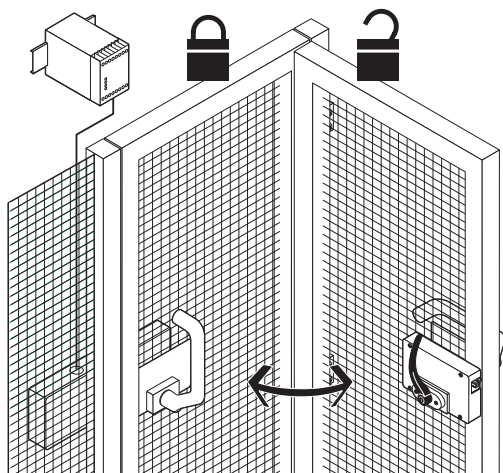
### Material number

1172016

# Ex solenoid interlocks

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

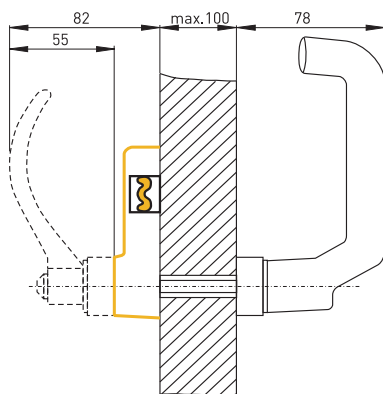
### // Actuator AZM 415-B30



#### Features/Options

- Suitable for all guard types
- Hinge radius not to be observed
- No further handles/levers required on the guard
- Latching actuating handle
- Emergency handle to open guard from within the guarded area:  
1. Press push-button, 2. Turn emergency handle
- Shearing force 25,000 N
- For door thickness max. 100 mm
- Lockout tag SZ 415-1 or SZ 415-2 to prevent unintentional closing

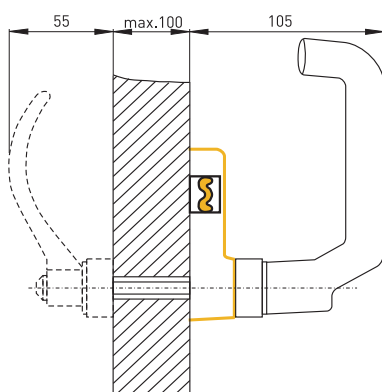
### // Actuator mounted inside



#### Features/Options

- Actuator mounted inside: Solenoid interlock is mounted inside the hazardous area, see yellow marking in the left drawing

### // Actuator mounted outside



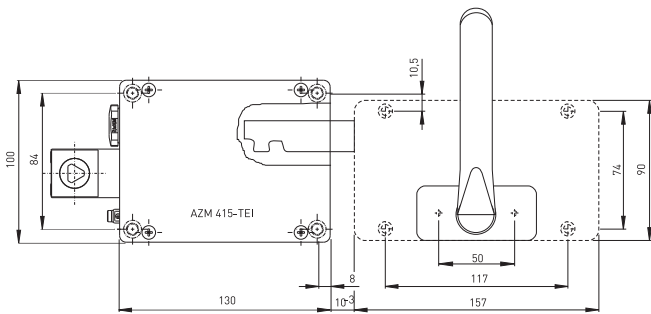
#### Features/Options

- Actuator mounted outside: Solenoid interlock is mounted outside the hazardous area, see yellow marking in the left drawing

✓ in stock



// Actuator AZM 415-B30-01



Features/Options

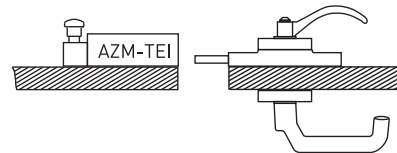
- With emergency handle, door hinge on right-hand side
- Actuator mounted inside, see yellow marking in the drawing on page 80
- Only to be used in combination with Ex AZM 415-20/2S-TEI

Actuator

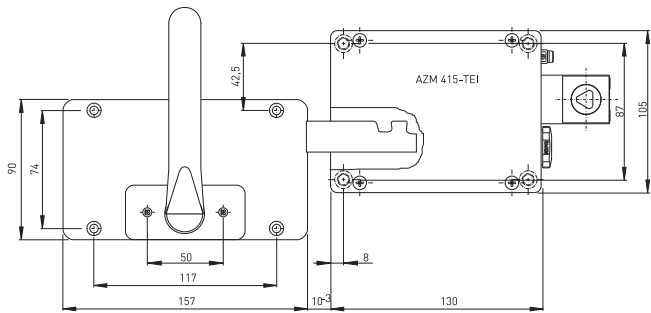
Ex AZM 415-B30-01

Material number

✓ 1184310



// Actuator AZM 415-B30-02



Features/Options

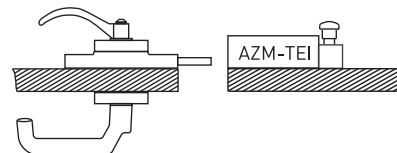
- Actuator mounted inside, see yellow marking in the drawing on page 80
- With emergency handle, door hinge on left-hand side
- Only to be used in combination with Ex AZM 415-20/2S-TEI

Actuator

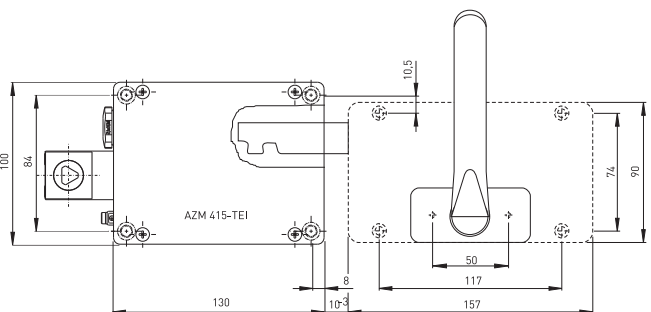
Ex AZM 415-B30-02

Material number

✓ 1182251



// Actuator AZM 415-B30-03



Features/Options

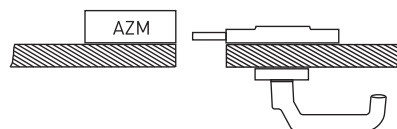
- Actuator mounted inside, see yellow marking in the drawing on page 80
- Door hinge on right-hand side

Actuator

Ex AZM 415-B30-03

Material number

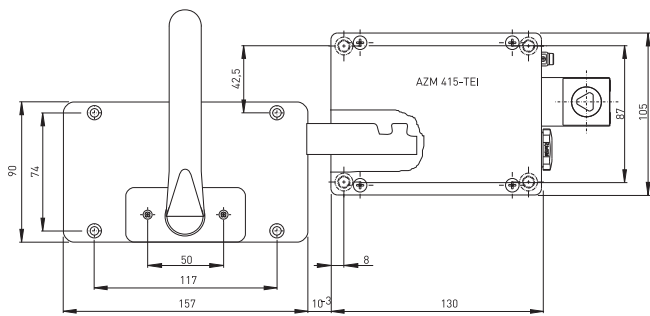
✓ 1172017



# Ex solenoid interlocks

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

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



#### Features/Options

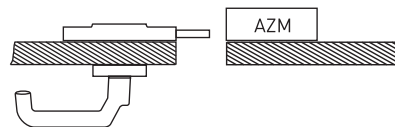
- Actuator mounted inside, see yellow marking in the drawing on page 80
- Door hinge on left-hand side

#### Actuator

Ex AZM 415-B30-01

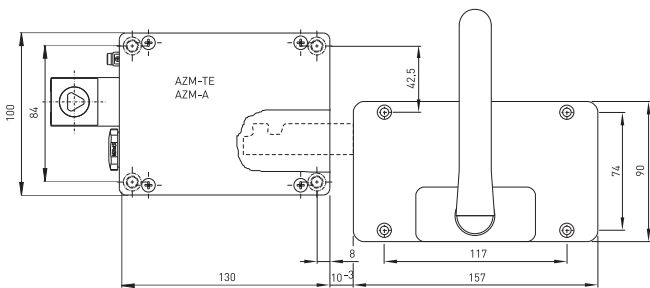
#### Material number

✓ 1184310



82

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



#### Features/Options

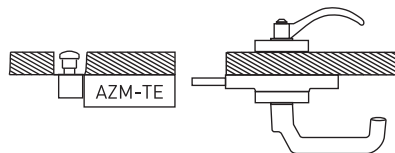
- Actuator mounted inside, see yellow marking in the drawing on page 80
- Only to be used in combination with Ex AZM 415-20/2S-TE
- Door hinge on right-hand side

#### Actuator

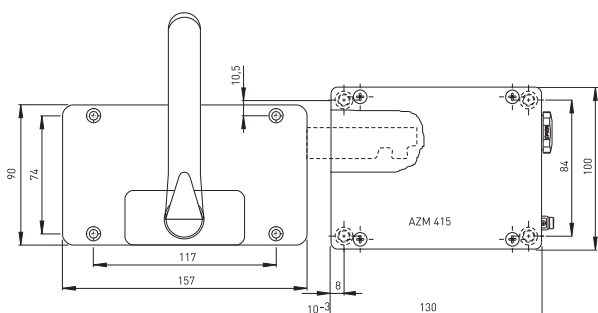
Ex AZM 415-B30-01

#### Material number

✓ 1184310



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



#### Features/Options

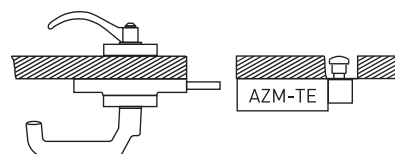
- Only to be used in combination with Ex AZM 415-20/2S-TE
- Actuator mounted inside, see yellow marking in the drawing on page 80
- Door hinge on left-hand side

#### Actuator

Ex AZM 415-B30-06

#### Material number

✓ 1184310

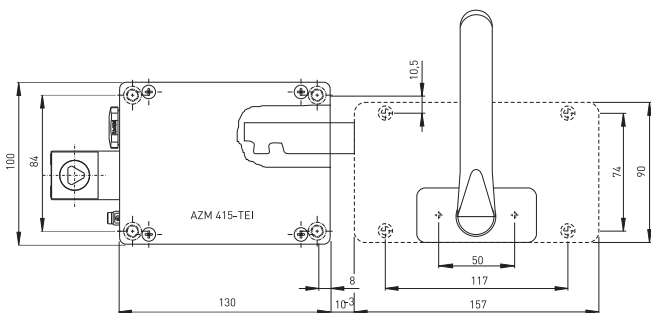


✓ in stock

## Ex solenoid interlocks

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

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



#### Features/Options

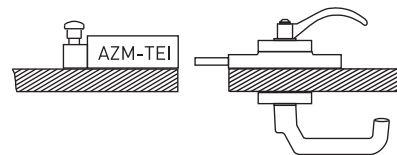
- Actuator mounted inside, see yellow marking in the drawing on page 80
- Door hinge on right-hand side

#### Actuator

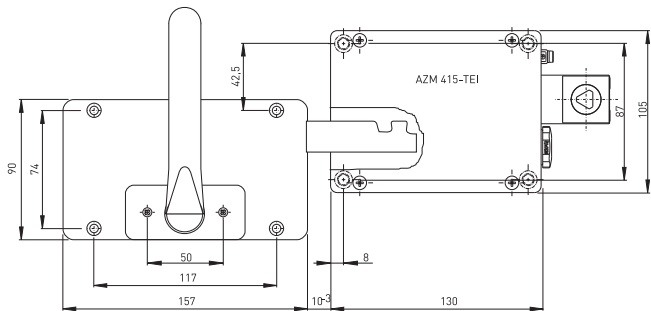
Ex AZM 415-B30-07

#### Material number

✓ 1184310



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



#### Features/Options

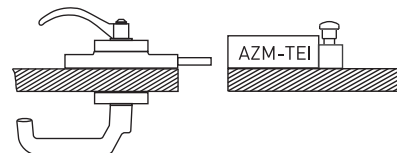
- Actuator mounted inside, see yellow marking in the drawing on page 80
- Door hinge on left-hand side

#### Actuator

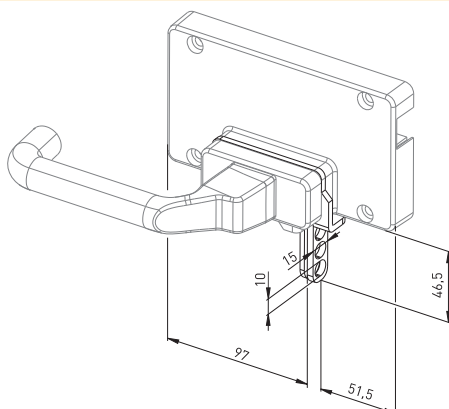
Ex AZM 415-B30-08

#### Material number

✓ 1182251



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



#### Features/Options

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

#### Accessories

SZ 415-1

SZ 415-2

#### Material number

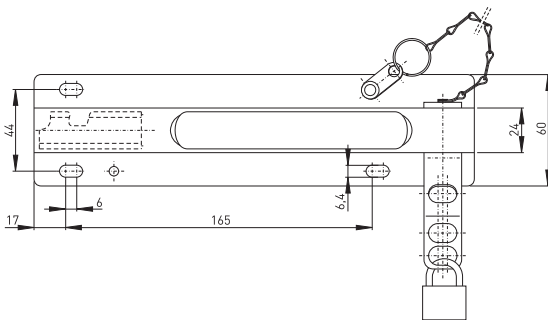
1187200

1187201

## Ex solenoid interlocks

// Series Ex AZM/AZP 415, accessories

### // Lockout tag SZ 415-B4pS



#### Features/Options

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

#### Accessories

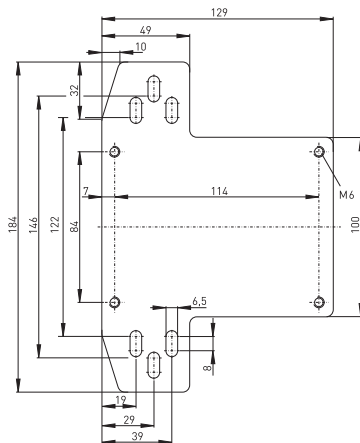
SZ 415-B4pS

#### Material number

1181419

84

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



#### Features/Options

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

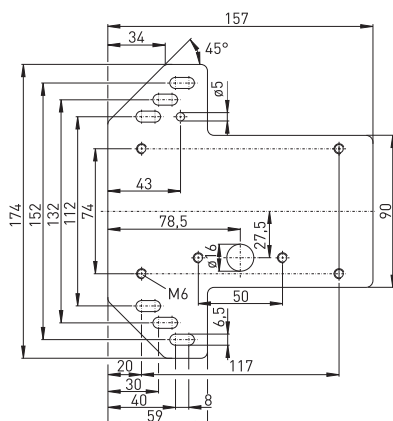
#### Accessories

MP AZM 415-22

#### Material number

✓ 1180143

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



#### Features/Options

- For simple mounting on profile systems, e.g. 40, 60 or 80 mm wide
- Thickness of plate 5 mm
- For mounting of a door or an emergency handle

#### Accessories

MP AZM 415-B30

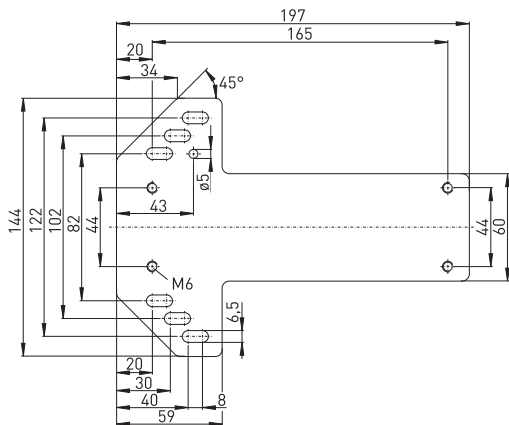
#### Material number

✓ 1180145

✓ in stock

.steute

## // Mounting plate MP AZM 415-B4pS



### Features/Options

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

### Accessories

MP AZM 415-B4pS

### Material number

✓ 1181420



## Ex safety switches with separate actuators

### Thermoplastic enclosure

// Series Ex ST 14

from page 90

// Series Ex 14 AZ-95

from page 94

// Series Ex 97 AZ

from page 96

// Series Ex AZ 16

from page 98

// Series Ex 99 ST

from page 108

### Metal enclosure

// Series Ex 98 ST

from page 109

// Series Ex 355 AZ

from page 110

// Series Ex ST 61

from page 114

01.08.0084



# Ex safety switches with separate actuators

## Range of application

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

In combination with a safety relay module series SRM, all safety switches shown in this chapter achieve PL »e« per EN ISO 13849-1 or up to SIL 3 per EN 62061, subject to suitable circuit arrangements.

The Ex switches are suitable for application in zone 1 and 2, as well as zone 21 and 22 according to ATEX 2014/34/EU.

## Design and operating principle

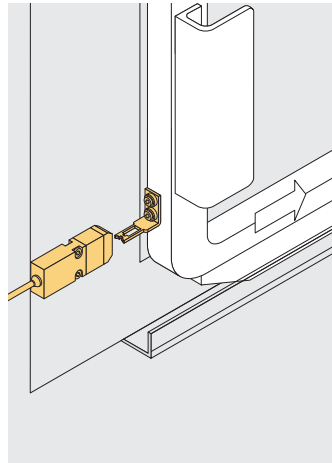
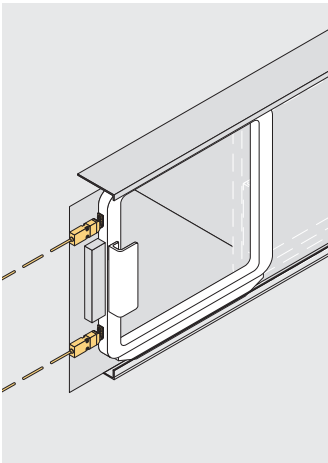
On the Ex safety switches with a separate actuator, the switching element is not physically connected to the actuator, but functionally united or separated by switching. When the guard device is opened, the actuator is separated from the base unit. In this process, NC contacts are positively opened and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

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

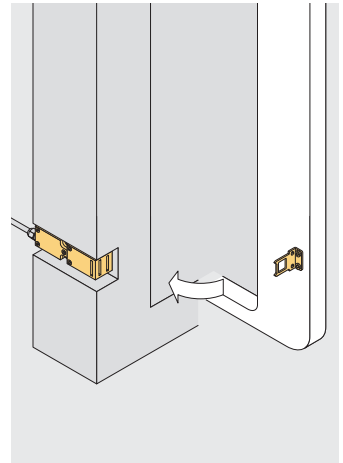
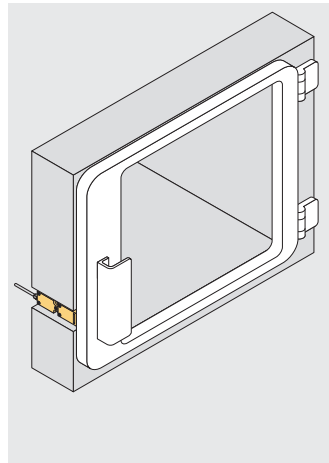
All Ex safety switches shown in this chapter bear the CE mark according to the Machinery Directive 2006/42/EC and according to ATEX 2014/34/EU. The Ex safety switches per equipment category 3D bear the CE mark without the number of the notified body and have received a CE declaration of manufacturer conformity.

## Application

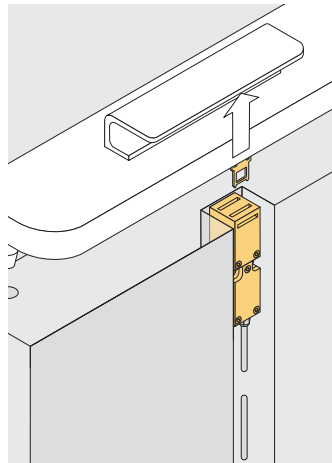
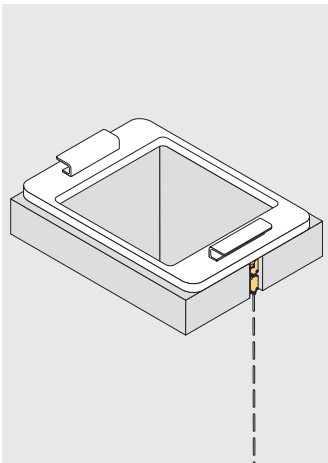
### on sliding guards



### on hinged guards



### on removable guards



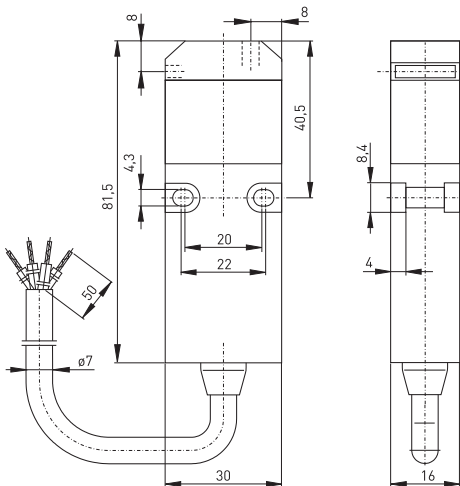
# Ex safety switches with separate actuators

## // Series Ex ST 14

### Features/Options

- Ex zone 1 and 21
- Thermoplastic enclosure
- Double insulated □
- Slow action available with contact overlapping
- Version with cable outlet on side
- With prewired cable, length 2 metres
- Special version only for dust Ex zone 22 available

## // EX ST 14



## Technical data

<b>Standards</b>	EN 60947-5-1; EN 60079-0, EN 60079-1, EN 60079-31; EN ISO 13849-1; EN ISO 14119
<b>Enclosure</b>	glass-fibre reinforced, shock-proof thermoplastic, self-extinguishing UL 94-V0 stainless steel 1.4301
<b>Actuator</b>	type 2
<b>Switch type</b>	low coding
<b>Coding level</b>	IP 65 to IEC/EN 60529
<b>Degree of protection</b>	IP 65 to IEC/EN 60529
<b>Contact material</b>	silver
<b>Switching system</b>	slow action, positive break NC contact ⊕
<b>Switching elements</b>	1 NC/1 NO or 2 NC contacts, type Zb
<b>Connection</b>	cable H05VV-F 4 x 0.75 mm <sup>2</sup>
<b>Cable length</b>	2, 5 or 10 m
<b>B<sub>10d</sub> (10 % load)</b>	2 million
<b>T<sub>M</sub></b>	max. 20 years
<b>U<sub>imp</sub></b>	4 kV
<b>U<sub>i</sub></b>	250 V
<b>I<sub>the</sub></b>	T6: 6 A; T5: 3 A
<b>I<sub>e</sub>/U<sub>e</sub></b>	6 A/250 VAC; 0.25 A/230 VDC; 4 A/24 VDC
<b>Utilisation category</b>	AC-15, DC-13
<b>Max. fuse rating</b>	6 A gG/gN fuse
<b>Ambient temperature</b>	T6: -20 °C ... +65 °C, T5: -20 °C ... +75 °C, +90 °C with max. 3 A
<b>Mechanical life</b>	> 1 million operations
<b>Impact energy</b>	max. 4 J
<b>Ex marking</b>	⊕ II 2G Ex db IIC T6/T5 Gb, II 2D Ex tb IIIC T80 °C/T95 °C Db IECEx Ex db IIC T6/T5 Gb, Ex tb IIIC T80 °C/T95 °C Db
<b>Approvals</b>	PTB 03 ATEX 1070 X; IECEx PTB 06.0098X



-40 °C:

### Contact variants: switch travel/contacts

	Slow action	Material number
1 NC/1 NO contact	<b>Ex ST 14 10/1S</b> 	1045467
1 NC/1 NO contact with overlapping	<b>Ex ST 14 UE</b> 	on request
2 NC contacts	<b>Ex ST 14 20</b> 	1184170

### Type code

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

✓ in stock

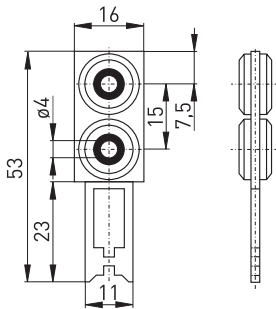
# Ex safety switches with separate actuators

## // Series Ex ST 14, actuators

### Note

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

### // Straight actuator ST 14-B1



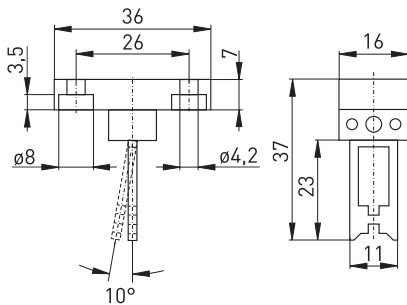
#### Features/Options

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

Actuator  
ST 14-B1

Material number  
1040840

### // Flexible actuator ST 14-B3



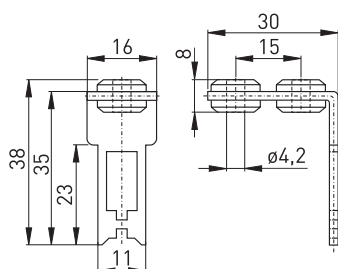
#### Features/Options

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

Actuator  
ST 14-B3

Material number  
1040842

### // Angled actuator ST 14-B5



#### Features/Options

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

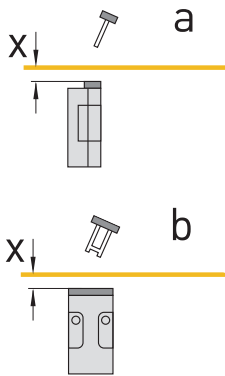
Actuator  
ST 14-B5

Material number  
1040841

## Ex safety switches with separate actuators

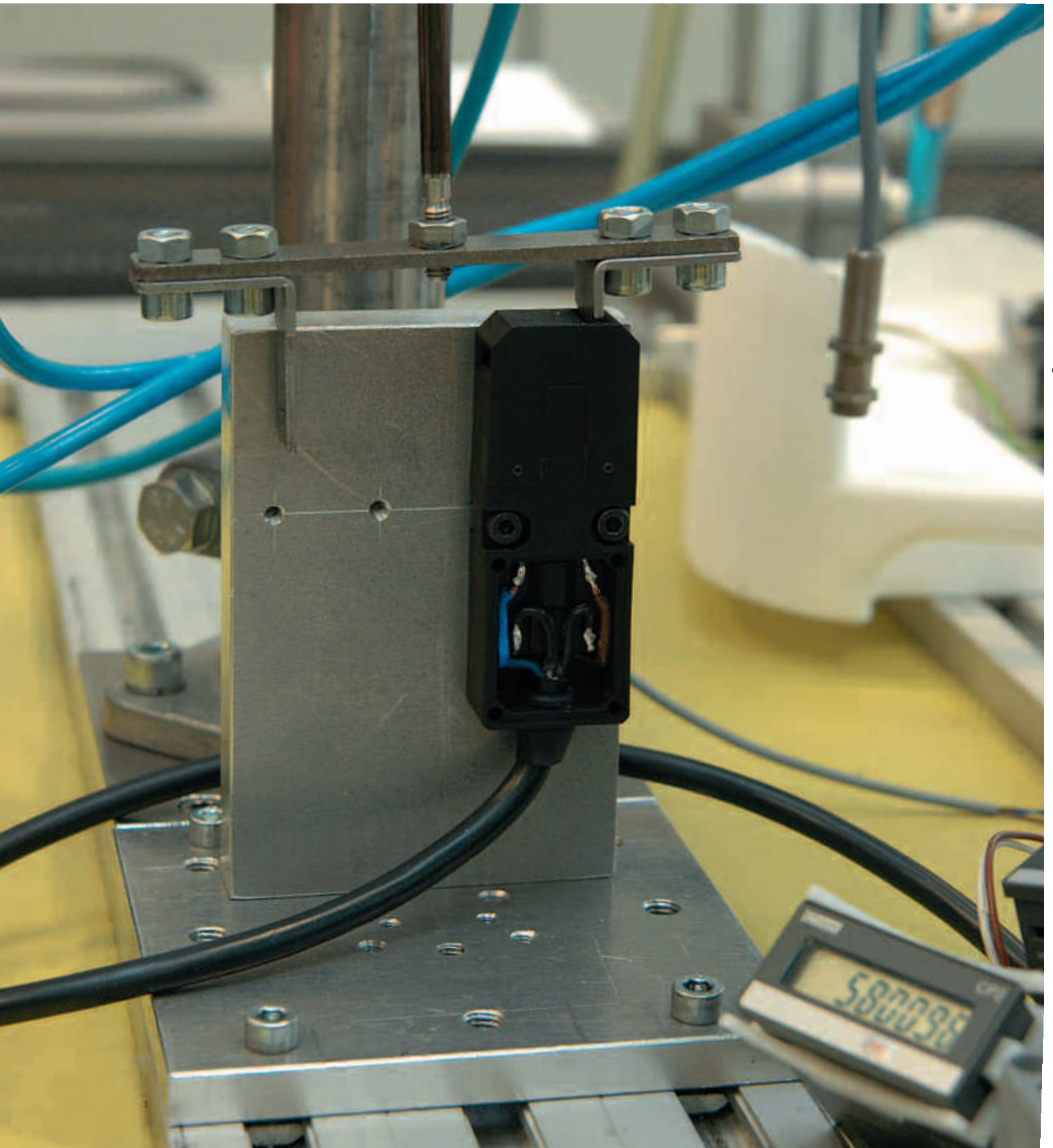
### // Series Ex ST 14, actuators

#### // Actuating radii



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

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



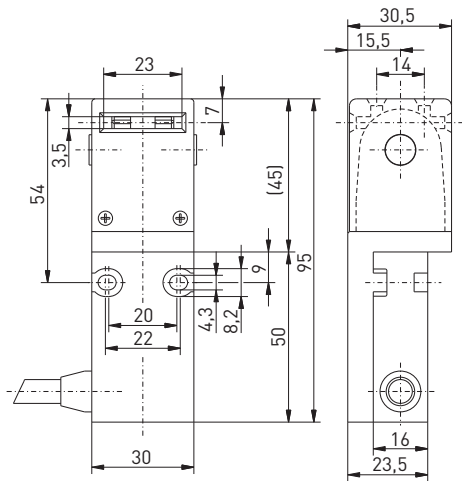
# Ex safety switches with separate actuators

## // Series Ex 14 AZ-95

### Features/Options

- Ex zone 1 and 21
- Thermoplastic enclosure
- Double insulated  $\square$
- Slow action available with contact overlapping
- Version with cable outlet on side
- With prewired cable, length 2 metres
- Special version only for dust Ex zone 22 available

// EX 14 AZ-95



### Technical data

<b>Standards</b>	EN 60947-5-1; EN 60079-0, EN 60079-1, EN 60079-31; EN ISO 13849-1; EN ISO 14119
<b>Enclosure</b>	glass-fibre reinforced, shock-proof thermoplastic, self-extinguishing UL 94-V0 stainless steel 1.4301
<b>Actuator</b>	type 2
<b>Switch type</b>	type 2
<b>Coding level</b>	low coding
<b>Degree of protection</b>	IP 65 to IEC/EN 60529
<b>Contact material</b>	silver
<b>Switching system</b>	slow action, positive break NC contact $\ominus$
<b>Switching elements</b>	1 NC/1 NO contact, type Zb
<b>Connection</b>	cable H05VV-F 4 x 0.75 mm <sup>2</sup>
<b>Cable length</b>	2 m
<b>B<sub>10d</sub> (10 % load)</b>	2 million
<b>T<sub>M</sub></b>	max. 20 years
<b>U<sub>imp</sub></b>	4 kV
<b>U<sub>i</sub></b>	250 V
<b>I<sub>the</sub></b>	T6: 6 A; T5: 3 A
<b>I<sub>e</sub>/U<sub>e</sub></b>	6 A/250 VAC; 0.25 A/230 VDC; 4 A/24 VDC
<b>Utilisation category</b>	AC-15, DC-13
<b>Max. fuse rating</b>	6 A gG/gN fuse
<b>Ambient temperature</b>	T6: -20 °C ... +65 °C, T5: -20 °C ... +75 °C, +90 °C with max. 3 A
<b>Mechanical life</b>	> 1 million operations
<b>Impact energy</b>	max. 4 J
<b>Ex marking</b>	$\ominus$ II 2G Ex db IIC T6/T5 Gb, II 2D Ex tb IIIC T80 °C/T95 °C Db
<b>Approvals</b>	PTB 03 ATEX 1070 X

### Contact variants: switch travel/contacts

	Slow action	Material number
1 NC/1 NO contact	Ex 14 AZ-95 10/1S-2m	1188713

### Type code

Ex 14 AZ-95-S 10/1S-2m

Series  
Ex certified component

Cable length 2 m  
Contact type 1NC/1NO  
Cable on side

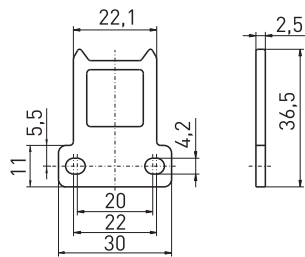
# Ex safety switches with separate actuators

## // Series Ex 14 AZ-95, actuators

### Note

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

### // Straight actuator AZ 95/97-B1



#### Features/Options

##### 95 AZ-B1

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

#### Actuator

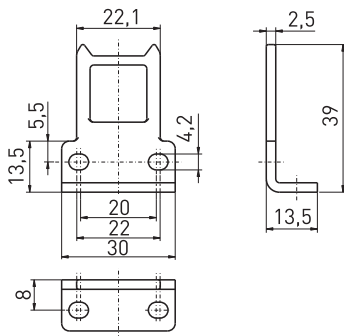
AZ 95/97-B1

#### Material number

1178645

95

### // Angled actuator AZ 95/97-B3



#### Features/Options

##### 95 AZ-B3

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

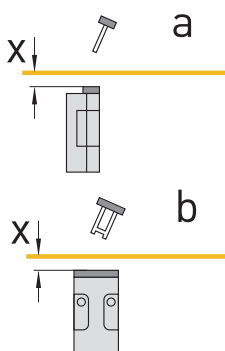
#### Actuator

AZ 95/97-B3

#### Material number

1178646

### // Actuating radii



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

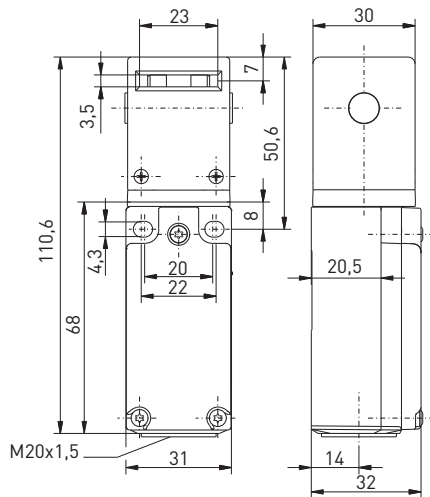
# Ex safety switches with separate actuators

## // Series Ex 97 AZ

### Features/Options

- Ex zone 1 and 21
- Thermoplastic enclosure, double insulated ☐
- Slow action ⊖, change-over contact with double break
- Wiring compartment
- Mounting details to EN 50 047
- Horizontal mounting slots
- Special version only for dust Ex zone 22 available

## // EX 97 AZ



## Technical data

<b>Standards</b>	EN 60947-5-1; EN 60079-0, EN 60079-1, EN 60079-7, EN 60079-31; EN ISO 13849-1; EN ISO 14119
<b>Enclosure</b>	glass-fibre reinforced, shock-proof thermoplastic, self-extinguishing UL 94-V0 stainless steel 1.4301
<b>Actuator</b>	type 2
<b>Switch type</b>	type 2
<b>Coding level</b>	low coding
<b>Switch insert</b>	Type 8080/1 ...
<b>Degree of protection</b>	-60°C: IP 66; -20°C: IP 67 to IEC/EN 60529
<b>Contact material</b>	silver, nickel-plated
<b>Switching system</b>	slow action, positive break NC contact ⊖
<b>Switching elements</b>	1 NC/1 No or 2 NC contacts, type Zb
<b>Connection</b>	screw connection terminals
<b>Cable section</b>	min. 0,75 mm <sup>2</sup> AWG 18, max. 1,5 mm <sup>2</sup> AWG 16 (incl. conductor ferrules)
<b>B<sub>10d</sub> (10 % load)</b>	2 million
<b>T<sub>M</sub></b>	max. 20 years
<b>U<sub>e</sub></b>	max. 500 VAC, 2Ö: max. 400 VAC, max. 250 VAC for unequal potential
<b>Utilisation category</b>	AC-15
<b>Ambient temperature</b>	-60 °C ... +55 °C max. 4 A, +60 °C max. 2 A
<b>Mechanical life</b>	> 1 million operations
<b>Impact energy</b>	max. 7 J
<b>Ex marking</b>	☐ II 2G Ex db eb IIC T6 Gb, II 2D Ex tb IIIC T80 °C Db IECEx Ex db eb IIC T6 Gb, Ex tb IIIC T80 °C Db
<b>Approvals</b>	BVS 16 ATEX E 052, IECEx BVS 16.0052 EAC, CE, cULUS

### Contact variants: switch travel/contacts

	Slow action	Material Number
1 NC/1 NO contact	<b>Ex ES 97 AZ-11</b> 	1360289
2 NC contacts	<b>Ex ES 97 AZ-02</b> 	1440509

### Type code

<b>Ex ES 97 AZ-02 -60°C</b>	
█	Cold-resistant down to -60 °C
█	Contact type 2 NC contacts (-11 1 NC/1 No contact)
█	Separate actuator AZ
█	Series
█	Schleichschaltung
█	Ex certified component



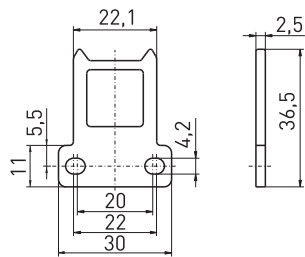
# Ex safety switches with separate actuators

## // Series Ex 97 AZ, actuators

### Note

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

### // Straight actuator AZ 95/97-B1



#### Features/Options

##### 95 AZ-B1

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

#### Actuator

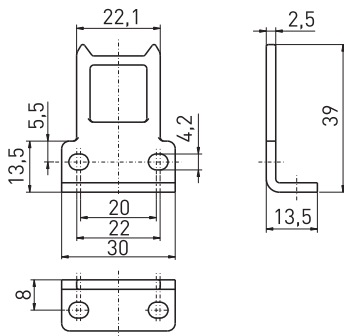
AZ 95/97-B1

#### Material number

1178645

97

### // Angled actuator AZ 95/97-B5



#### Features/Options

##### Especially suitable for hinged guards

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

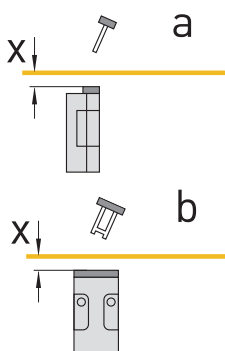
#### Actuator

AZ 95/97-B5

#### Material number

1178646

### // Actuating radii



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

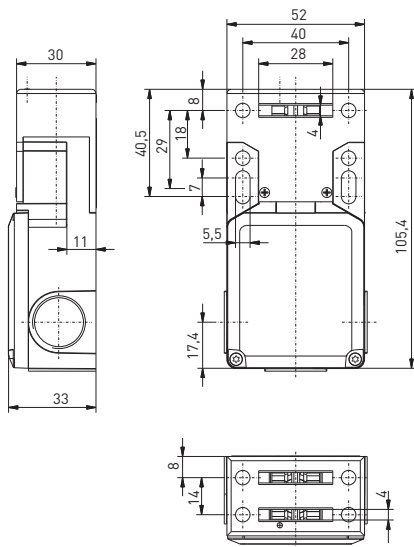
# Ex safety switches with separate actuators

## // Series Ex AZ 16

### Features/Options

- Ex zone 1 and 21
- Thermoplastic enclosure
- Multiple coding
- Slow action  $\ominus$ , change-over contact with double break
- With prewired cable, length 2 metres
- Special version only for dust Ex zone 22 available

## // EX AZ 16



## Technical data

<b>Standards</b>	EN 60947-5-1; EN 60079-0, EN 60079-1, EN 60079-31; EN ISO 13849-1; EN ISO 14119
<b>Enclosure</b>	glass-fibre reinforced, shock-proof thermoplastic, self-extinguishing UL 94-V0 stainless steel 1.4301
<b>Actuator</b>	type 2
<b>Switch type</b>	low coding
<b>Coding level</b>	IP 65 to IEC/EN 60529
<b>Degree of protection</b>	silver
<b>Contact material</b>	slow action, positive break NC contact $\ominus$
<b>Switching system</b>	2 NC/1 NO contacts, type Zb
<b>Switching elements</b>	screw connection terminals
<b>Connection</b>	2 million
<b>B<sub>10d</sub> (10 % load)</b>	max. 20 years
<b>T<sub>M</sub></b>	4 kV
<b>U<sub>imp</sub></b>	250 V
<b>U<sub>i</sub></b>	3 A
<b>I<sub>the</sub></b>	3 A/250 VAC; 0.25 A/230 VDC
<b>I<sub>e</sub>/U<sub>e</sub></b>	AC-15, DC-13
<b>Utilisation category</b>	3 A gG/gN fuse
<b>Max. fuse rating</b>	9.5 mm
<b>Positive break travel</b>	T6: -20 °C ... +55 °C; T5: -20 °C ... +70 °C
<b>Ambient temperature</b>	> 1 million operations
<b>Mechanical life</b>	max. 7 J
<b>Impact energy</b>	$\ominus$ II 2G Ex de IIC T6/T5 Gb, II 2D Ex tb IIIC T80 °C/T95 °C Db
<b>Ex marking</b>	IECEx Ex de IIC T6/T5 Gb, Ex tb IIIC T80 °C/T95 °C Db
<b>Approvals</b>	PTB 13 ATEX 1008 X, IECEx PTB 13.0014X EAC

### Contact variants: switch travel/contacts

	Slow action	Material Number
2 NC/1 NO contact	Ex AZ 16 2Ö/1S	1210562

### Type code

Type code	Ex AZ 16 2Ö/1S-30N-2m-3D
	Equipment Categ. 3D, dust Ex zone 22
	Cable length 2 m, (5 m, 10 m)
	30 N latching force: 1210566 (5N latching force: 1210564, blank ejection force)
	2 NC/1 NO contact
	Series
	Separate actuator AZ
	Ex certified component

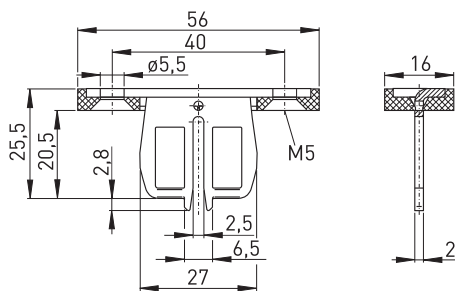
# Ex safety switches with separate actuators

## // Series Ex AZ 16, actuators

### Note

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

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



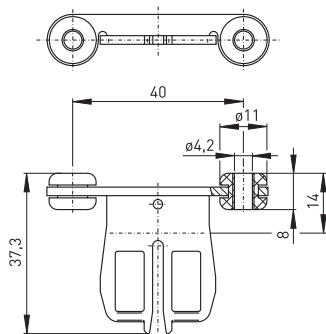
#### Features/Options

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

Actuator  
AZ 15/16-B1

Material number  
1172495

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



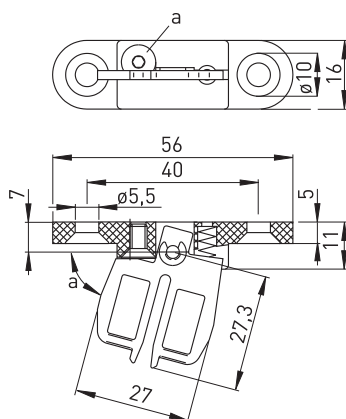
#### Features/Options

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

Actuator  
AZ 15/16-B1-2245

Material number  
1176700

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



#### Features/Options

- Actuating radius on hinged guards  
b = 45 mm
- Axial misalignment = 11 mm

Actuator  
AZ 15/16-B2

Material number  
1172616

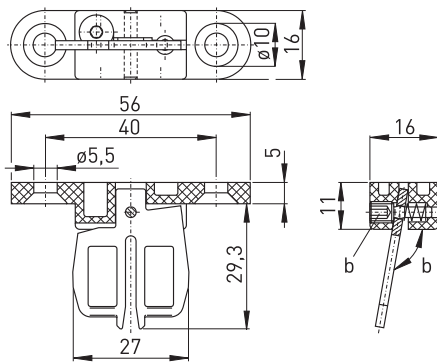
# Ex safety switches with separate actuators

## // Series Ex AZ 16, actuators

### Note

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

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



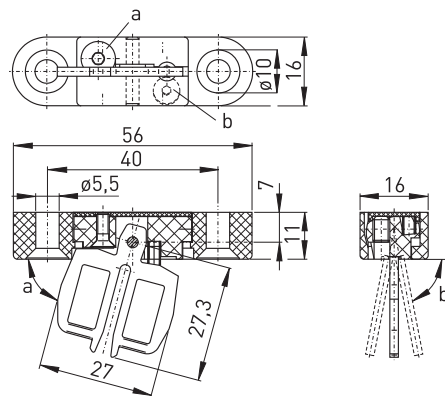
#### Features/Options

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

Actuator  
 AZ 15/16-B3

Material number  
 1172617

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



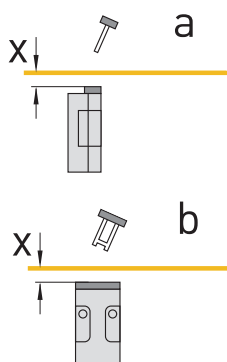
#### Features/Options

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

Actuator  
 AZ 15/16-B6

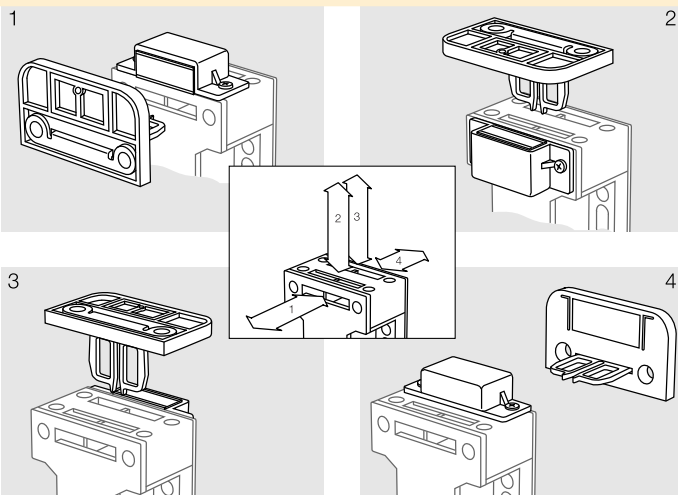
Material number  
 1175024

### // Actuating radii



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

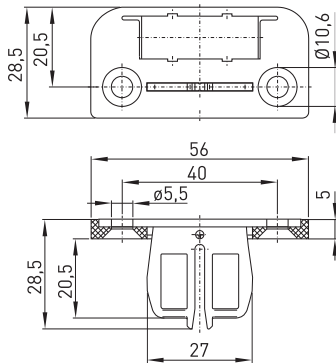
## // Actuator with magnetic latch



### Features/Options

- For play-free interlocking of light guards
- The magnetic latch can easily be fitted in any actuating plane
- Suitable for retrofitting

## // Actuator with magnetic latch AZ 15/16-B1-1747



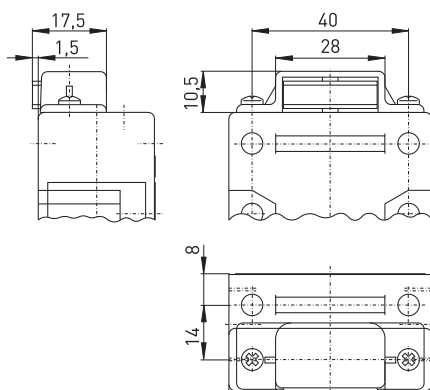
### Features/Options

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

Actuator  
AZ 15/16-B1-1747

Material number  
1172954

## // Magnetic latch



### Features/Options

- Holding force: 30 N

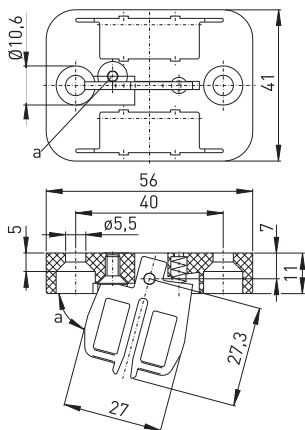
# Ex safety switches with separate actuators

## // Series Ex AZ 16, actuators

### Note

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

### // Flexible actuator with magnetic latch AZ 15/16-B2-1747



#### Features/Options

- Actuating radius on hinged guards  
 $b = 45 \text{ mm}$ , axial misalignment  $x = 11 \text{ mm}$

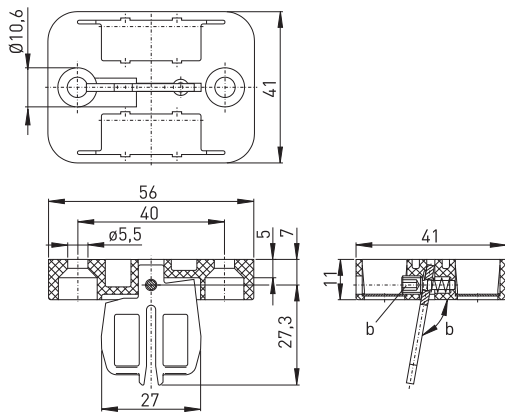
#### Actuator

AZ 15/16-B2-1747

#### Material number

1172958

### // Flexible actuator with magnetic latch AZ 15/16-B3-1747



#### Features/Options

- Actuating radius on hinged guards  
 $a = 32 \text{ mm}$ , axial misalignment  $x = 11 \text{ mm}$

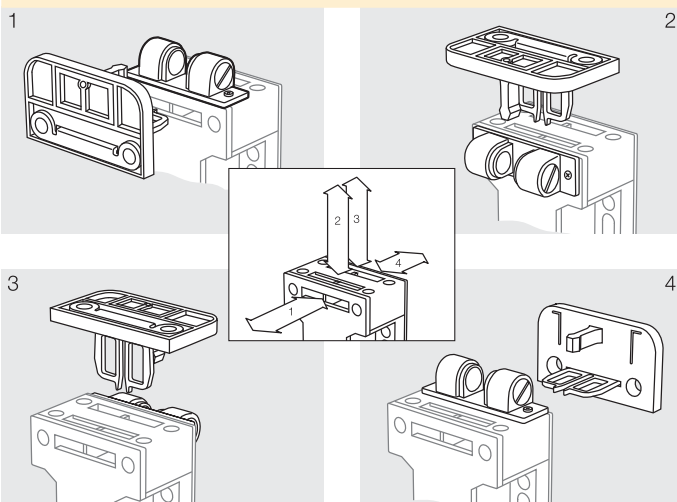
#### Actuator

AZ 15/16-B3-1747

#### Material number

1172960

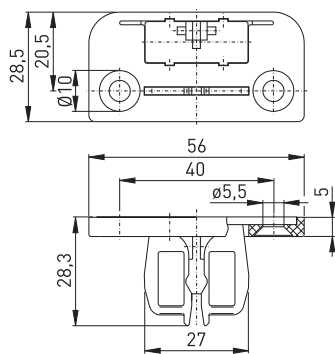
### // Actuator with ball latch



#### Features/Options

- For interlocking of light to medium-weight guards

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



### Features/Options

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

### Actuator

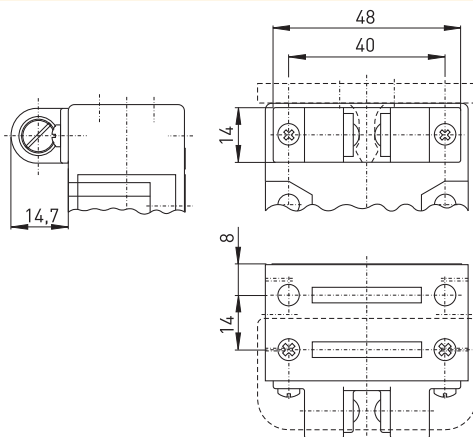
AZ 15/16-B1-2053

### Material number

1172956

103

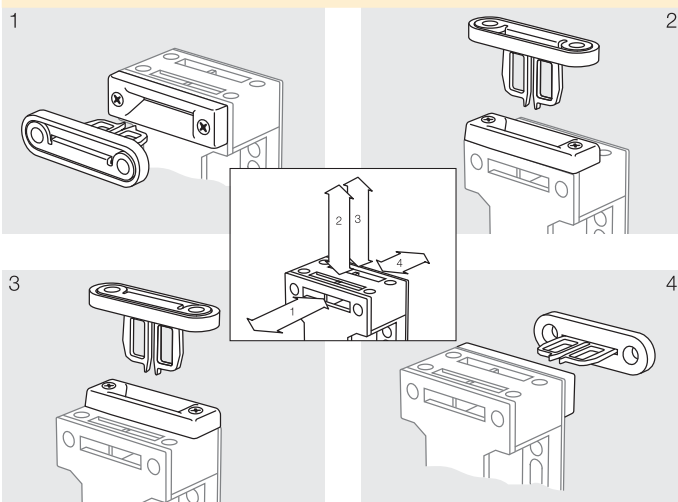
## // Ball latch



### Features/Options

- Latching force adjustable up to 100 N

## // Actuator with centering guide



### Features/Options

- For interlocking of light, unguided guards

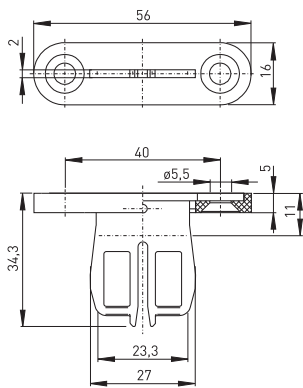
# Ex safety switches with separate actuators

## // Series Ex AZ 16, actuators/accessories

### Note

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

### // Actuator with centering guide AZ 15/16-B1-2177



#### Features/Options

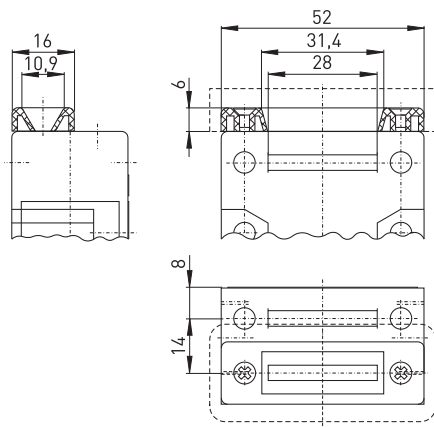
- Actuating radius on hinged guards  
 a = 150 mm and b = 150 mm
- Axial misalignment x = 11 mm

Actuator  
 AZ 15/16-B1-2177

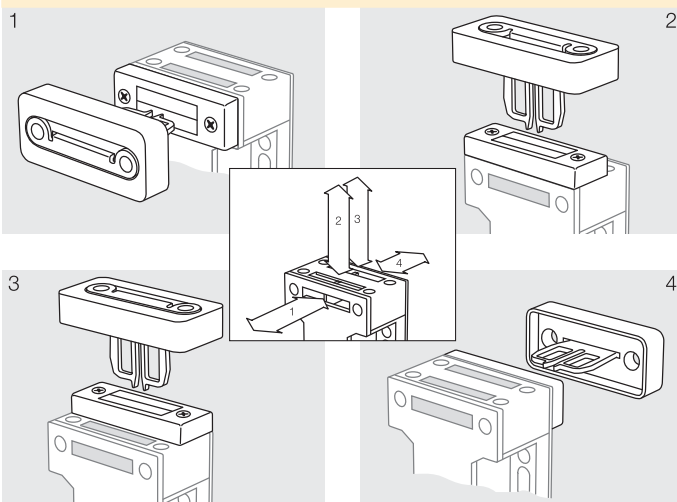
Material number  
 1172957

104

### // Centering guide



### // Actuator with slot lip-seal

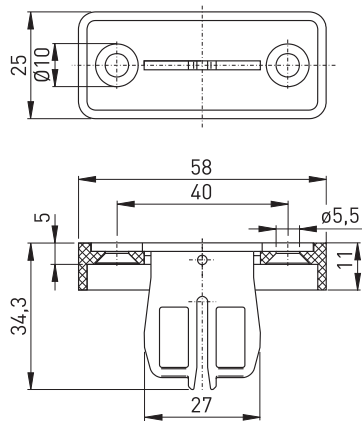


#### Features/Options

- For protection against the ingress of coarse dirt



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



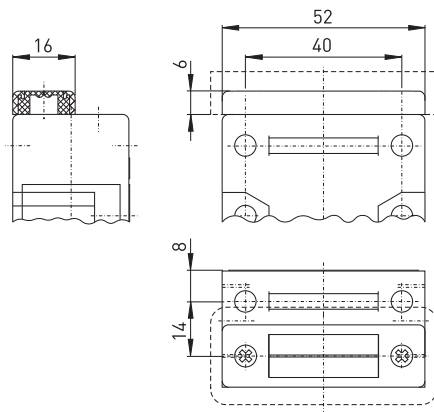
### Features/Options

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

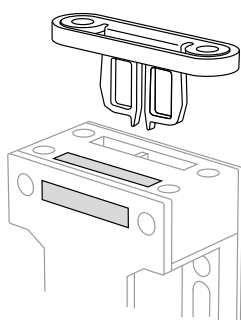
Actuator  
AZ 15/16-B1-2024

Material number  
1172955

## // Slot lip-seal



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



### Features/Options

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

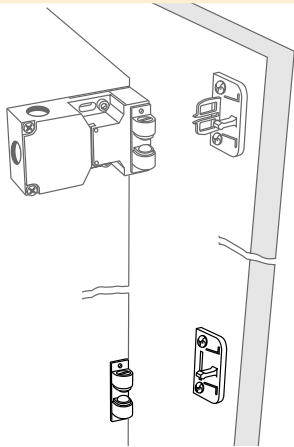
Accessories  
AZ 15/16-1476

Material number  
1172961

## Ex safety switches with separate actuators

### // Series Ex AZ 16, accessories

#### // Ball latch 2053-2



##### Features/Options

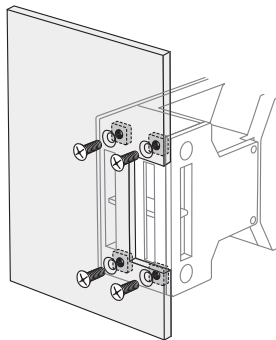
- Additional ball latch for stable latching of light to medium-weight guards
- For separate mounting on the guard
- Latching force adjustable up to 100 N

##### Accessories

Ball latch 2053-2

Material number  
on request

#### // Front mounting AZ 16-1762



##### Features/Options

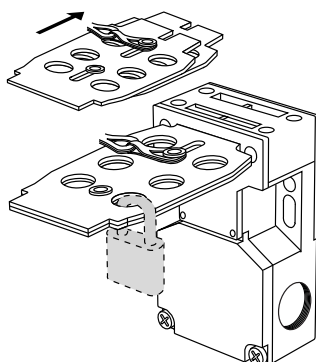
- Suitable for actuators B1, B2, B3 and B6
- Equipped with square nuts for front mounting of switch
- Ordering suffix: -1762
- no retrofitting

##### Variant

Front mounting AZ 16-1762

Material number  
on request

#### // Lockout tag SZ 16/335



##### Features/Options

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

##### Accessories

SZ 16/335

Material number  
1170535

## Ex safety switches with separate actuators

// Series Ex AZ 16, accessories

### // Tamperproof screws



#### Features/Options

- To mount the actuator
- Higher protection against tampering with interlock
- Protects against unauthorised removal of actuator
- Available in various lengths
- Countersunk-head screws
- Ordering unit: 2 pieces

#### Accessories

Tamperproof screws M5 x 12  
Tamperproof screws M5 x 16  
Tamperproof screws M5 x 20

#### Material number

1184270  
1184271  
1184272

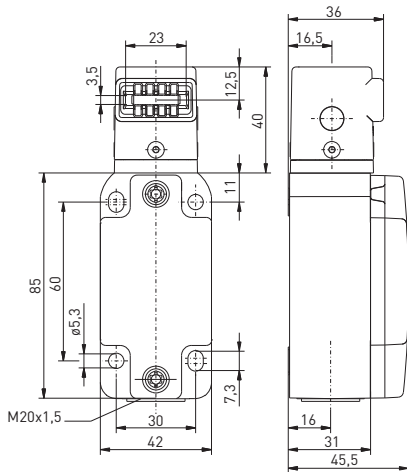
# Ex safety switches with separate actuators

## // Series Ex 99 ST

### Features/Options

- Ex zone 1 and 21
- Metal enclosure
- Mounting details to EN 50 041
- Cold-resistance (Storage Ex protection down to -60 °C, mechanical function down to -50 °C)
- Wiring compartment
- Actuator head can be repositioned in factory in 4 x 90° steps
- Special version only for dust Ex zone 22 available

## // EX 99 ST



## Technical data

<b>Standards</b>	EN 60947-5-1; EN 60079-0, EN 60079-1, EN 60079-7, EN 60079-31; EN ISO 13849-1; EN ISO 14119
<b>Enclosure</b>	glass-fibre reinforced, shock-proof thermo-plastic, self-extinguishing UL 94-V0
<b>Cover</b>	glass-fibre reinforced, shock-proof thermoset material, self-extinguishing UL 94-V0
<b>Actuator</b>	stainless steel 1.4301
<b>Switch type</b>	type 2
<b>Coding level</b>	low coding
<b>Switch insert</b>	Type 8080/1 ...
<b>Degree of protection</b>	IP 66 (EN 60079-0 + IEC/EN 60529); IP 67, IP 69 (IEC/EN 60529); IP 69 K (ISO 20653)
<b>Contact material</b>	silver, nickel-plated
<b>Switching system</b>	slow action, positive break NC contact ⊖
<b>Switching elements</b>	1 NC/1 NO contact or 2 NC contacts, type Zb
<b>Connection</b>	screw connection terminals
<b>Cable section</b>	min. 0,75 mm <sup>2</sup> AWG 18, max. 1,5 mm <sup>2</sup> AWG 16 (incl. conductor ferrules)
<b>B<sub>10d</sub> (10 % load)</b>	2 million
<b>T<sub>M</sub></b>	max. 20 years
<b>U<sub>e</sub></b>	max. 500 VAC, 2Ö: max. 400 VAC, max. 250 VAC for unequal potential
<b>Utilisation category</b>	AC-15
<b>Ambient temperature</b>	-60 °C ... +55 °C max. 4 A, +60 °C max. 2 A; Cold-resistance (Storage Ex protection down to -60 °C, mechanical function down to -50 °C)
<b>Mechanical life</b>	> 1 million operations
<b>Impact energy</b>	max. 7 J down to -40 °C max. 4 J down to -60 °C
<b>Ex marking</b>	⊕ II 2G Ex db eb IIC T6 Gb, II 2D Ex tb IIIC T80 °C Db IECEx Ex db eb IIC T6 Gb, Ex tb IIIC T80 °C Db
<b>Approvals</b>	BVS 16 ATEX E113 X, IECEx BVS 16.0076X EAC, IECEx, cSPUS

### Contact variants: switch travel/contacts

	Slow action	Material Number
1 NC/1 NO contact	<b>Ex ES 99 ST-11</b> 	1354452
2 NC contacts	<b>Ex ES 99 ST-02</b> 	1442235

### Type code

**Ex ES 99 ST-11 -60°C X**

Cold-resistant down to -60 °C  
 Contact type 1 NC/1 NO, (-02: 2 NC)  
 Separate actuator ST  
 Series  
 Slow action  
 Ex certified component

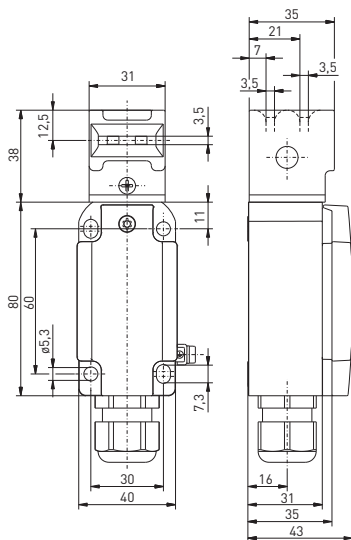
# Ex safety switches with separate actuators

## // Series Ex 98 ST

### Features/Options

- Ex zone 1 and 21
- Metal enclosure
- Mounting details to EN 50 041
- Wiring compartment
- Actuator head can be repositioned in factory in 4 x 90° steps
- Special version only for dust Ex zone 22 available

## // EX 98 ST



## Technical data

<b>Standards</b>	EN 60947-5-1; EN 60079-0, EN 60079-1, EN 60079-7, EN 60079-31; EN ISO 13849-1; EN ISO 14119
<b>Enclosure</b>	corrosion-resistant aluminium, powder-coated, similar to RAL 7016
<b>Cover</b>	stainless steel 1.4401, powder-coated, similar to RAL 1003
<b>Actuator</b>	stainless steel 1.4301
<b>Switch type</b>	type 2
<b>Coding level</b>	low coding
<b>Switch insert</b>	Ex 95
<b>Degree of protection</b>	IP 66 to IEC/EN 60529
<b>Contact material</b>	silver
<b>Switching system</b>	slow action, positive break NC contact ⊖
<b>Switching elements</b>	1 NC/1 NO contact or 2 NC contacts, type Zb
<b>Connection</b>	screw connection terminals
<b>Cable section</b>	max. 1.5 mm <sup>2</sup> (incl. conductor ferrules)
<b>B<sub>10d</sub> (10 % load)</b>	2 million
<b>T<sub>M</sub></b>	max. 20 years
<b>U<sub>imp</sub></b>	4 kV
<b>U<sub>i</sub></b>	250 V
<b>I<sub>the</sub></b>	6 A
<b>I<sub>e</sub>/U<sub>e</sub></b>	6 A/250 VAC; 0.25 A/230 VDC
<b>Utilisation category</b>	AC-15, DC-13
<b>Max. fuse rating</b>	6 A gG/gN fuse
<b>Positive break travel</b>	8.3 mm
<b>Ambient temperature</b>	T6: -20 °C ... +40 °C; T5: -20 °C ... +60 °C
<b>Mechanical life</b>	> 1 million operations
<b>Impact energy</b>	max. 7 J
<b>Ex marking</b>	⊕ II 2G Ex de IIC T6/T5 Gb, II 2D Ex tD A21 IP67 T80°C/T95°C IECEx Ex de IIC T6/T5 Gb, Ex tb IIIC T80 °C/T95 °C Db
<b>Approvals</b>	DMT 01 ATEX E 178, IECEx BVS 07.0014

109

### Contact variants: switch travel/contacts

	Slow action	Material Number
1 NC/1 NO contact	<b>Ex ES 98 ST-11</b> 	1255734
2 NC contacts	<b>Ex ES 98 ST-02</b> 	1304203

### Type code

Ex ES 98 ST-11

Ex ES 98 ST-11  
 Contact type 1 NC/1 NO,  
 [-02: 2 NC]  
 Separate actuator ST  
 Series  
 Slow action  
 Ex certified component

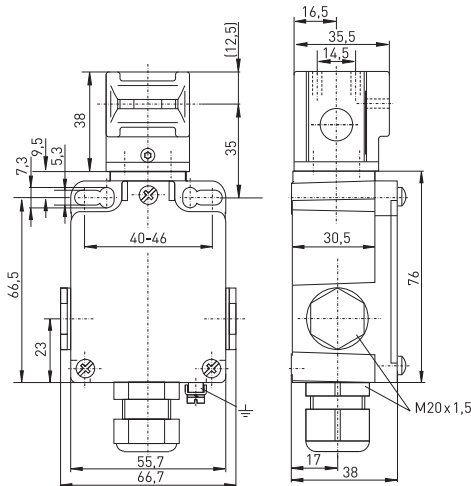
# Ex safety switches with separate actuators

## // Series Ex 355 AZ

### Features/Options

- Ex zone 1 and 21
- Metal enclosure
- Mounting details to EN 50 041
- Wiring compartment
- Actuator head can be repositioned in factory in 4 x 90° steps
- Special version only for dust Ex zone 22 available

## // EX 355 AZ



## Technical data

<b>Standards</b>	EN 60947-5-1; EN 60079-0, EN 60079-1, EN 60079-7, EN 60079-31; EN ISO 13849-1; EN ISO 14119
<b>Enclosure</b>	zinc die casting, enamel finish
<b>Actuator</b>	stainless steel 1.4301
<b>Switch type</b>	type 2
<b>Coding level</b>	low coding
<b>Switch insert</b>	Ex 95
<b>Degree of protection</b>	IP 67 to IEC/EN 60529
<b>Contact material</b>	silver
<b>Switching system</b>	slow action, positive break NC contact ⊕
<b>Switching elements</b>	1 NC/1 NO contact or 2 NC contacts, type Zb
<b>Connection</b>	screw connection terminals
<b>Cable section</b>	max. 1.5 mm <sup>2</sup> (incl. conductor ferrules)
<b>B<sub>10d</sub> (10 % load)</b>	2 million
<b>T<sub>M</sub></b>	max. 20 years
<b>U<sub>imp</sub></b>	4 kV
<b>U<sub>i</sub></b>	250 V
<b>I<sub>the</sub></b>	6 A
<b>I<sub>e</sub>/U<sub>e</sub></b>	6 A/250 VAC; 0.25 A/230 VDC
<b>Utilisation category</b>	AC-15, DC-13
<b>Max. fuse rating</b>	6 A gG/gN fuse
<b>Positive break travel</b>	8.3 mm
<b>Ambient temperature</b>	-20 °C ... +60 °C
<b>Mechanical life</b>	> 1 million operations
<b>Impact energy</b>	max. 7 J
<b>Ex marking</b>	⊕ II 2G Ex db e IIC T6/T5 Gb, II 2D Ex tb IIIC T80 °C/T95 °C Db IECEx Ex db e IIC T6/T5 Gb, Ex tb IIIC T80 °C/T95 °C Db
<b>Approvals</b>	BVS 04 ATEX E 126, IECEx BVS 07.0013

### Contact variants: switch travel/contacts

	Slow action	Material Number
1 NC/1 NO contact	<b>Ex 355 AZ 1Ö/1S</b> 	1179075
2 NC contacts	<b>Ex 355 AZ 2Ö</b> 	1180261

### Type code

Ex 355 AZ 1Ö/1S-3D

Equipment Categ. 3D,  
dust Ex zone 22  
Contact type 1Ö/1S, (2Ö)  
Separate actuator AZ  
Series  
Ex certified component

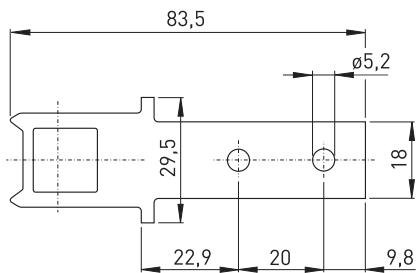
## Ex safety switches with separate actuators

// Series Ex 98 ST , Ex 99 ST and Ex 355 AZ, actuators

### Note

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

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



#### Features/Options

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

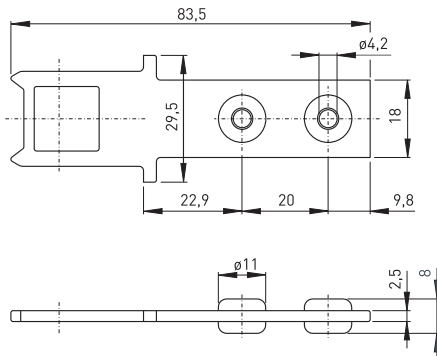
#### Actuator

AZ 335/355-B1

#### Material number

1170536

### // Straight actuator AZ 335/355-B1-2245



#### Features/Options

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

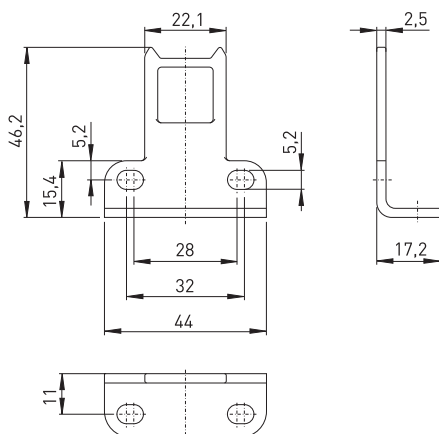
#### Actuator

AZ 335/355-B1-2245

#### Material number

1170537

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



#### Features/Options

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

#### Actuator

AZ 335/355-B5

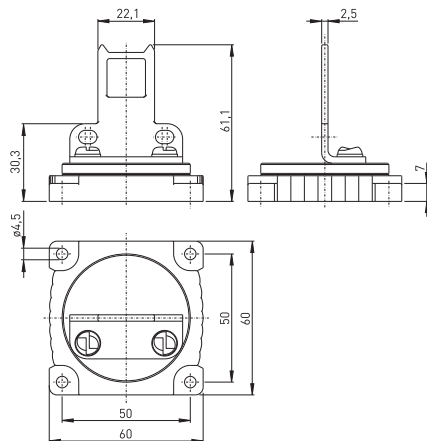
#### Material number

1170538

## Ex safety switches with separate actuators

// Series Ex 98 ST , Ex 99 ST and Ex 355 AZ, actuators

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



#### Features/Options

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

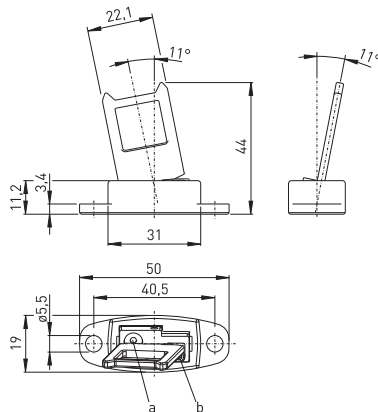
#### Actuator

AZ 335/355-B5-Flex

#### Material number

1182126

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



#### Features/Options

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

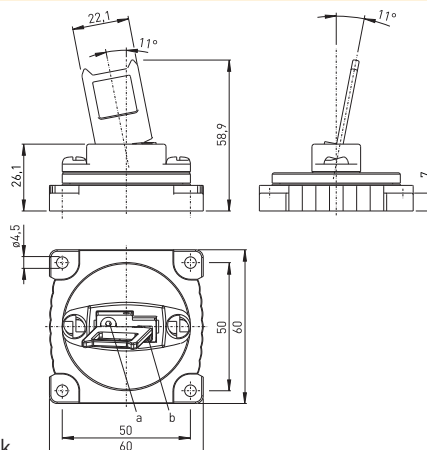
#### Actuator

AZ 335/355-B6

#### Material number

1170540

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



#### Features/Options

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

#### Actuator

AZ 335/355-B6-Flex

#### Material number

1182698

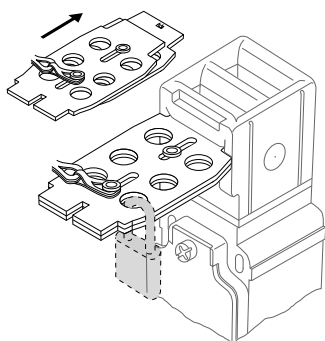
✓ in stock



## Ex safety switches with separate actuators

// Series Ex 98 ST , Ex 99 ST and Ex 355 AZ, accessories

### // Lockout tag SZ 16/335



#### Features/Options

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

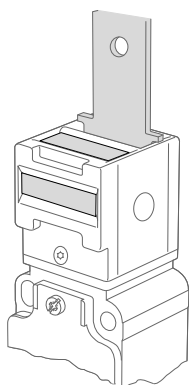
#### Accessories

SZ 16/335

#### Material number

1170535

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



#### Features/Options

- For protection against the ingress of coarse dirt
- Quantity required: 3 per switch, ordering unit: 10 pieces

#### Accessories

AZ 335/355-1990

#### Material number

1172965

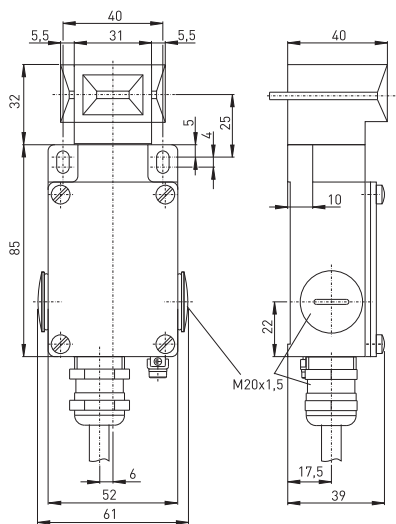
# Ex safety switches with separate actuators

## // Series Ex ST 61

### Features/Options

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

## // EX ST 61



## Technical data

<b>Standards</b>	EN 60947-5-1; EN 60079-0, EN 60079-1, EN 60079-31; EN ISO 13849-1; EN ISO 14119
<b>Enclosure</b>	aluminium die-cast, powder-coated
<b>Actuator</b>	stainless steel 1.4301
<b>Switch type</b>	type 2
<b>Coding level</b>	low coding
<b>Switch insert</b>	Ex 14
<b>Degree of protection</b>	IP 65 to IEC/EN 60529
<b>Contact material</b>	silver
<b>Switching system</b>	slow action, positive break NC contacts $\ominus$
<b>Switching elements</b>	1 NC/1 NO contact, type Zb
<b>Connection</b>	cable H05VV-F, 4 x 0.75 mm <sup>2</sup>
<b>Cable length</b>	3 m
<b>B<sub>10d</sub> (10 % load)</b>	2 million
<b>T<sub>M</sub></b>	max. 20 years
<b>U<sub>imp</sub></b>	4 kV
<b>U<sub>i</sub></b>	250 V
<b>I<sub>the</sub></b>	T6: 6 A; T5: 3 A
<b>I<sub>e</sub>/U<sub>e</sub></b>	6 A/250 VAC; 0.25 A/230 VDC
<b>Utilisation category</b>	AC-15, DC-13
<b>Max. fuse rating</b>	6 A gG/gN fuse
<b>Positive break travel</b>	12 mm
<b>Ambient temperature</b>	T6: -20 °C ... +65 °C, T5: -20 °C ... +75 °C, +90 °C with max. 3 A
<b>Mechanical life</b>	> 1 million operations
<b>Impact energy</b>	max. 7 J
<b>Ex marking</b>	$\ominus$ II 2G Ex db IIC T6/T5 Gb, II 2D Ex tb IIIC T80 °C/T95 °C Db IECEx Ex db IIC T6/T5 Gb, Ex tb IIIC T80 °C/T95 °C Db
<b>Approvals</b>	PTB 03 ATEX 1070 X*, IECEx PTB 06.0098X*



\*referring to the switch insert

### Contact variants: switch travel/contacts

	Slow action	Material Number
1 NC/1 NO contact	Ex ST 61 1Ö/1S	1047851

### Type code

<b>Ex ST 61</b>	<b>1Ö/1S-3m-3D</b>
Equipment Categ. 3D, dust Ex zone 22	Cable length 3 m
Contact type 1Ö/1S	Series
Safety door switch	Ex certified component

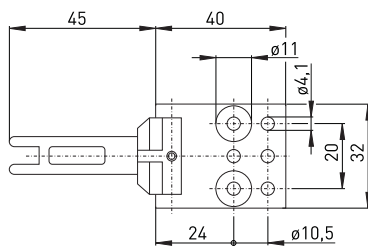
# Ex safety switches with separate actuators

## // Series Ex ST 61, actuators

### Note

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

### // Straight actuator ST 61-B1



#### Features/Options

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

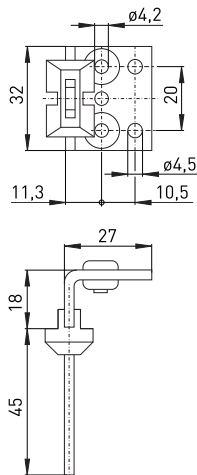
#### Accessories

ST 61-B1

#### Material number

1032911

### // Angled actuator ST 61-B5



#### Features/Options

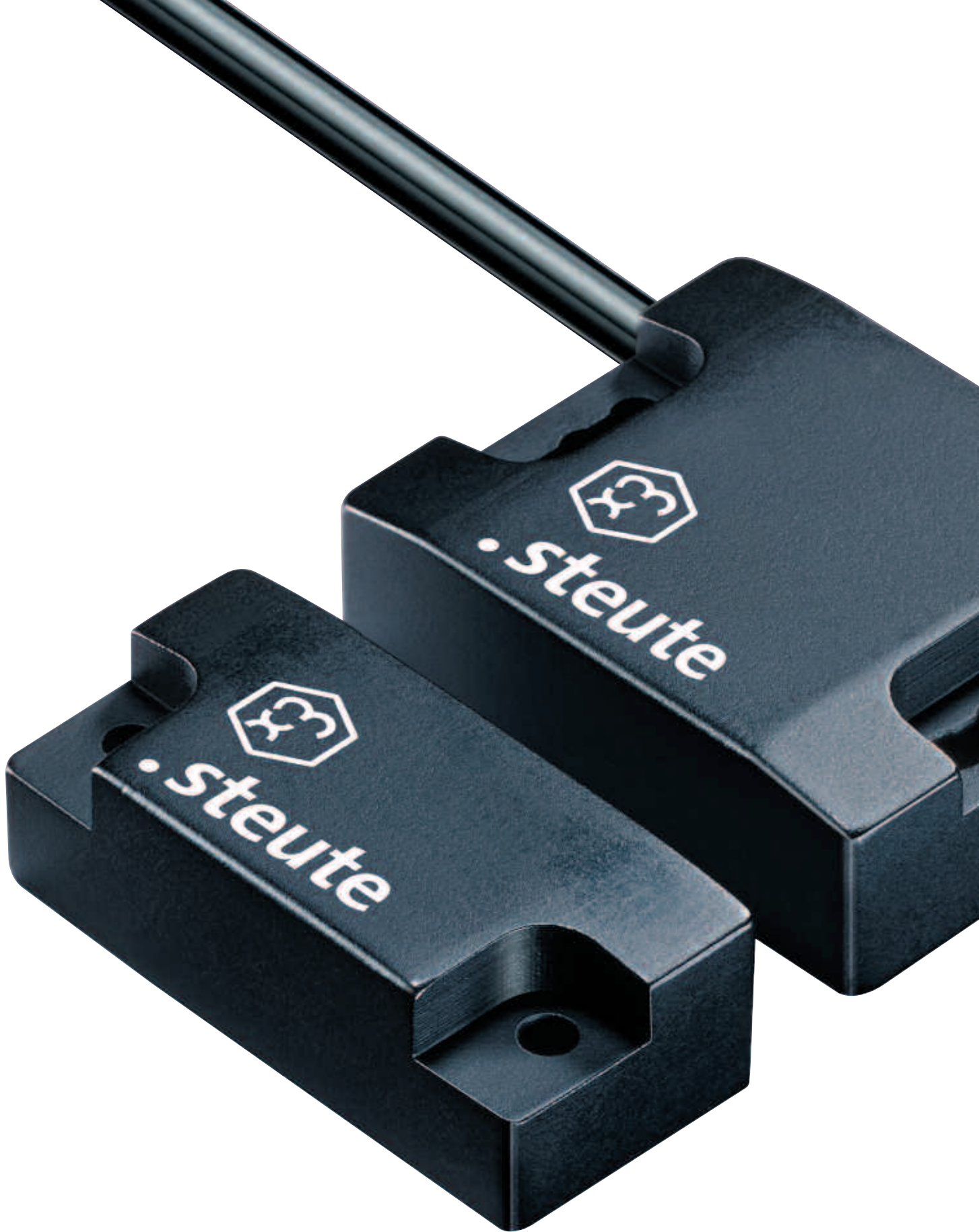
- Rubber mounting damps vibrations on guard devices
- Especially suitable for hinged guards
- Actuating radius on hinged guards
  - a = 140 mm and b = 1000 mm
- x = 15 mm

#### Accessories

ST 61-B5

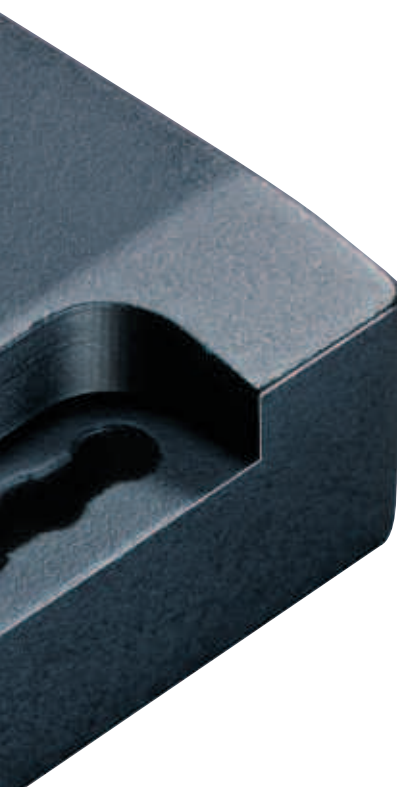
#### Material number

1032913



  
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Steute



## Ex safety sensors

### Cylindrical form

// Series Ex RC Si M30

from page 120

### Rectangular form

// Series Ex RC Si 56

from page 122

// Series Ex HS Si 4

from page 124

### Safety relay module

// Series SRM 21 RT2

from page 126

// Series SRM 21 Multi

from page 128



# Ex safety sensors

## Range of application

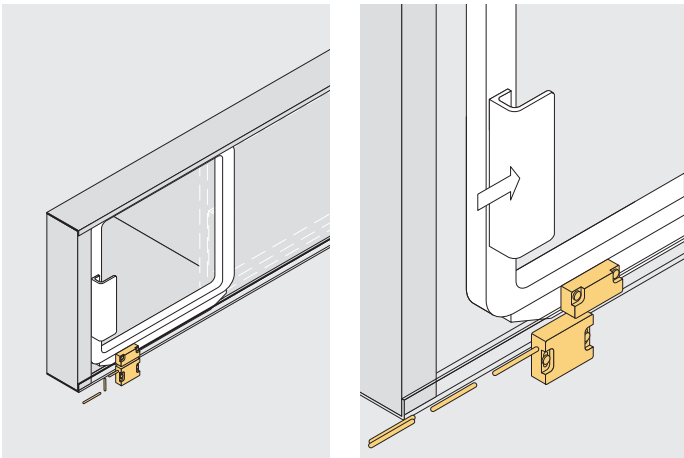
The Ex safety sensors are suitable for monitoring the position of sliding, hinged and removable protective doors. They can only be used for safety duties to DIN VDE 0660-209 in combination with a safety guard monitor for protection up to safety level PL »e« per EN ISO 13849-1 or up to SILCL 3 per EN 62061.

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

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

## Application

### On sliding doors



## Design and operating principle

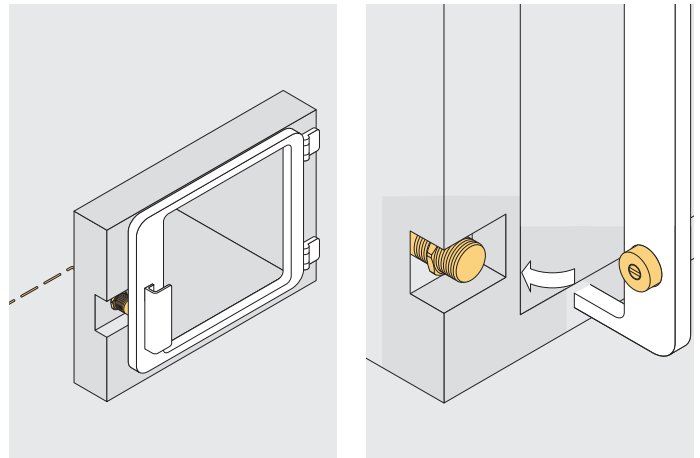
These devices comprise a multi-channel safety sensor and an actuating magnet. The Ex safety sensors are actuated by a coded actuator without any mechanical contact. The devices can be selected with one NC and one NO contact or with two NC contacts. All described Ex safety sensors are supplied with a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

The Ex safety sensors are protected to degree of protection IP 67.

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

All Ex safety sensors shown in this chapter bear the CE mark according to the Machinery Directive 2006/42/EC and according to ATEX 2014/34/EU. The Ex safety sensors per equipment category 3G/D bear the CE mark without the number of the notified body and have received a CE declaration of manufacturer conformity.

### On hinged doors



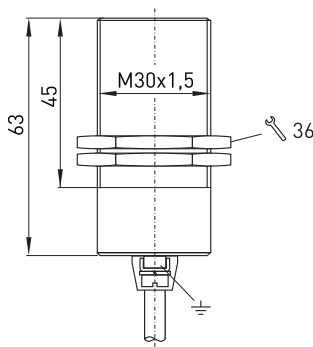
# Ex safety sensors, cylindrical form

## // Series Ex RC Si M30




### Features/Options

- Ex zone 1 and 21
- Metal enclosure
- Available in stainless steel enclosure
- Reed contacts, coded
- Actuation from front
- Switching distance up to 8 mm
- Special version only for gas Ex zone 2 and dust Ex zone 22 available

## // EX RC SI M30

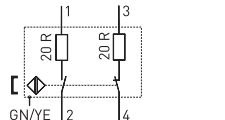
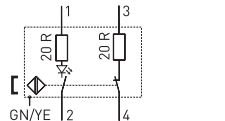
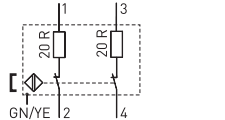
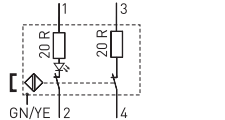


### Technical data

<b>Standards</b>	EN 60947-5-3; EN ISO 14119; EN ISO 13849-1; IEC/EN 60079-0; IEC/EN 60079-18
<b>Enclosure</b>	Aluminium-brass, nickered or stainless steel 1.4571
<b>Actuator</b>	Ex MC 30; Ex MC 30-NIRO
<b>Tightening torque</b>	Mounting nut max 75 Nm
<b>Sensor type</b>	type 4 interlocking device
<b>Coding level</b>	low coding
<b>Switching system</b>	reed contacts, 1 NC/1 NO or 2 NC contacts
<b>Degree of protection</b>	IP 67 or IP 69 to IEC/EN 60529, IP 69K to ISO 20653
<b>Connection</b>	cable, 5 x H05 VV-F 5G, 0.5 mm <sup>2</sup>
<b>Safety-relevant data*</b>	
EN ISO 13849-1	PL e , category 4
B <sub>10d</sub>	20 million
T <sub>M</sub>	max. 20 years
MTTF <sub>d</sub>	>100 years
DC/DC <sub>avg</sub>	>99 %
<b>Safety requirements n<sub>op</sub></b>	
h <sub>op</sub>	8 h/day
d <sub>op</sub>	220 days/year
t <sub>zyklus</sub>	20 s/cycle
I <sub>e</sub> /U <sub>e</sub>	max. 125 mA, with LED: 20 mA/24 VDC
<b>Switching voltage</b>	max. 30 VDC
<b>Voltage drop at I<sub>e</sub></b>	2,5 V, with LED: 3 V
<b>Switching frequency</b>	5 Hz
<b>Limit distances</b>	s <sub>n</sub> 10 mm, s <sub>ao</sub> 8 mm, s <sub>ar</sub> 30 mm
<b>Repeatability</b>	< 0.5 mm
<b>Ambient temperature</b>	-20 °C ... +70 °C
<b>Ex marking</b>	Ⓔ II 2G Ex mb IIC T6 Gb, II 2D Ex mb IIIC T80°C Db IP67 IECEx Ex mb IIC T6 Gb, Ex mb IIIC T80°C Db IP67
<b>Approvals</b>	PTB 05 ATEX 2024 X; IECEx PTB 07.0008 X   

\* is only valid in combination with a safety module

### Contact variants: switch travel/contacts

	without LED	with LED
1 NC/1 NO contact	<b>Ex RC Si M30 1Ö/1S</b> 	<b>Ex RCSI M30 1Ö/1S-LED</b> 
2 NC contacts	<b>Ex RC Si M30 2Ö</b> 	<b>Ex RC Si M30 2Ö-LED</b> 

### Type code

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

✓ in stock

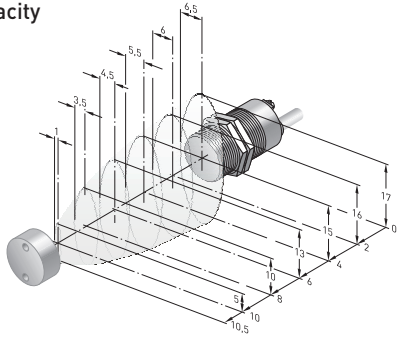
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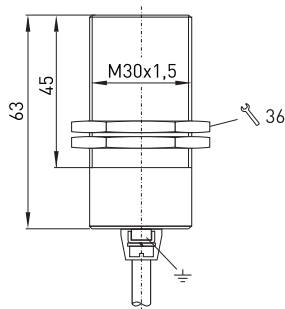
# Ex safety sensors, cylindrical form

## // Series Ex RC Si M30, Actuator

Switching capacity



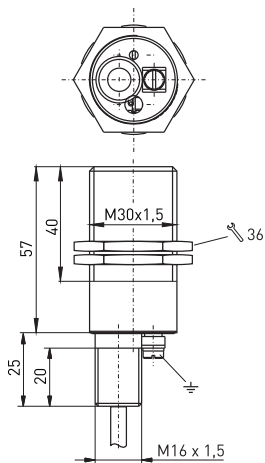
### // Ex RC Si M30



#### Ex RC Si M30

	Material number
Ex RC Si M30 10̇/1S - 2m	1179282
Ex RC Si M30 10̇/1S - 5m	1179281
Ex RC Si M30 10̇/1S - 10m	1179392
Ex RC Si M30 10̇/1S - LED - 2m	1183059
Ex RC Si M30 10̇/1S - LED - 5m	1182420
Ex RC Si M30 10̇/1S - LED - 10m	1181148
Ex RC Si M30 20̇ - 2m	1186768
Ex RC Si M30 20̇ - 5m	1182129
Ex RC Si M30 20̇ - 10m	1185005
Ex RC Si M30 20̇ - LED - 2m	1189004
Ex RC Si M30 20̇ - LED - 5m	1188437
Ex RC Si M30 20̇ - LED - 10m	1189928

### // Ex RC Si M30-B with mounting thread B



#### Features/Options

- Variant with mounting thread M16 x 1.5

#### Mounting thread B

Ex RC Si M30 10̇/1S-B

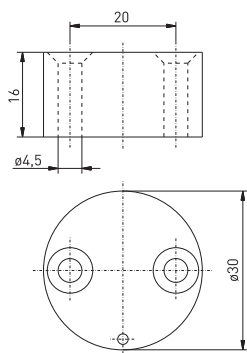
Material number  
on request

#### Ex RC Si M30-NIRO

Ex RC Si M30 10̇/1S-B IP69K-NIRO 1m

Material number  
1186818

### // Actuating magnet Ex MC 30



#### Features/Options

- actuator available with stainless steel enclosure 1.4571:  
MC30-NIRO

#### Note

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

#### Actuator

	Material number
Ex MC 30	1180333
Ex MC30-NIRO	1181818

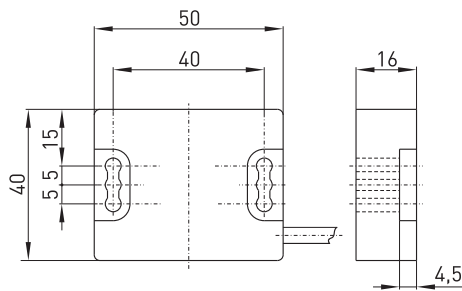
# Ex safety sensors, rectangular form

## // Series Ex RC Si 56

### Features/Options

- Ex zone 1 and 21
- Thermoplastic enclosure
- Long life
- Reed contacts, coded
- Actuation from front
- Switching distance up to 7 mm
- Special version only for gas Ex zone 2 and dust Ex zone 22 available

// EX RC SI 56



### Technical data

<b>Standards</b>	EN 60947-5-3 ; EN ISO 14119; EN ISO 13849-1; IEC/EN 60079-0; IEC/EN 60079-18
<b>Enclosure</b>	glass-fibre reinforced thermoplastic, (PA 66) self-extinguishing
<b>Actuator</b>	Ex MC 56 material No. 1180986, Ex MC 56-3 material No. 1181408
<b>Switching system</b>	reed contacts, 1 NC/1 NO or 2 NC contacts
<b>Degree of protection</b>	IP 67 to IEC/EN 60529
<b>Connection</b>	cable, 4 x AWG 24, length 2, 5 or 10 m
<b>Safety-relevant data*</b>	
EN ISO 13849-1	PL e , category 4
B <sub>10d</sub>	20 million
T <sub>M</sub>	max. 20 years
MTTF <sub>d</sub>	>100 years
I <sub>e</sub> /U <sub>e</sub>	max. 125 mA, with LED: 20 mA/24 VDC
Switching voltage	max. 30 VDC
Voltage drop at I <sub>e</sub>	2,5 V, mit LED: 3 V
Switching frequency	5 Hz
Limit distances	s <sub>n</sub> 6 mm, s <sub>ao</sub> 4 mm, s <sub>ar</sub> 30 mm
Repeatability	< 0.5 mm
Ambient temperature	T6: -20 °C ... +70 °C; T5: -20 °C ... +85 °C
Mechanical life	> 10 million operations
Impact energy	max. 7 J
Ex marking	⊕ II 2G Ex mb IIC T6/T5 Gb II 2D Ex mb IIIC T80°C/T95°C Db IP67 IECEx Ex mb IIC T6/T5 Gb Ex mb IIIC T80°C/T95°C Db IP67
<b>Approvals</b>	PTB 08 ATEX 2027 X, IECEx PTB 08.0042X. c US EAC

\* is only valid in combination with a safety module.

### Contact variants: switch travel/contacts

	without LED	with LED
1 NC/1 NO contact	<b>Ex RC Si 56 10/1S</b> 	<b>Ex RC Si 56 10/1S-LED</b> 
2 NC contacts	<b>Ex RC Si 56 20</b> 	<b>Ex RC Si 56 20-LED</b> 

### Type code

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

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

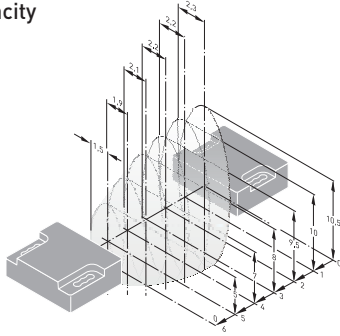
✓ in stock

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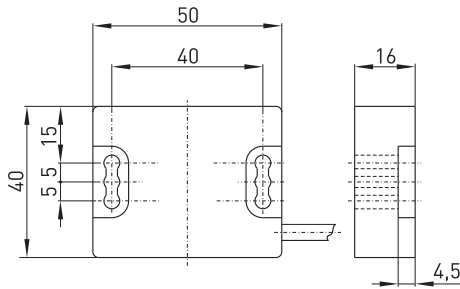
# Ex safety sensors, rectangular form

## // Series Ex RC Si 56, Actuator

Switching capacity



### // Ex RC Si 56



#### Ex RC Si 56 IÖ/1S

- Ex RC Si 56 IÖ/1S - 2m
- Ex RC Si 56 IÖ/1S - 5m
- Ex RC Si 56 IÖ/1S - 10m
- Ex RC Si 56 IÖ/1S - LED - 2m
- Ex RC Si 56 IÖ/1S - LED - 5m
- Ex RC Si 56 IÖ/1S - LED - 10m

#### Material number

- 1189255
- ✓ 1184598
- 1185923
- 1189265
- 1189271
- 1190301

#### Ex RC Si 56 2Ö

- Ex RC Si 56 2Ö - 2m
- Ex RC Si 56 2Ö - 5m
- Ex RC Si 56 2Ö - 10m
- Ex RC Si 56 2Ö - LED - 2m
- Ex RC Si 56 2Ö - LED - 5m
- Ex RC Si 56 2Ö - LED - 10m

#### Material number

- 1189262
- ✓ 1184620
- ✓ 1184434
- 1189273
- 1185181
- 1187207

123

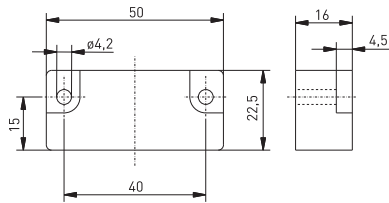
### // Actuating magnet Ex MC 56

#### Features/Options

- compact design
- suitable for 30 mm profiles

#### Note

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



#### Actuator

Ex MC 56

#### Material number

✓ 1180986

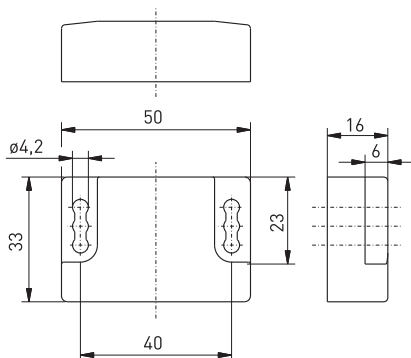
### // Actuating magnet Ex MC 56-3

#### Features/Options

- suitable for 30, 40 and 50 mm profiles

#### Note

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



#### Actuator

Ex MC 56-3

#### Material number

✓ 1181408

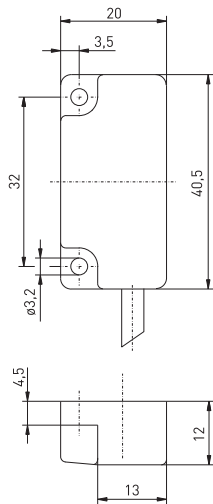
# Ex safety sensors, rectangular form

## // Series Ex HS Si 4

### Features/Options

- Ex zone 1 and 21
- Thermoplastic enclosure
- Hall elements, coded
- Actuation from front
- Switching distance up to 8 mm
- Special version only for gas Ex zone 2 and dust Ex zone 22 available

## // EX HS SI 4



## Technical data

<b>Standards</b>	EN 60079-0; EN 60079-18; EN 60947-5-2; EN ISO 14119; EN ISO 13849-1
<b>Enclosure</b>	glass-fibre reinforced thermoplastic, (PA 66) self-extinguishing
<b>Actuator</b>	Ex MC 4 material No. 1182903
<b>Switching system</b>	hall sensor, 2 galvanically separated channels, 1 NC/1 NO or 2 NC contacts
<b>Degree of protection</b>	IP 67 to IEC/EN 60529
<b>Connection</b>	cable, 6 x AWG 26, 2, 5 or 10 m, max. 15 m
<b>Safety-relevant data*</b>	
$T_M$	max. 20 years
$MTTF_d$	>100 years
$DC/DC_{avg}$	> 99 %
<b>Utilisation category</b>	DC-12
$U_e$	24 VDC
$I_e$	max. 40 mA per channel
$U_i$	75 VDC
$U_{imp}$	1 kV
<b>No-load supply current <math>I_0</math></b>	max. 6 mA per channel
<b>Input voltage</b>	10 ... 30 VDC
<b>Voltage drop</b>	max. 2.5 VDC
<b>Switch-on/-off time</b>	< 1 ms
<b>Max. fuse rating</b>	< 50 mA internal reversible fuse
<b>Ambient temperature</b>	-20 °C ... +60 °C
<b>Mechanical life</b>	> 10 million operations
<b>Switching distances</b>	$s_n$ 7 mm, $s_{a0}$ 6 mm, $s_{ar}$ 20 mm
<b>Impact energy</b>	max. 7 J
<b>Ex marking</b>	Ⓜ II 2G Ex mb IIC T6 Gb, II 2D Ex mb IIIC T80°C Db IECEX Ex mb IIC T6 Gb, Ex mb IIIC T80°C Db
<b>Approvals</b>	BVS 08 ATEX E150 X; IECEX BVS 08.0054X; 

\* is only valid in combination with a safety module.

### Contact variants: switch travel/contacts

	Bi-directional actuation
1 NC/1 NO contact	<b>Ex HS Si 4 1Ö/1S</b> 
2 NC contacts	<b>Ex HS Si 4 2Ö</b> 

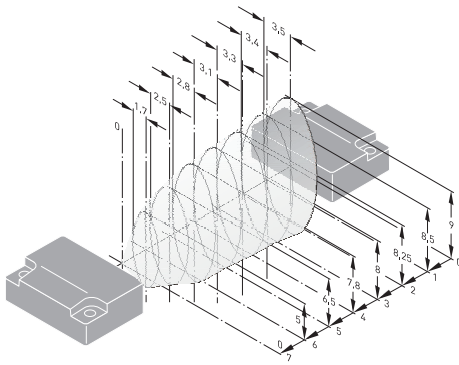
### Type code

<b>Ex HS Si 4 1Ö/1S-3G/D</b>	Equipm. cat. 3G/D, gas Ex z. 2 a. dust Ex z. 22
1	1 NC/1 NO contact (2Ö)
1	Series
1	Safety
1	Hall sensor
1	Ex certified component

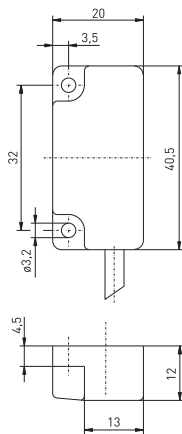
✓ in stock

Ex safety sensors, rectangular form  
 // Series Ex HS Si 4, Actuator

// Switching capacity



// Ex HS Si 4



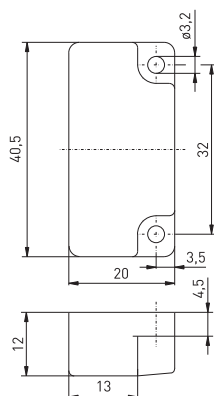
Ex HS Si 4 10/1S  
 Ex HS Si 4 10/1S - 2m  
 Ex HS Si 4 10/1S - 5m  
 Ex HS Si 4 10/1S - 10m

Material number  
 1189003  
 ✓ 1187202  
 1185205

Ex HS Si 4 20  
 Ex HS Si 4 20 - 2m  
 Ex HS Si 4 20 - 5m  
 Ex HS Si 4 20 - 10m

Material number  
 1189005  
 1188792  
 1189918

// Actuator Ex MC 4



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

Actuator  
 Ex MC 4

Material number  
 ✓ 1182903

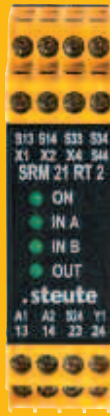
# Safety relay module

## // Series SRM 21 RT2

### Features/Options

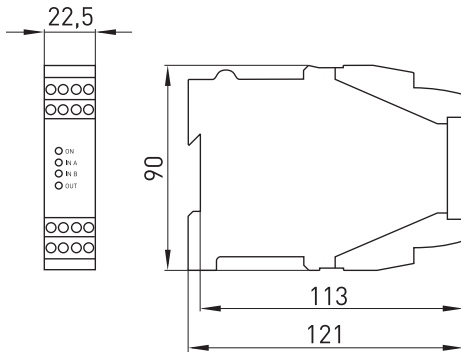
- Enclosure width: 22.5 mm
- 2 NC contacts or NC/NO combination can be connected
- Feedback circuit
- 2 enabling paths
- 1 transistor output
- Manual or automatic reset
- Switching position indication by LED

// SRM 21 RT2



### Technical data

<b>Standards</b>	EEN ISO 13849-1; EN 62061; EN 60204-1, BG-GS-ET 20; EN 60947-5-1,-3; EN 61326-3-1
<b>Enclosure</b>	polycarbonate, terminal block polyamid V0
<b>Mounting</b>	DIN rail mounting, screw terminals
<b>Degree of protection</b>	enclosure IP 40, terminals IP 20 to IEC/EN 60529
<b>Safety-relevant data</b>	
EN 60204-1	stop category 0
EN 62061	SILCL 3
EN ISO 13849-1	PL e, category 4
$h_{op}$	8 h/d
$d_{op}$	220 d/a
$t_{zyklus}$	30 s
$T_M$	max. 20 years
MTTFd	>86 years
DC/ DC <sub>avg</sub>	>99 %
$U_e$	24 VDC $\pm 15\%$
$I_e$	0.125 A
<b>Inputs</b>	1 NC/1 NO or 2 NC inputs, 1 feedback circuit, 1 start input (monitored)
<b>Outputs</b>	2 enabling paths, 1 transistor output as signalling output
$I_e / U_e$ of enabling paths	3 A / 230 VAC, 2 A / 24 VDC
<b>Utilisation category</b>	AC-15; DC-13
<b>Max. fuse rating</b>	power supply 2A slow blow enabling paths 6A gG/gN fuse
<b>Risk time</b>	$\leq 0,5$ s (switch-on delay)
<b>Display</b>	1 LED for supply voltage, 1 LED each for input A and B, 1 LED for authorisation
<b>Ambient temperature</b>	0 °C ... +55 °C
<b>Shock resistance</b>	3g
<b>Approvals</b>	<b>ERC</b>



Safety relay module  
SRM 21 RT2

Material number  
✓ 1179203

Type code

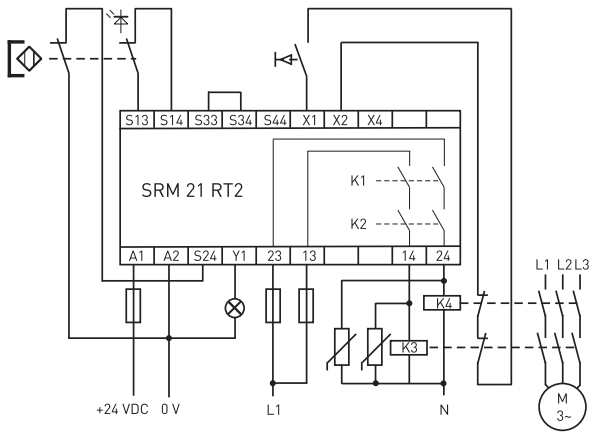
SRM 21 RT2

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

# Safety relay module

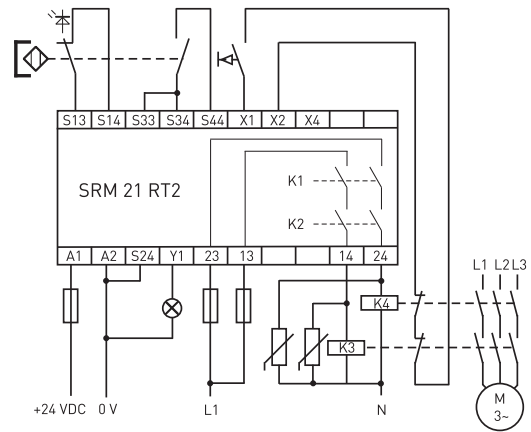
## // Series SRM 21 RT2, wiring examples

### // Wiring example



- 2-channel: monitoring of one magnetic safety sensor with 2 NC contacts
- Feedback circuit
- Cross-wire detection
- With manual reset/start
- Y1 high upon authorisation
- Up to PL e or SILCL 3

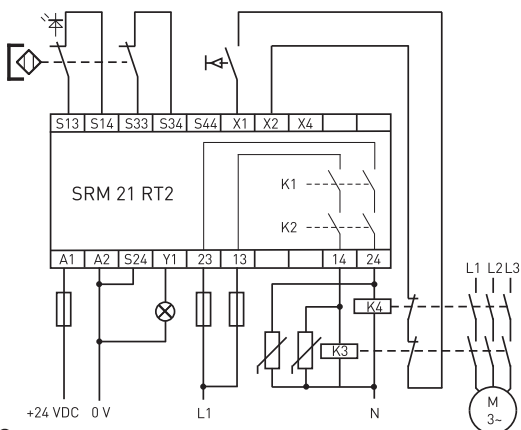
### // Wiring example



- 2-channel: monitoring of one magnetic safety sensor with 2 NC contacts
- Feedback circuit
- Without cross-wire detection
- With manual reset/start
- Y1 high upon authorisation
- Up to PL e or SILCL 3

127

### // Wiring example



- 2-channel: monitoring of one magnetic safety sensor with 1 NC and 1 NO contact
- Feedback circuit
- Without cross-wire detection
- With manual reset/start
- Y1 high upon authorisation
- Up to PL e or SILCL 3

# Safety relay module

## // Series SRM 21 Multi

### Features/Options

- Enclosure width: 22.5 mm
- 2 NC contacts combination can be connected
- Feedback circuit
- 2 enabling paths
- 1 transistor output
- Manual or automatic reset
- Switching position indication by LED

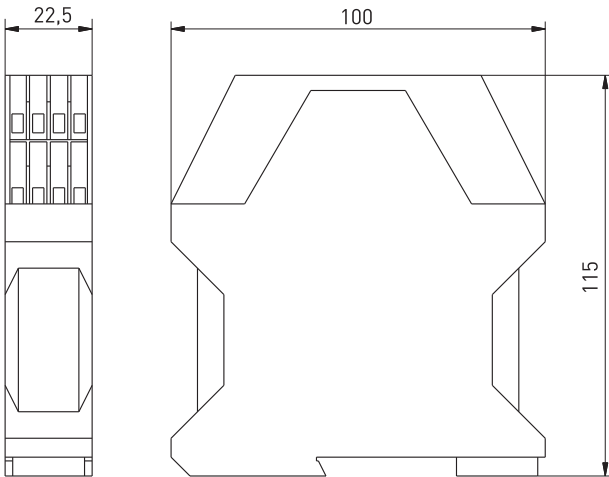
## // SRM 21 MULTI



### Technical data

<b>Standards</b>	EN ISO 13849-1; EN 62061; EN ISO 14119; IEC/EN 60204-1, EN 60947-5-1, EN 60947-5-3
<b>Enclosure</b>	polyamid PA 6.6 V0
<b>Mounting</b>	DIN rail mounting
<b>Degree of protection</b>	enclosure and terminals IP 20 to IEC/EN 60529
<b>Safety-relevant data</b>	
EN ISO 13849-1	PL e, category 4
EN 60204-1	stop category 0
EN 61508	SIL 3
PFH	$2.2 \times 10^{-9}$
PFD	$4.64 \times 10^{-6}$
$T_M$	max. 20 years
MTTFd	100 years
DC/ DC <sub>avg</sub>	>99 %
$U_e$	24 VDC -20 % ... +25 %
$I_e$	0.125 A
<b>Inputs</b>	2 NC inputs, 1 feedback circuit, 1 start input (monitored)
<b>Outputs</b>	2 enabling paths, 1 transistor output as signalling output
$I_e / U_e$ of enabling paths	3A/ 230VAC, 5A/ 24VDC
<b>Utilisation category</b>	AC-15; DC-13
<b>Max. fuse rating</b>	power supply 2 A slow blow, enabling paths 4 A gG/gN fuse
<b>Display</b>	2 LEDs for inputs, 2 LEDs for outputs, 1 LED for supply voltage, 1 LED for fault
<b>Ambient temperature</b>	-25 °C ... +55 °C
<b>Shock resistance</b>	10g

128



Safety relay module  
SRM 21 Multi

Material number  
✓ 1185607

Type code

SRM 21 Multi

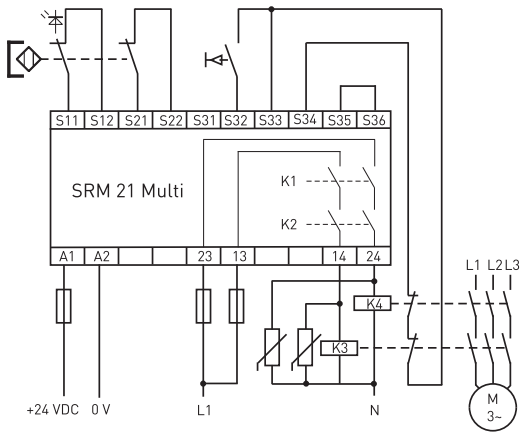
multi-functional  
1 transistor output  
2 enabling paths  
Safety relay module



# Safety relay module

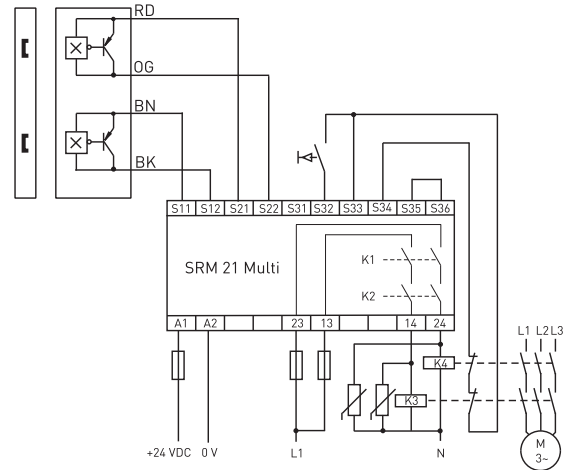
## // Series SRM Multi, wiring examples

### // Wiring example



- 2-channel: monitoring of one magnetic safety sensor with two NC contacts
- Cross-wire detection, monitored start and feedback circuit
- S31 is high on authorisation
- Up to PL e

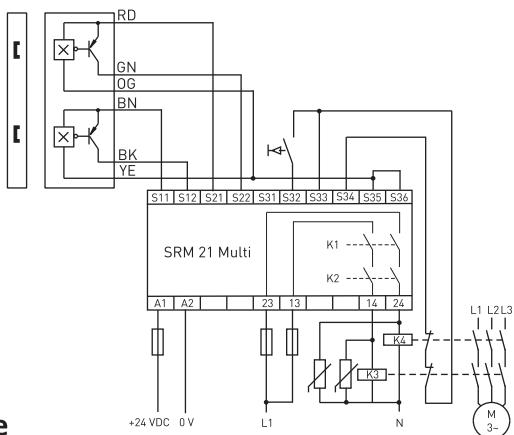
### // Wiring example



- 2-channel: monitoring of one safety hall sensor with two semiconductor outputs as NC
- Cross-wire detection, monitored start and feedback circuit
- S31 is high on authorisation
- Up to PL e

129

### // Wiring example



- 2-channel: monitoring of one safety hall sensor with two semiconductor outputs as NC
- cross-wire detection, monitored start and feedback circuit
- S31 is high on authorisation
- up to PL e



## Ex safety switches for hinged guards

### Thermoplastic enclosure

// Series Ex 13 SB

from page 134

// Series Ex 95 SB

from page 135

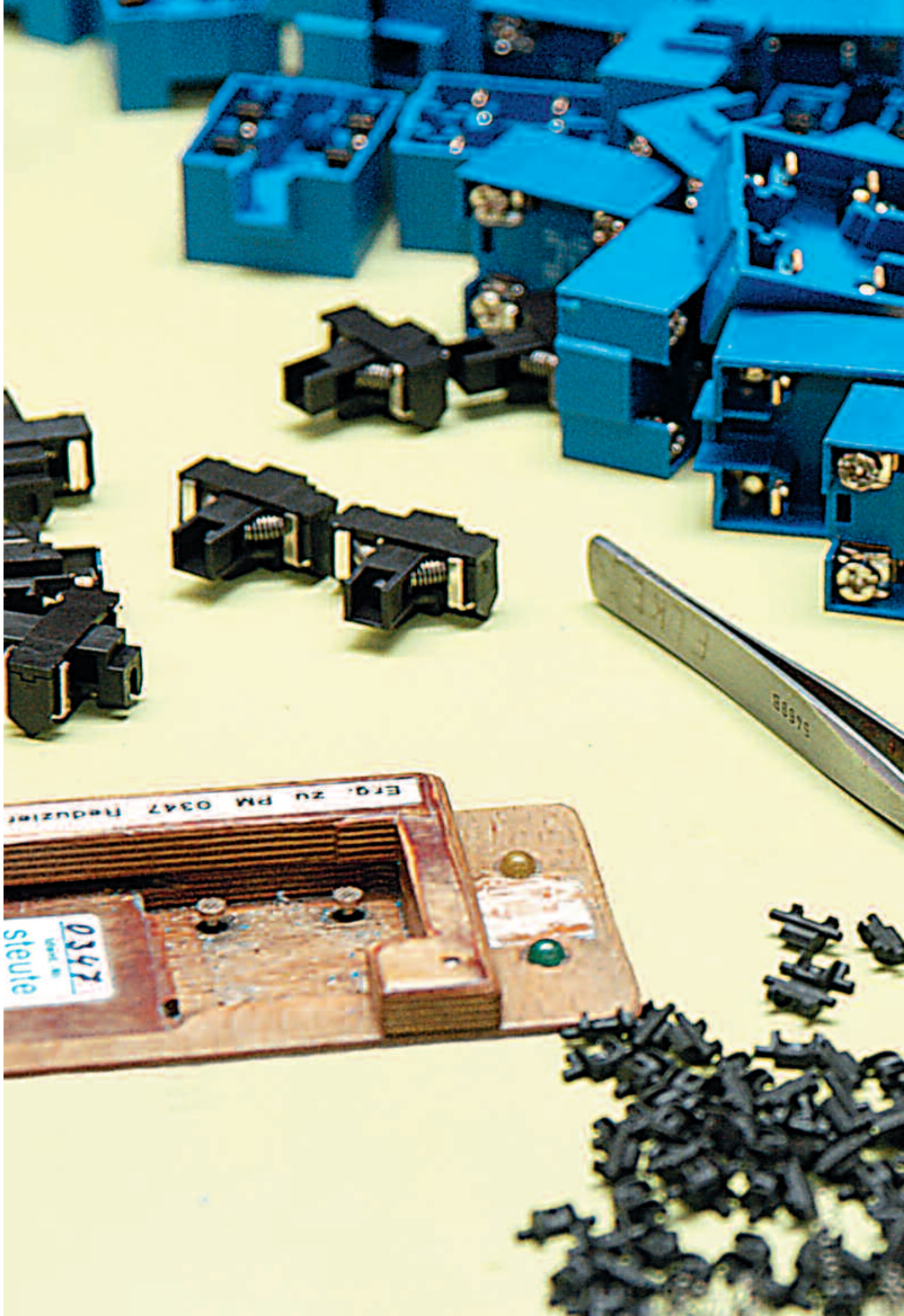
### Metal enclosure

// Series Ex 98 SB

from page 136

// Series Ex 355 V.S

from page 137



# Ex safety switches for hinged guards

## Range of application

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

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

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

## Design and operating principle

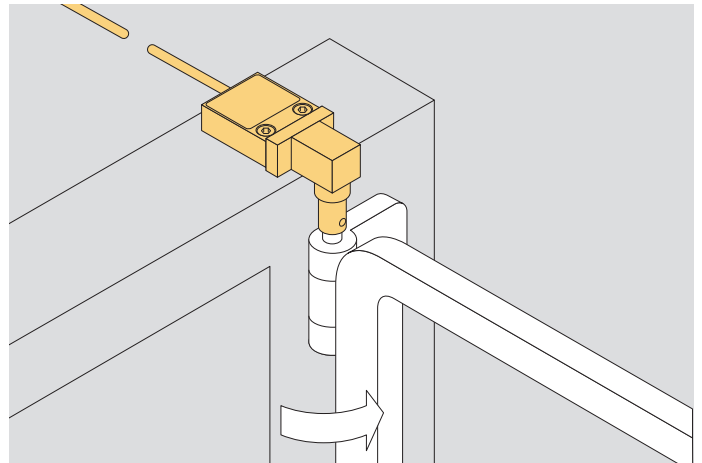
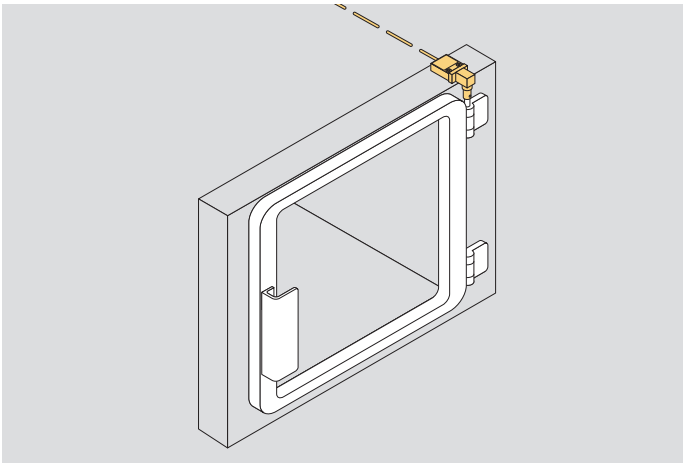
A general advantage of the Ex safety switches shown here is the integral cam within the safety switch. The requirements of EN ISO 14119, such as positive linkage between cam and actuator, as well as protection against tampering, are thus fulfilled.

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

All Ex safety switches for hinged guards shown in this chapter bear the CE mark according to the Machinery Directive 2006/42/EC and according to ATEX 2014/34/EU. The Ex safety switches for hinged guards per equipment category 3D bear the CE mark without the number of the notified body and have received a CE declaration of manufacturer conformity.

## Application

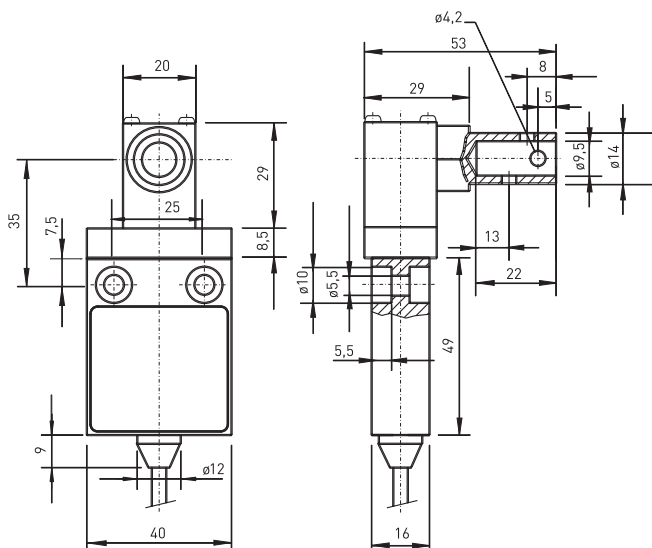
### safety hinge switch on sliding guard



# Ex safety switches for hinged guards

## // Series Ex 13 SB

### // EX 13 SB



Contact variants: switch travel/contacts

	Slow action	Material number
1 NC/1 NO contact	Ex 13 SB 1Ö/1S 	1045263

### Features/Options

- Ex zone 1 and 21
- Double insulated □
- Version with cable entry on side available
- With pre-wired cable, cable length 2 metres
- With gold-plated contacts available on request
- Shaft bore  $\varnothing$  10 mm available
- Actuating shaft can be turned 360°
- Special version only for dust Ex zone 22 available

### Technical data

Standards	EN 60947-5-1; EN ISO 14119; BG-GS-ET-15; EN 60079-0; EN 60079-1; EN 60079-31; EN ISO 13849-1
Enclosure	glass-fibre reinforced, shock-proof thermoplastic, self-extinguishing UL 94-V0
Switch type	type 1
Coding level	no coding
Degree of protection	IP 65 to IEC/EN 60529
Contact material	silver
Switching system	slow action, positive break NC contact ⊖
Switching elements	1 NC/1 NO contact, type Zb
Connection	cable H05VV-F, 4 x 0.75 mm <sup>2</sup>
Cable length	2 or 5 m
B <sub>10d</sub> (10 % load)	2 million
T <sub>M</sub>	max. 20 years
U <sub>imp</sub>	4 kV
U <sub>i</sub>	250 V
I <sub>the</sub>	T6: 6 A, T5: 3 A
I <sub>e</sub> /U <sub>e</sub>	6 A/250 VAC; 0.25 A/230 VDC
Utilisation category	AC-15, DC-13
Max. fuse rating	6 A gG/gN fuse
Ambient temperature	T6: -20 °C ... +65 °C, T5: -20 °C ... +75 °C, +90 °C with max. 3 A
Mechanical life	> 1 million operations
Impact energy	max. 7 J
Ex marking	⊕ II 2G Ex db IIC T6/T5 Gb, II 2D Ex tb IIIC T80°C/T95°C Db IECEx Ex db IIC T6/T5 Gb, Ex tb IIIC T80°C/T95°C Db
Approvals	PTB 03 ATEX 1068 X, IECEx PTB 06.0053X 

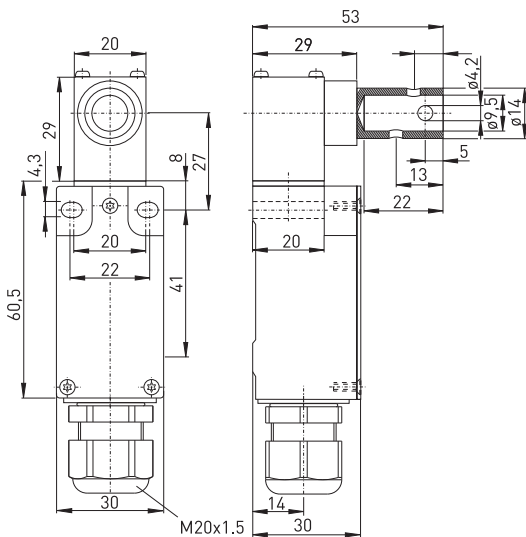
### Type code

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

# Ex safety switches for hinged guards

## // Series Ex 95 SB

### // EX 95 SB



#### Features/Options

- Ex zone 1 and 21
- Double insulated □
- Slow action ⊖, change-over contact with double break
- With gold-plated contacts available on request
- Wiring compartment, cable entry M20 x 1.5
- Mounting details to EN 50047
- Actuator head can be repositioned in factory in 4 x 90° steps
- Shaft bore ø 10 mm available
- Actuating shaft can be turned 360°
- Special version only for dust Ex zone 22 available

#### Technical data

<b>Standards</b>	EN 60947-5-1; EN ISO 14119; EN 60079-0, EN 60079-1, EN 60079-7, EN 60079-31, EN ISO 13849-1
<b>Design</b>	mounting details to EN 50047
<b>Enclosure</b>	glass-fibre reinforced, shock-proof thermoplastic, self-extinguishing UL 94-V0
<b>Switch type</b>	type 1
<b>Coding level</b>	no coding
<b>Degree of protection</b>	IP 67 to IEC/EN 60529
<b>Contact material</b>	silver
<b>Switching system</b>	slow action, positive break NC contact ⊖
<b>Switching elements</b>	1 NC/1 NO, 2 NC or 1 NC/1 NO contact with contact overlapping, type Zb
<b>Connection</b>	screw connection terminals
<b>Cable section</b>	max. 1.5 mm <sup>2</sup> (incl. conductor ferrules)
<b>Cable entry</b>	1 x M20 x 1.5 for Ø 5 ... 9 mm
<b>B<sub>10d</sub> (10 % load)</b>	2 million
<b>T<sub>M</sub></b>	max. 20 years
<b>U<sub>imp</sub></b>	4 kV
<b>U<sub>i</sub></b>	250 V
<b>I<sub>the</sub></b>	6 A
<b>I<sub>e</sub>/U<sub>e</sub></b>	6 A/250 VAC; 0.25 A/230 VDC
<b>Utilisation category</b>	AC-15, DC-13
<b>Max. fuse rating</b>	6 A gG/gN fuse
<b>Ambient temperature</b>	-20 °C ... +60 °C
<b>Mechanical life</b>	> 1 million operations
<b>Impact energy</b>	max. 7 J
<b>Ex marking</b>	⊕ II 2G Ex de IIC T5 Gb, II 2D Ex tb IIIC T80°C Db IP67 IECEx Ex de IIC T5 Gb Ex tb IIIC T80°C Db

**Approvals** DMT 01 ATEX E 118, IECEx BVS 14.0018X



#### Contact variants: switch travel/contacts

	Slow action	Material number
1 NC/1 NO contact	<b>Ex 95 SB 10/1S</b> 	1050056
2 NC contacts	<b>Ex 95 SB 20</b> 	1050455
1 NC/1 NO contact with overlapping	<b>Ex 95 SB UE</b> 	on request

#### Type code

**Ex 95 SB 10/1S-3D**

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

# Ex safety switches for hinged guards

## // Series Ex 98 SB

### Features/Options

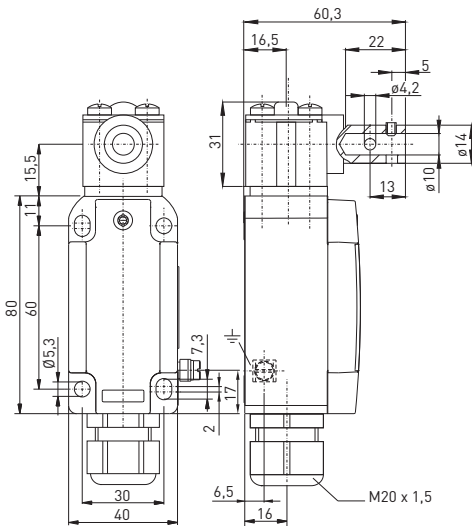
- Ex zone 1 and 21
- Wiring compartment
- Mounting details to EN 50041
- Actuator head can be repositioned in 4 x 90° steps
- Actuating shaft can be turned 360°
- Shaft bore  $\varnothing$  10 mm
- Special version only for dust Ex zone 22 available

## // EX 98 SB



## Technical data

<b>Standards</b>	EN 60947-5-1; EN 60079-0, EN 60079-1, EN 60079-7, EN 60079-14, EN 60079-31; EN ISO 13849-1; EN ISO 14119
<b>Design</b>	mounting details to EN 50041
<b>Enclosure</b>	Corrosion-resistant aluminium, powder-coated, similar to RAL 7016
<b>Switch type</b>	type 1
<b>Coding level</b>	no coding
<b>Degree of protection</b>	IP 66 to IEC/EN 60529
<b>Contact material</b>	silver
<b>Switching system</b>	slow action, positive break NC contact $\ominus$
<b>Switching elements</b>	1 NC/1 NO contact or 2 NC contacts, type Zb
<b>Connection</b>	screw connection terminals
<b>Cable section</b>	min. 0.75 mm <sup>2</sup> AWG 18, max. 1.5 mm <sup>2</sup> AWG 16 (incl. conductor ferrules)
<b>Cable entry</b>	1 x M20 x 1.5 for $\varnothing$ 5 ... 9 mm
<b>B<sub>10d</sub> (10 % load)</b>	2 million
<b>T<sub>M</sub></b>	max. 20 years
<b>U<sub>imp</sub></b>	4 kV
<b>U<sub>i</sub></b>	250 V
<b>I<sub>the</sub></b>	6 A
<b>I<sub>e</sub>/U<sub>e</sub></b>	6 A/250 VAC; 0.25 A/230 VDC
<b>Utilisation category</b>	AC-15, DC-13
<b>Max. fuse rating</b>	6 A gG/gN fuse
<b>Ambient temperature</b>	T6: -20 °C ... +40 °C; T5: -20 °C ... +60 °C
<b>Mechanical life</b>	> 1 million operations
<b>Impact energy</b>	max. 7 J
<b>Ex marking</b>	⊕ II 2G Ex de IIC T6/T5 Gb II 2D Ex tb IIIC T80 °C/T95 °C Db IECEx Ex de IIC T6/T5 Gb, Ex tb IIIC T80 °C/T95 °C Db
<b>Approvals</b>	DMT 01 ATEX E 178, IECEx BVS 07.0014



### Contact variants: switch travel/contacts

	Slow action	Material number
1 NC/1 NO contact	<b>Ex ES 98 SB-11</b> 180° 10° 0° 10° 180°  12° 8° 8° 12°	1304292 ✓
2 NC contacts	<b>Ex ES 98 SB-02</b> 180° 12° 0° 12° 180°  8° 8°	1336010

### Type code

**Ex 98 SB-11-3D**

Equipment Categ. 3D, dust Ex zone 22  
 Contact type 1 NC/1 NO contact, (02 2 NC contacts)  
 Actuator SB shaft bore  $\varnothing$  10 mm  
 Series  
 Ex certified component



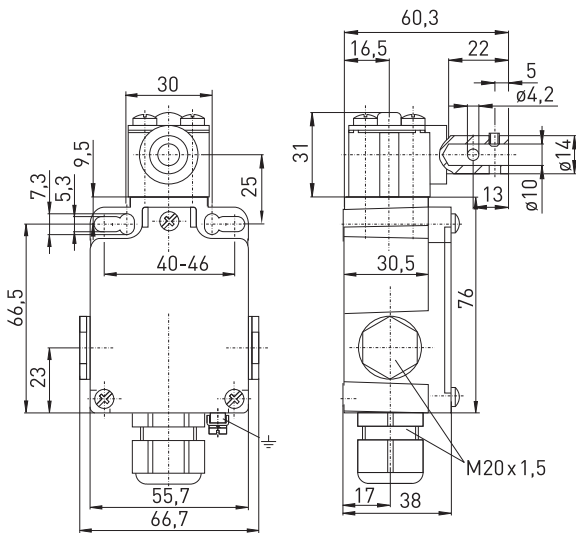
# Ex safety switches for hinged guards

## // Series Ex 355 V.S

### Features/Options

- Ex zone 1 and 21
- Wiring compartment
- With gold-plated contacts available on request
- Mounting details to EN 50041
- Actuator head can be repositioned in 4 x 90° steps
- Actuating shaft can be turned 360°
- Shaft bore  $\varnothing$  10 mm
- Special version only for dust Ex zone 22 available

## // EX 355 V.S



## Technical data

<b>Standards</b>	EN 60947-5-1; EN ISO 14119; EN 60079-0, EN 60079-1, EN 60079-7, EN 60079-31; EN ISO 13849-1
<b>Design</b>	mounting details to EN 50041
<b>Enclosure</b>	zinc die-cast, enamelled
<b>Switch type</b>	type 1
<b>Coding level</b>	no coding
<b>Switch insert</b>	Ex 95
<b>Degree of protection</b>	IP 67 to IEC/EN 60529
<b>Contact material</b>	silver
<b>Switching system</b>	slow action, positive break NC contact $\ominus$
<b>Switching elements</b>	1 NC/1 NO contact or 2 NC contacts, type Zb
<b>Connection</b>	screw connection terminals
<b>Cable section</b>	max. 1.5 mm <sup>2</sup> (incl. conductor ferrules)
<b>Cable entry</b>	3 x M20 x 1.5 for $\varnothing$ 5 ... 9 mm
<b>B<sub>10d</sub> (10 % load)</b>	2 million
<b>T<sub>M</sub></b>	max. 20 years
<b>U<sub>imp</sub></b>	4 kV
<b>U<sub>i</sub></b>	250 V
<b>I<sub>the</sub></b>	6 A
<b>I<sub>e</sub>/U<sub>e</sub></b>	6 A/250 VAC; 0.25 A/230 VDC
<b>Utilisation category</b>	AC-15, DC-13
<b>Max. fuse rating</b>	6 A gG/gN fuse
<b>Ambient temperature</b>	-20 °C ... +60 °C
<b>Mechanical life</b>	> 1 million operations
<b>Impact energy</b>	max. 7 J
<b>Ex marking</b>	$\ominus$ II 2G Ex db e IIC T6/T5 Gb II 2D Ex tb IIIC T80°C/T95°C Db IECEx Ex db e IIC T6/T5 Gb Ex tb IIIC T80 °C/T95 °C Db
<b>Approvals</b>	BVS 04 ATEX E 126, IECEx BVS 07.0013

137

### Contact variants: switch travel/contacts

	Slow action	Material number
1 NC/1 NO contact	Ex 355 V.S 10/1S 	1179160
2 NC contacts	Ex 355 V.S 20 	1182134

### Type code

<b>Ex 355</b>	<b>V10S</b>	<b>10/1S</b>	<b>3D</b>	
				Equipment Categ. 3D, dust Ex zone 22
				Contact type 10/1S, (20)
				Actuator V10S shaft bore $\varnothing$ 10 mm
				Series
				Ex certified component

# Ex safety switches for hinged guards

## // Accessories

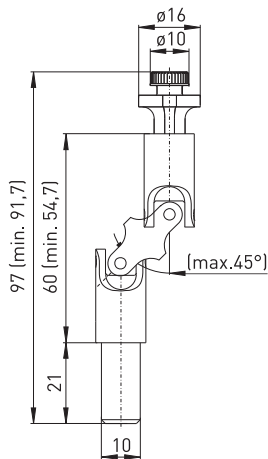
### Features/Options

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

### Features/Options

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

## // Universal joint K2



### Features/Options

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

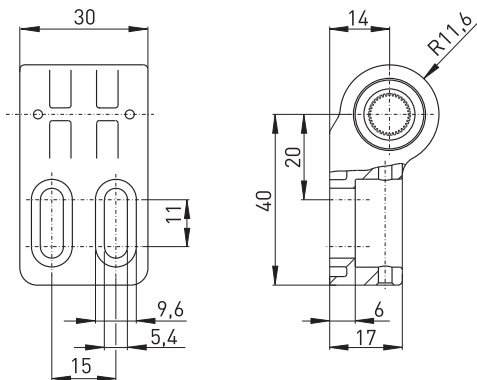
### Accessories

Universal joint K2

### Material number

1169834

## // Fixed hinge F



### Features/Options

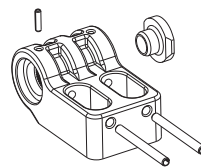
- Locating pins
- One blanking plug
- Two M 5 x 20 screws to ISO 7380

### Actuator

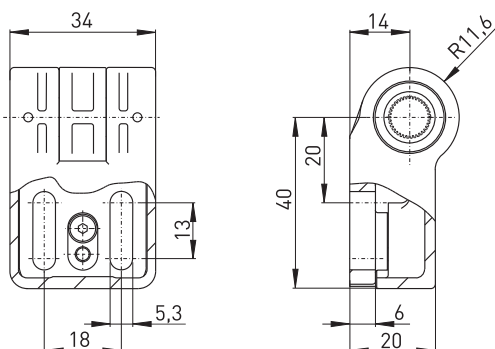
Fixed hinge F

### Material number

1169835



## // Adjustable hinge L



### Features/Options

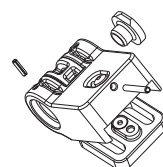
- Locating pins
- One blanking plug
- Two M 5 x 20 screws to ISO 7380

### Actuator

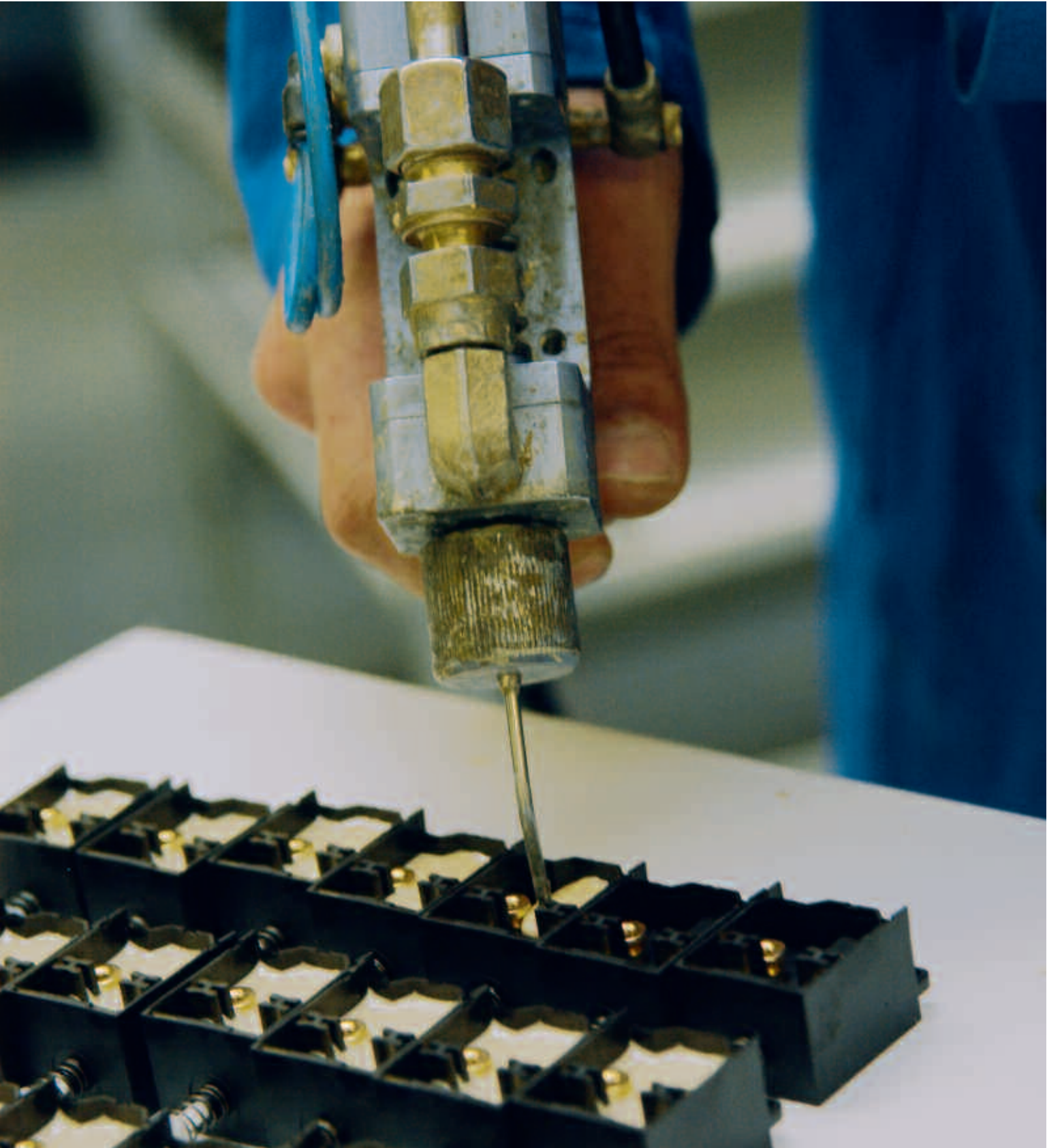
Adjustable hinge L

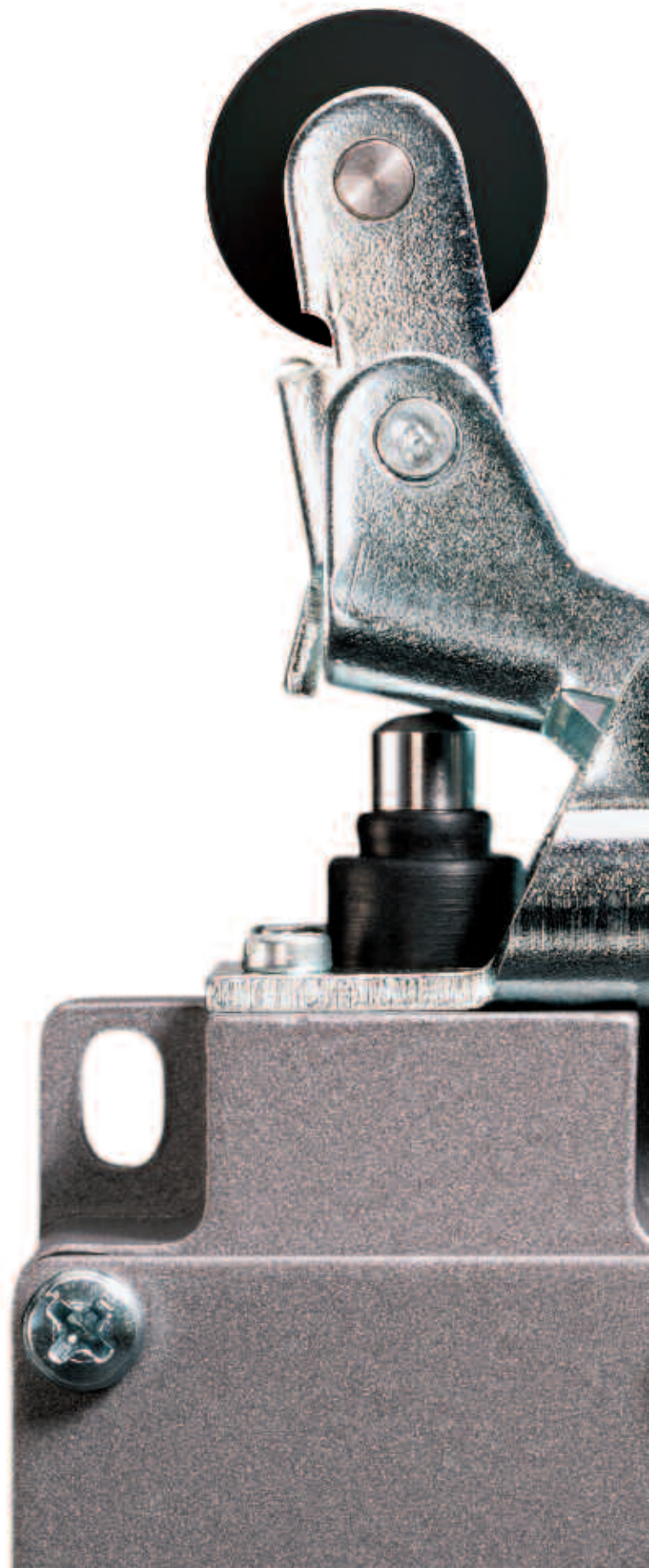
### Material number

1169836



PRODUCTION PROCESS ASSEMBLY  
POTTING OF SWITCH INSERTS







## Ex position switches with/without safety function

### Thermoplastic enclosure

// Series Ex 13

from page 148

// Series Ex/ExM 14

from page 160

// Series Ex 97

from page 170

/// Series Ex 99

from page 178

/ Series Ex T 356

from page 184

### Metal enclosure

// Series Ex 12

from page 188

// Series Ex 98

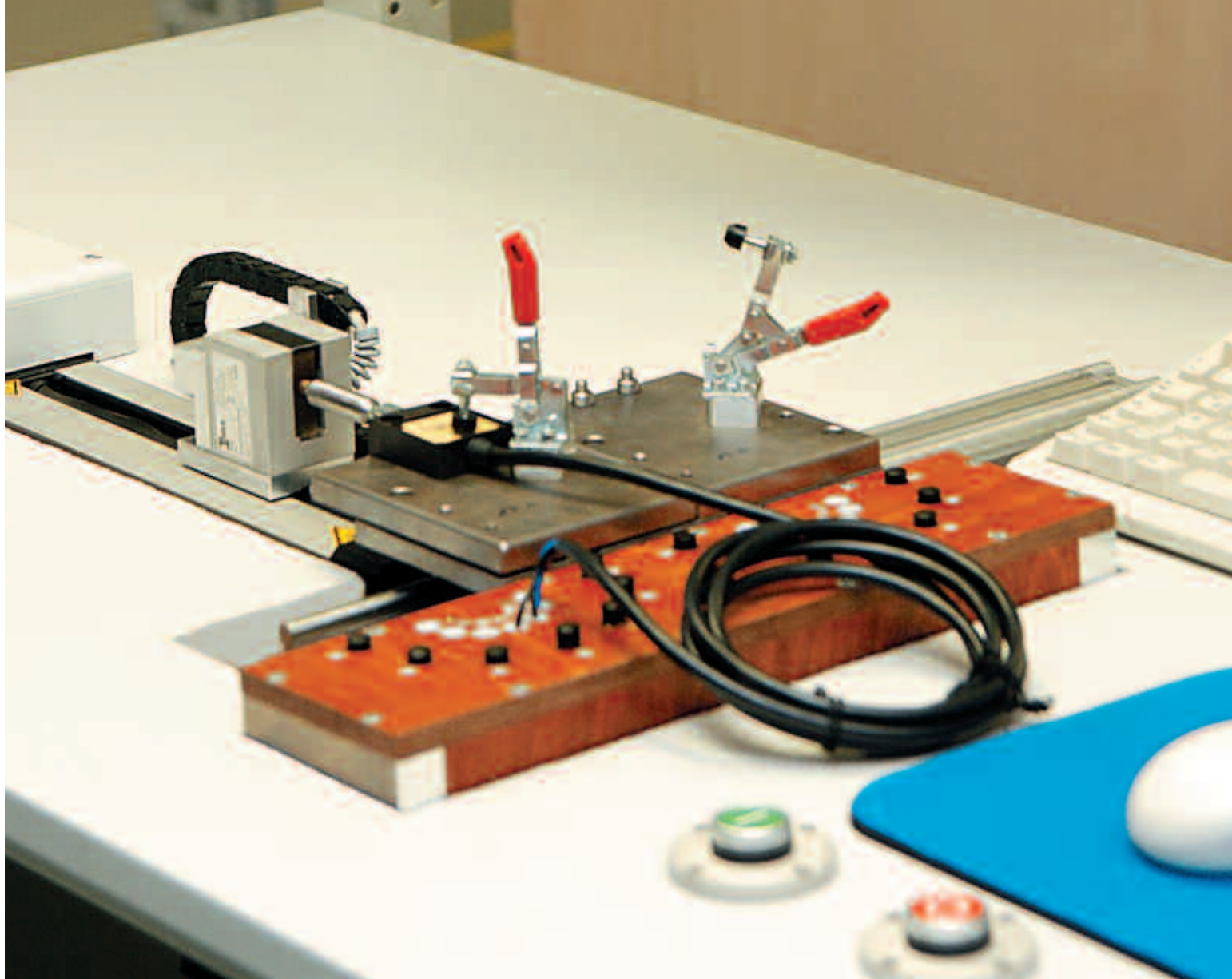
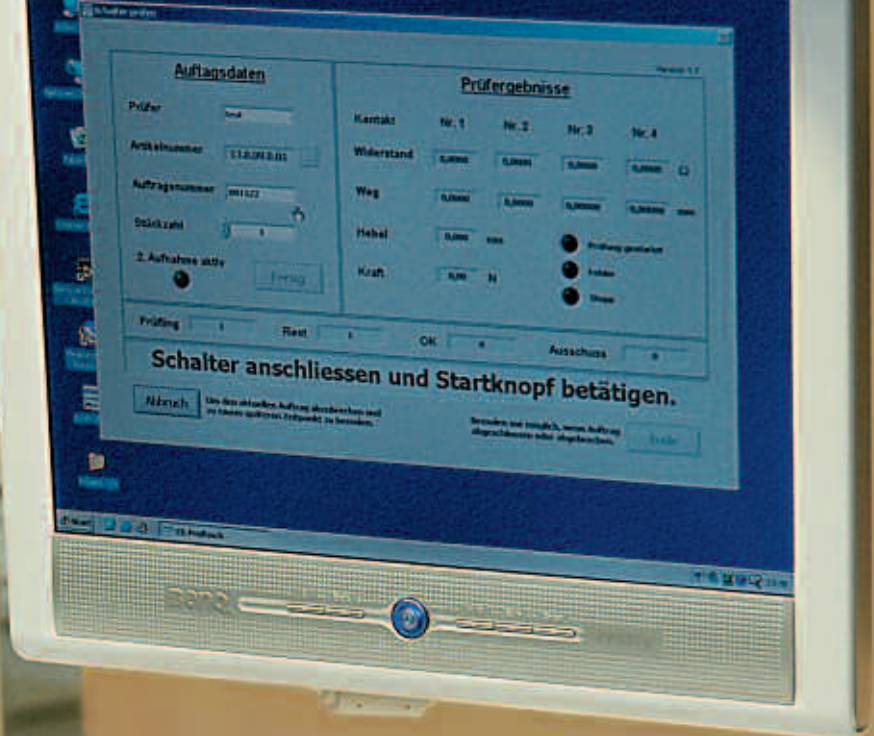
from page 200

// Series Ex 355

from page 206

// Series Ex/ExM 61

from page 212



# Ex position switches with/without safety function

## Range of application

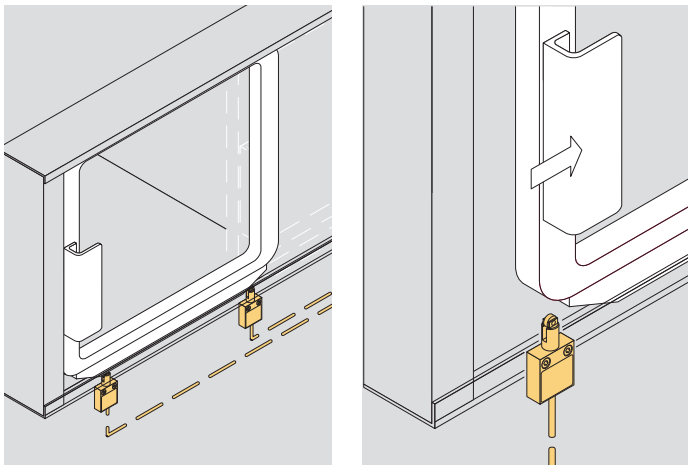
Ex position switches are used where moving parts of machines and industrial plants have to be positioned, controlled and monitored.

The 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 PL »e« per EN ISO 13849-1 or up to SIL 3 per EN 62061, subject to suitable circuit arrangements.

## Design and operating principle

Many of the Ex position switches fulfil the requirements of the IEC 60947-5-1 standard and can therefore also be used as Ex position switches with safety function. On the Ex safety position switches, the guard device and the positive break NC contact are positively linked. When the guard device is closed, the position switch is not actuated. On sliding guards one switch is actuated and one switch is not actuated so that there is a change when opening and closing the guard door. These products are identified by the symbol  $\ominus$  for positive break.

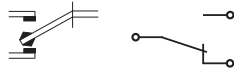
## Application on sliding guards



## Contacts per IEC 60617

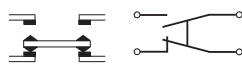
### Type C

Change-over contact with single break with 3 terminals



### Type Za

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



### Type Zb

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



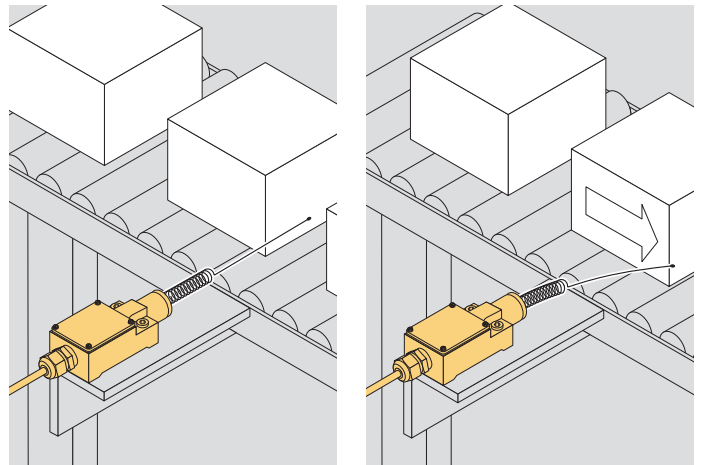
Some position switches fulfil the requirements for standardised switches to EN 50047 or EN 50041.

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

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

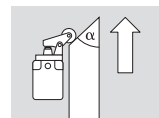
All Ex position switches shown in this chapter bear the CE mark according to the Low Voltage Directive 2014/35/EU and to ATEX 2014/34/EU. The Ex position switches per equipment category 3D bear the CE mark without the number of the notified body and have received a CE declaration of manufacturer conformity. All Ex position switches with safety function bear the CE mark according to the Machinery Directive 2006/42/EC and according to ATEX 2014/34/EU. The Ex position switches with safety function per equipment category 3D bear the CE mark without the number of the notified body and have received a CE declaration of manufacturer conformity.

## As a piece counter

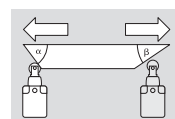


## Legend

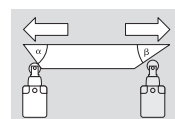
a: Actuating angle from bottom of switch axis as shown in picture



a: Actuating angle from right of switch axis



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



# Selection table

## Ex position switches with/without safety function

// Series

// Actuator

		↓	↓	↺	↺	↺	↔	↔	↔
<b>Ex 13, from page 148</b> - Safety switch - Thermoplastic enclosure - Cable IECEx		+ W	F	KU WKU	FKU		R WR		FR
<b>Ex/ExM 14, from page 160</b> - Ex 14: Safety switch - Thermoplastic enclosure - Cable IECEx		+ W	F	KU WKU	FKU	VKU	R WR		FR
<b>Ex 97, from page 170</b> - Safety switch - Thermoplastic enclosure - Wiring compartment - Design to EN 50047 IECEx		W					R	RL	
<b>Ex 99, from page 178</b> - Safety switch - Thermoplastic enclosure - Wiring compartment - Design to EN 50041 IECEx		S					R		
<b>Ex T 356, from page 184</b> - Safety switch - Thermoplastic enclosure with metal cover - Cable IECEx		S					R		
<b>Ex 12, from page 188</b> - Metal enclosure - Cable IECEx		+ W	F	KU WKU	FKU		R WR		FR
<b>Ex 98, from page 200</b> - Safety switch - Metal enclosure - Wiring compartment - 1 cable entry IECEx		S					R		

+ Standard: plunger without water-tight collar










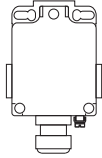








Actuating direction ↓ / Free movement of actuator →

	↔	↔	↔	↑	↔	↔	↔	↔	↔	↔	↔	↻	↻	↻		
		WH	WHL	WPH	WHK	D	DL	DS			DD	TL	TF	TK		
	VR					D	DL	DS				TL	TF	TK		
		WH		WPH		D D50		DS			DD			TK TKK		
		H		PH		D		DS			DD			TK		
						4VH		4V7H			4V10H					
		WH	WHL	WPH	WHK	D	DL	DS			DD	TL	TF	TK		
		H		PH		D	DL	DS			DD					

# Selection table

## Ex position switches with/without safety function

// Series		// Actuator							
		↓	↓	↺	↺	↺	↔	↔	↔
									
<p><b>Ex 355, from page 206</b></p> <ul style="list-style-type: none"> <li>- Safety switch</li> <li>- Metal enclosure</li> <li>- Wiring compartment</li> <li>- 3 cable entries</li> </ul> <p>IECEX </p>		S					R		
<p><b>Ex /ExM 61, from page 212</b></p> <ul style="list-style-type: none"> <li>- Ex 61: Safety switch</li> <li>- Metal enclosure</li> <li>- Cable</li> </ul> <p>IECEX     </p>		W							

+ Standard: plunger without water-tight collar

Actuating direction ↓ / Free movement of actuator →

	↔	↔	↔	↑	↔	↔	↔	↔	↔	↔	↔	↻	↻	↻		
		1K		3K		4VH	4V3H	4V7H	3V4D		4V10H				TK	
		WH	WHL	WPH	WHK	D	DL	DS				TL	TF TFL	TK		

# Ex position switches with/without safety function

## // Series Ex 13

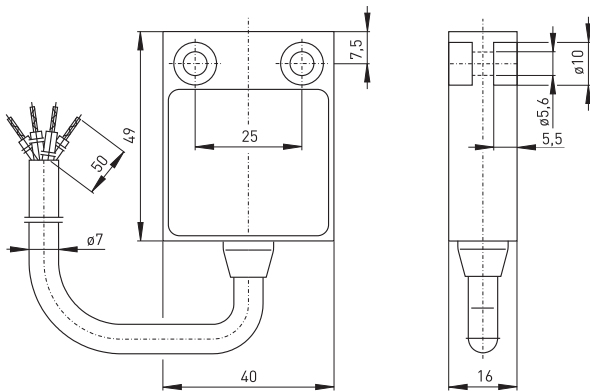
### Features/Options

- Ex zone 1 and 21
- Thermoplastic enclosure
- Double insulated □
- Slow action ⊖, type Zb
- Slow action with overlapping contacts available
- Suitable for in-line mounting
- With pre-wired cable, cable length 2 metres
- Special version only for dust Ex zone 22

## // EX 13



148



## Technical data

<b>Standards</b>	EN 60947-5-1; EN 60079-0, EN 60079-1, EN 60079-31; EN ISO 13849-1; EN ISO 14119
<b>Enclosure</b>	glass-fibre reinforced, shock-proof thermoplastic, self-extinguishing UL 94-V0
<b>Switch type</b>	type 1
<b>Coding level</b>	no coding
<b>Degree of protection</b>	IP 65 to IEC/EN 60529
<b>Contact material</b>	silver
<b>Switching system</b>	slow action, positive break NC contact ⊖
<b>Switching elements</b>	1 NC/1 NO contact, type Zb
<b>Connection</b>	cable H05VV-F, 4 x 0.75 mm <sup>2</sup>
<b>Cable length</b>	2, 5 or 10 m
<b>B<sub>10d</sub> (10 % load)</b>	2 million
<b>T<sub>M</sub></b>	max. 20 years
<b>U<sub>imp</sub></b>	4 kV
<b>U<sub>i</sub></b>	250 V
<b>I<sub>the</sub></b>	T6: 6 A; T5: 3 A
<b>I<sub>e</sub>/U<sub>e</sub></b>	6 A/250 VAC; 0.25 A/230 VDC
<b>Utilisation category</b>	AC-15, DC-13
<b>Max. fuse rating</b>	6 A gG/gN fuse
<b>Ambient temperature</b>	T6: -20 °C ... +65 °C, T5: -20 °C ... +75 °C, +90 °C with max. 3 A
<b>Mechanical life</b>	> 1 million operations
<b>Switching frequency</b>	1800/h
<b>Repeat accuracy</b>	± 0.1 mm
<b>Contact gap</b>	max. 2 x 4 mm
<b>Impact energy</b>	max. 7 J
<b>Ex marking</b>	⊖ II 2G Ex d IIC T6/T5 Gb, II 2D Ex tb IIIC T80°C/T95°C Db IP65 IECEx Ex d IIC T6/T5 Gb, Ex tb IIIC T80°C/T95°C Db IP65
<b>Approvals</b>	PTB 03 ATEX 1068 X, IECEx PTB 06.0053 X



### Type code

Ex 13 WR-V-S 10/1S-2m-3D

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

# Ex position switches with/without safety function

## // Series Ex 13, variants

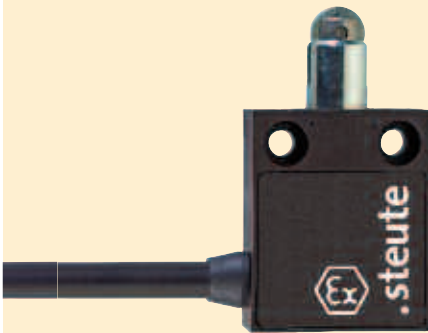
### Features/Options

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

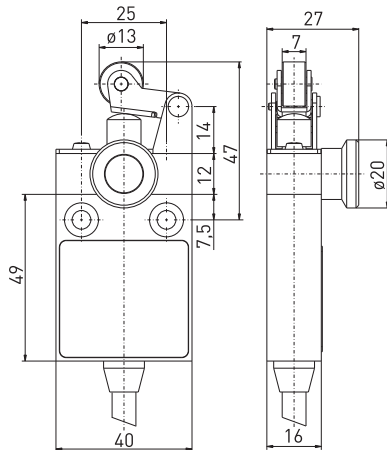
### Features/Options

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

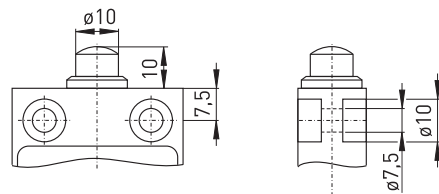
### // Cable entry on side S



### // Mechanical latching V



### // Plunger



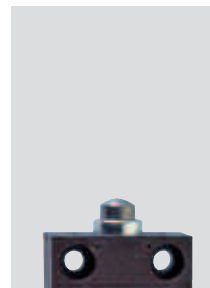
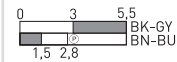
Contact variants: switch travel/contacts

#### Slow action

1 NC/1 NO contact  
Material number

Ex 13 1Ö/1S-2m

1053444 ✓



# Ex position switches with/without safety function

## // Series Ex 13, actuators

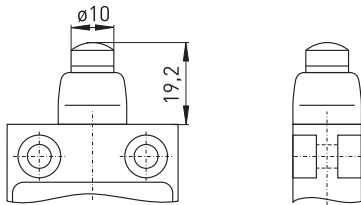
### Features/Options

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

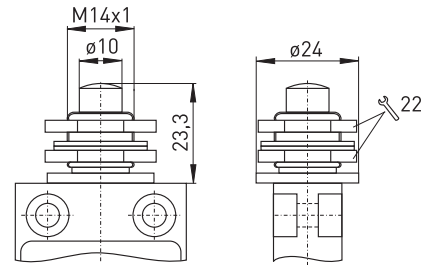
### Features/Options

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

### // Plunger with collar W



### // Plunger for front mounting F



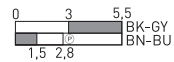
Contact variants: switch travel/contacts

Contact variants: switch travel/contacts

#### Slow action

1 NC/1 NO contact  
Material number

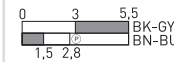
Ex 13 W 10/1S-2m  
1044934



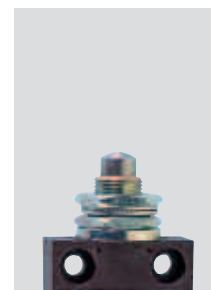
#### Slow action

1 NC/1 NO contact  
Material number

Ex 13 F 10/1S-2m  
1189142



✓ in stock



.steute

**Features/Options**

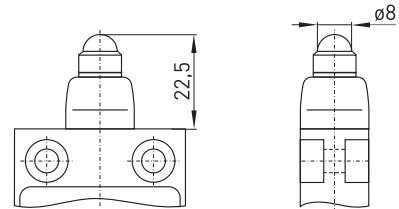
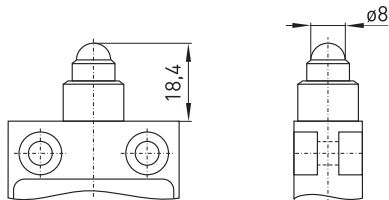
- Actuating speed 0.5 m/s with an actuating angle of 20°
- Can be actuated in line with or from side of switch axis
- Actuator head with captive stainless steel ball actuator
- Exact repeatability of switching point

**Features/Options**

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

**// Ball plunger KU**

**// Ball plunger with collar WKU**



Contact variants: switch travel/contacts

Contact variants: switch travel/contacts

**Slow action**

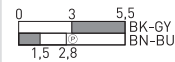
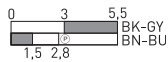
**Slow action**

1 NC/1 NO contact  
Material number

Ex 13 KU 10/1S-2m  
1170833

1 NC/1 NO contact  
Material number

Ex 13 WKU 10/1S-2m  
1189146



# Ex position switches with/without safety function

## // Series Ex 13, actuators

### Features/Options

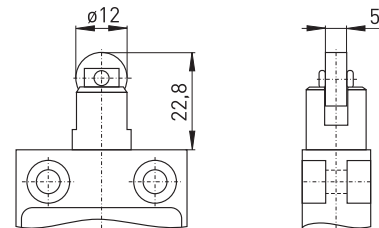
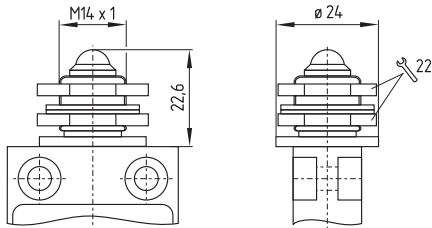
- Actuating speed 0.5 m/s with an actuating angle of 20°
- Can be actuated in line with or from side of switch axis
- Actuator head with captive stainless steel ball actuator
- Ball diameter: 8 mm
- Exact repeatability of switching point

### Features/Options

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

### // Ball plunger for front mounting FKU

### // Roller plunger R



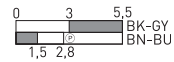
Contact variants: switch travel/contacts

Contact variants: switch travel/contacts

#### Slow action

1 NC/1 NO contact  
Material number

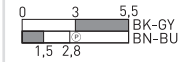
Ex 13 FKU 10/1S-2m  
1189147



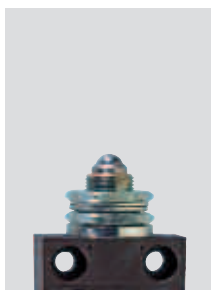
#### Slow action

1 NC/1 NO contact  
Material number

Ex 13 R 10/1S-2m  
1044995 ✓



✓ in stock



.steute



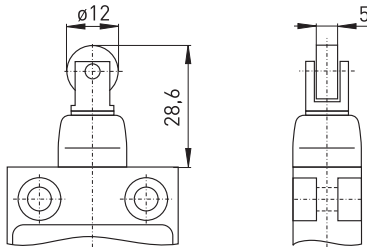
**Features/Options**

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

**Features/Options**

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

// Roller plunger with collar WR

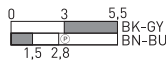


Contact variants: switch travel/contacts

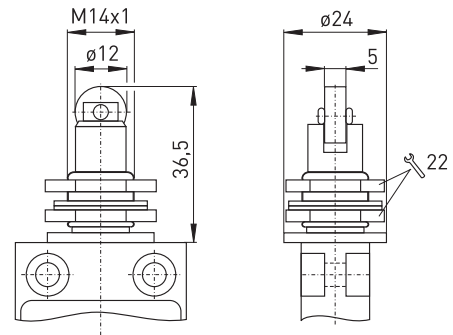
**Slow action**

1 NC/1 NO contact  
Material number

Ex 13 WR 1Ö/1S-2m  
1045061



// Roller plunger for front mounting FR

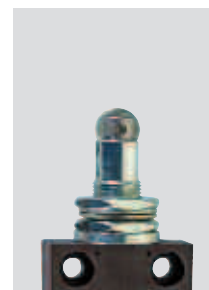
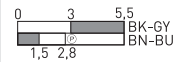


Contact variants: switch travel/contacts

**Slow action**

1 NC/1 NO contact  
Material number

Ex 13 FR 1Ö/1S-2m  
1189148



# Ex position switches with/without safety function

## // Series Ex 13, actuators

### Features/Options

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

### Note

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

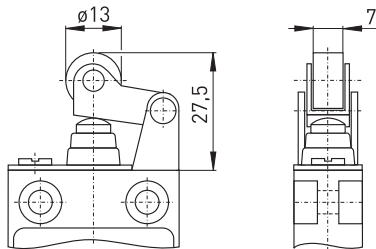
### Features/Options

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

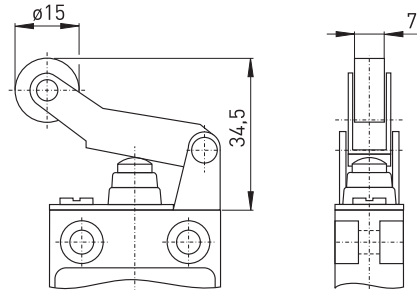
### Note

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

## // Roller lever with collar WH



## // Long roller lever with collar WHL

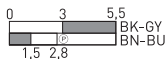


Contact variants: switch travel/contacts

### Slow action

1 NC/1 NO contact  
Material number

Ex 13 WH 10/1S-2m  
1045100 ✓

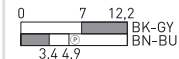


Contact variants: switch travel/contacts

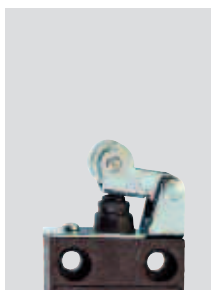
### Slow action

1 NC/1 NO contact  
Material number

Ex 13 WHL 10/1S-2m  
1045126



✓ in stock



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**Features/Options**

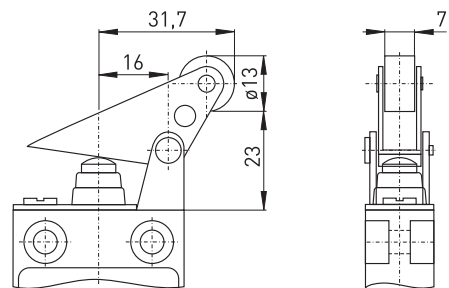
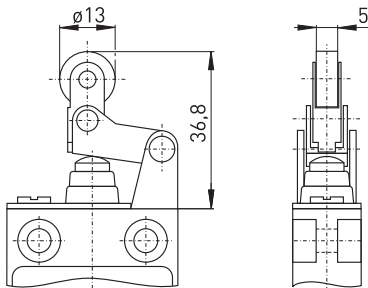
- Actuating speed 0.5 m/s with an actuating angle of  $\alpha = 40^\circ$
- Actuation only possible from right-hand side
- Free movement of actuator from the other side
- Metal roller
- Available with actuator repositioned by  $180^\circ$
- Collar to protect against the entry of foreign bodies
- With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

**Features/Options**

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

// Rocking roller lever with collar WHK

// Parallel roller lever with collar WPH

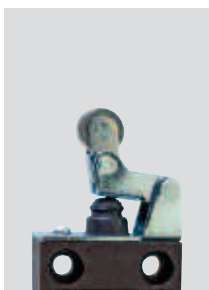


Contact variants: switch travel/contacts

Contact variants: switch travel/contacts

Slow action													
1 NC/1 NO contact	Ex 13 WHK 10/1S-2m												
Material number	1189153												
	<table border="1"> <tr> <td>0</td> <td>3,6</td> <td>6,3</td> <td>BK-GY</td> </tr> <tr> <td></td> <td></td> <td></td> <td>BN-BU</td> </tr> <tr> <td>1,6</td> <td></td> <td></td> <td></td> </tr> </table>	0	3,6	6,3	BK-GY				BN-BU	1,6			
0	3,6	6,3	BK-GY										
			BN-BU										
1,6													

Slow action													
1 NC/1 NO contact	Ex 13 WPH 10/1S-2m												
Material number	1189156												
	<table border="1"> <tr> <td>0</td> <td>3,2</td> <td>5,4</td> <td>-</td> </tr> <tr> <td></td> <td></td> <td></td> <td>BK-GY</td> </tr> <tr> <td>1,5</td> <td>3</td> <td></td> <td>BN-BU</td> </tr> </table>	0	3,2	5,4	-				BK-GY	1,5	3		BN-BU
0	3,2	5,4	-										
			BK-GY										
1,5	3		BN-BU										



# Ex position switches with/without safety function

## // Series Ex 13, actuators

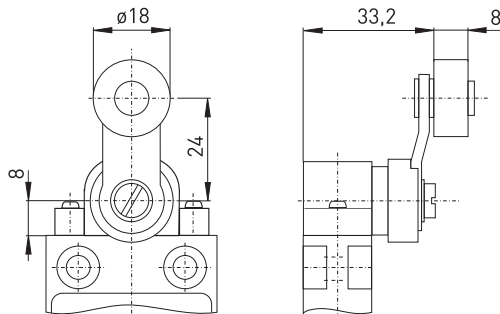
### Features/Options

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

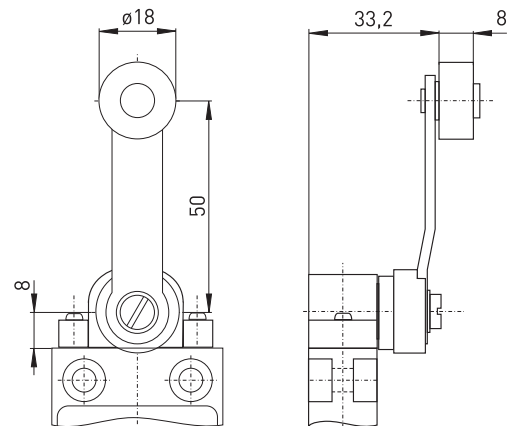
### Features/Options

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

### // Rocking roller lever D



### // Long rocking roller lever DL

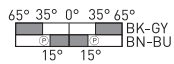


Contact variants: switch travel/contacts

#### Slow action

1 NC/1 NO contact  
Material number

**Ex 13 D 10/1S-2m**  
**1189157**

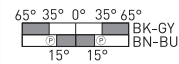


Contact variants: switch travel/contacts

#### Slow action

1 NC/1 NO contact  
Material number

**Ex 13 DL 10/1S-2m**  
**1189163**



✓ in stock



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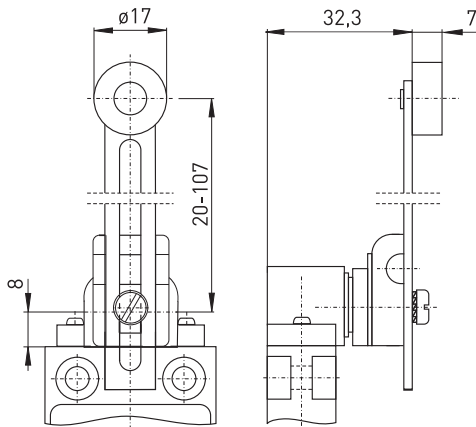
**Features/Options**

- No safety switch!
- Actuating speed 0.5 m/s with an actuating angle of 45°
- Wear-resistant thermoplastic roller
- Lever can be repositioned in 10° steps clockwise or counter-clockwise
- Actuator can be repositioned by 180°
- With metal roller available on request

**Features/Options**

- No safety switch!
- Wear-resistant thermoplastic tip
- Lever can be repositioned in 10° steps clockwise or counter-clockwise
- Actuator can be repositioned by 180°

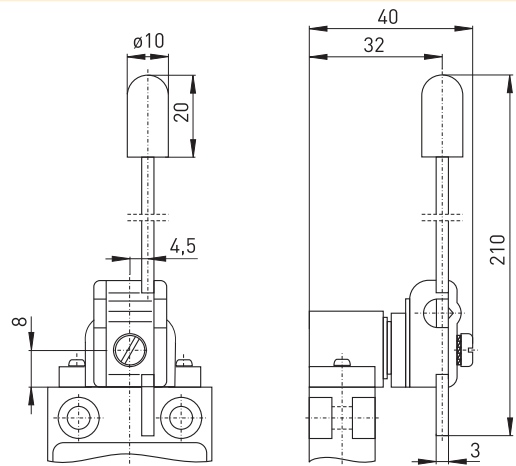
**// Adjustable-length roller lever DS**



Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	Ex 13 DS 10/1S-2m
Material number	1177362 ✓

**// Wire roller lever DD**



Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	Ex 13 DD 10/1S-2m
Material number	1177841



# Ex position switches with/without safety function

## // Series Ex 13, actuators

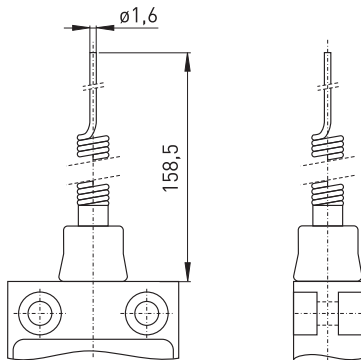
### Features/Options

- No safety switch!
- Spring rod can be actuated from any direction
- Spring rod can be shortened 30 mm in actuating area
- Exact linear actuation not unnecessary
- Elasticity of spring allows for deflection above the max. switching angle of 18°

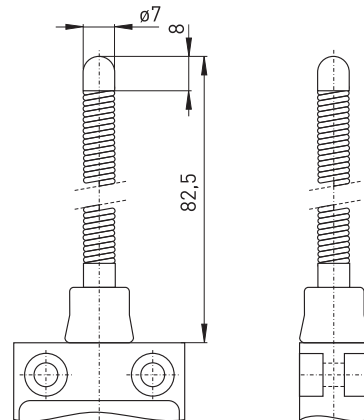
### Features/Options

- No safety switch!
- With rounded steel tip
- Spring rod can be actuated from any direction
- Elasticity of spring allows for deflection above the max. switching angle of 18°

### // Long spring rod TL



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

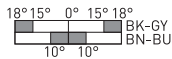


Contact variants: switch travel/contacts

#### Slow action

1 NC/1 NO contact  
Material number

Ex 13 TL 10°/15-2m  
1189165

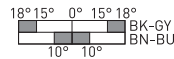


Contact variants: switch travel/contacts

#### Slow action

1 NC/1 NO contact  
Material number

Ex 13 TF 10°/15-2m  
1045202 ✓



✓ in stock

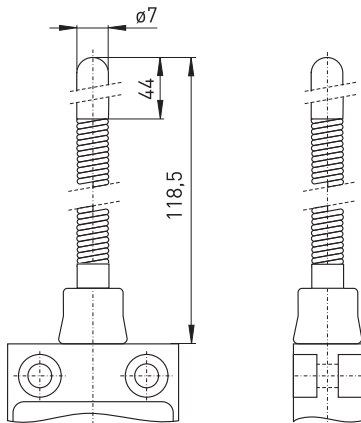


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### Features/Options

- No safety switch!
- Wear-resistant plastic tip
- Spring rod can be actuated from any direction
- Elasticity of spring allows for deflection above the max. switching angle of 18°

### // Spring rod with plastic tip TK

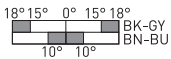


Contact variants: switch travel/contacts

#### Slow action

1 NC/1 NO contact  
Material number

Ex 13 TK 10°/15°-2m  
1189166



# Ex position switches with/without safety function

## // Series Ex/ExM 14

### Features/Options

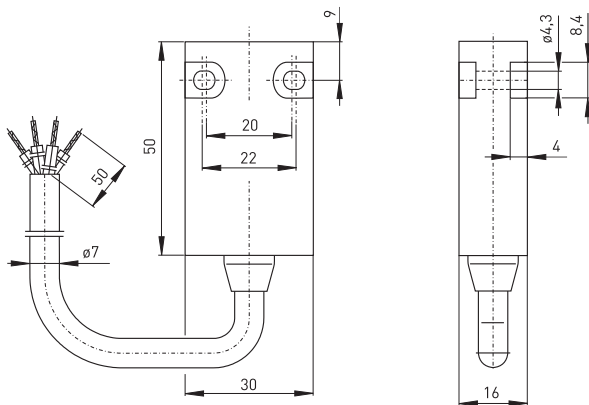
- Ex zone 1 and 21
- Safety switch only version with slow action
- Thermoplastic enclosure
- Double insulated ☐
- Slow action with overlapping contacts available
- Mounting details to EN 50047
- Suitable for in-line mounting
- With pre-wired cable, cable length 2 metres
- Special version only for dust Ex zone 22 available

## // EX/EXM 14



### Technical data

<b>Standards</b>	EN 60947-5-1; EN 60079-0, EN 60079-1, EN 60079-31; EN ISO 13849-1; EN ISO 14119
<b>Enclosure</b>	glass-fibre reinforced, shock-proof thermoplastic, self-extinguishing UL 94-V0
<b>Switch type</b>	type 1
<b>Coding level</b>	no coding
<b>Degree of protection</b>	IP 65 to IEC/EN 60529
<b>Contact material</b>	silver
<b>Switching system</b>	slow or snap action
<b>Switching elements</b>	Ex 14: 1 NC/1 NO contact, type Zb; ExM 14: change-over cont. type C or 1 NC/1 NO contact, type Za
<b>Connection</b>	cable H05VV-F, 3/4 x 0.75mm <sup>2</sup> , length 2, 5 or 10m
<b>B<sub>10d</sub> (10 % load)</b>	Ex 14: 2 million
<b>T<sub>M</sub></b>	max. 20 years
<b>U<sub>imp</sub></b>	4 kV
<b>U<sub>i</sub></b>	250 V
<b>I<sub>e</sub><sup>the</sup></b>	T6: Zb: 6 A; C and Za: 5 A; T5: 3 A
<b>I<sub>e</sub>/U<sub>e</sub></b>	Zb: 6 A/250 VAC, 0.25 A/230 VDC; Za: 5 A/250 VAC, 0.25 A/230 VDC, C: 5 A/250 VAC, 0.16 A/230 VDC
<b>Utilisation category</b>	Zb, C: AC-15, DC-13, Za: AC-1, DC-1
<b>Max. fuse rating</b>	Zb: 6 A gG/gN fuse; C, Za: 5 A gG/gN fuse
<b>Ambient temperature</b>	Zb: T6: -20 °C ... +65 °C, T5: -20 °C ... +75 °C, +90 °C with max. 3 A; Za, C: -20 °C ... +60 °C (down to -40 °C on request)
<b>Mechanical life</b>	> 1 million operations
<b>Impact energy</b>	max. 4 J
<b>Ex marking</b>	Ex 14: Ⓢ II 2G Ex db IIC T6/T5 Gb, II 2D Ex tb IIIC T80 °C/T95 °C Db ExM 14: II 2G Ex d IIC T6 Gb, II 2D Ex tb IIIC T80 °C Db IP65
<b>Approvals</b>	ExM 14: PTB 03 ATEX 1069 X; ExM 14 1Ö/1S: PTB 00 ATEX 1006 X, IECEx PTB 13.0019X; Ex 14: PTB 03 ATEX 1070X, IECEx PTB06.0098X depend. on variant



### Type code

ExM 14 WR-S 1Ö/1S-RE-2m-3D

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



# Ex position switches with/without safety function

## // Series Ex/ExM 14, actuators

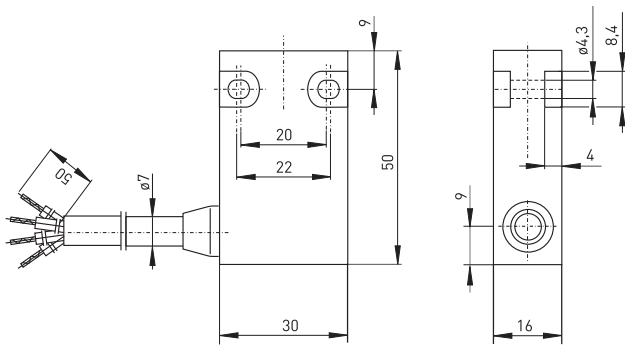
### Features/Options

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

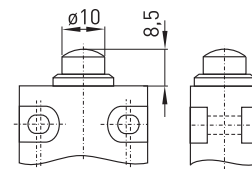
### Features/Options

- Safety switch only version with slow action
- Actuating speed 0.5 m/s with an actuating angle of 0°

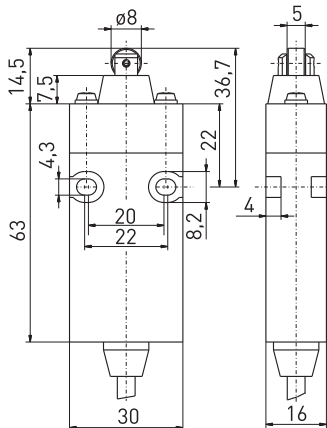
### // Cable entry on side S



### // Plunger

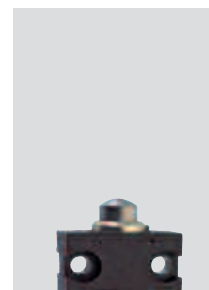


### // With latching RE



### Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact Material number	ExM 14 10/1S-2m 1189182	Ex 14 10/1S-2m 1160657
1 change-over contact Material number	ExM 14-2m 1189090	
2 NC contacts Material number		Ex 14 20-2m 1216357



# Ex position switches with/without safety function

## // Series Ex/ExM 14, actuators

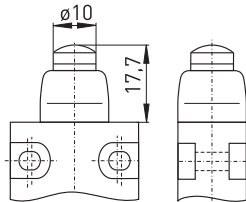
### Features/Options

- Safety switch only version with slow action
- Actuating speed 0.5 m/s with an actuating angle of 0°
- Collar to protect against the entry of foreign bodies

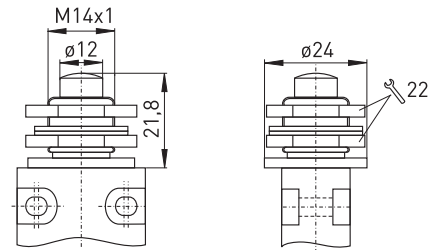
### Features/Options

- Safety switch only version with slow action
- Actuating speed 0.5 m/s with an actuating angle of 0°

### // Plunger with collar W



### // Plunger for front mounting F



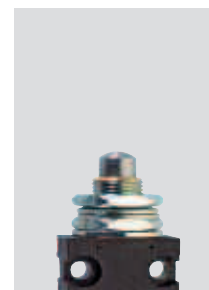
#### Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact Material number	<b>ExM 14 W 10/1S-2m</b> <b>1189184</b> 	<b>Ex 14 W 10/1S-2m</b> <b>1180472</b> 
1 change-over contact Material number	<b>ExM 14 W-2m</b> <b>1189091</b> 	
2 NC contacts Material number		<b>Ex 14 W 20-2m</b> <b>on request</b> 

#### Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact Material number	<b>ExM 14 F 10/1S-2m</b> <b>1189186</b> 	<b>Ex 14 F 10/1S-2m</b> <b>1051550</b> 
1 change-over contact Material number	<b>ExM 14 F-2m</b> <b>1189092</b> 	
2 NC contacts Material number		<b>Ex 14 F 20-2m</b> <b>on request</b> 

✓ in stock



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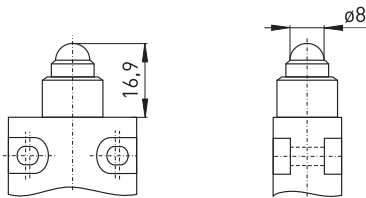
### Features/Options

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

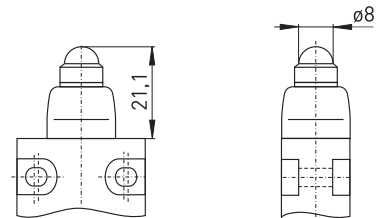
### Features/Options

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

## // Ball plunger KU



## // Ball plunger with collar WKU



### Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact Material number	ExM 14 KU 10/1S-2m 1185368	Ex 14 KU 10/1S-2m 1189013
1 change-over contact Material number	ExM 14 KU-2m 1189093	
2 NC contacts Material number		Ex 14 KU 20-2m on request

### Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact Material number	ExM 14 WKU 10/1S-2m 1189189	Ex 14 WKU 10/1S-2m 1179897
1 change-over contact Material number	ExM 14 WKU-2m 1189095	
2 NC contacts Material number		Ex 14 WKU 20-2m on request



# Ex position switches with/without safety function

## // Series Ex/ExM 14, actuators

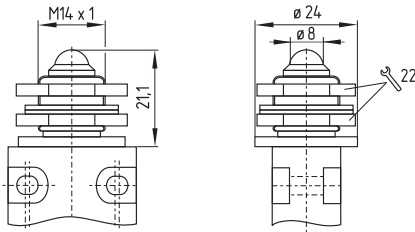
### Features/Options

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

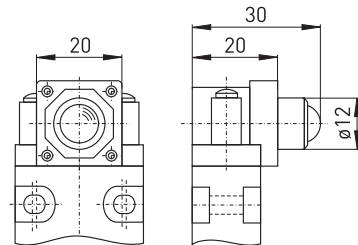
### Features/Options

- Safety switch only version with slow action
- Actuation from any direction
- Actuator head with captive stainless steel ball actuator

## // Ball plunger for front mounting FKU



## // Vertical ball plunger VKU



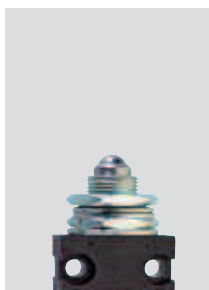
### Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact Material number	<b>ExM 14 FKU 1Ö/1S</b> <b>1189191</b> 	<b>Ex 14 FKU 1Ö/1S</b> <b>1189139</b> 
1 change-over contact Material number	<b>ExM 14 FKU</b> <b>1189097</b> 	
2 NC contacts Material number		<b>Ex 14 FKU 2Ö</b> <b>on request</b> 

### Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact Material number	<b>ExM 14 VKU 1Ö/1S</b> <b>1189203</b> 	<b>Ex 14 VKU 1Ö/1S</b> <b>1189140</b> 
1 change-over contact Material number	<b>ExM 14 VKU</b> <b>1189099</b> 	
2 NC contacts Material number		<b>Ex 14 VKU 2Ö</b> <b>on request</b> 

✓ in stock



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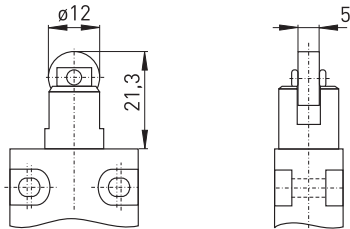
**Features/Options**

- Safety switch only version with slow action
- Actuating speed 0.5 m/s with an actuating angle of 30°
- Metal roller
- Available with actuator repositioned by 90°

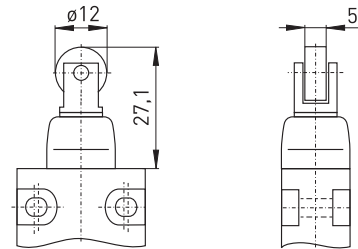
**Features/Options**

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

// Roller plunger R



// Roller plunger with collar WR



Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact Material number	ExM 14 R 1Ö/1S-2m 1173979	Ex 14 R 1Ö/1S-2m 1045364
1 change-over contact Material number	ExM 14 R-2m 1189101	
2 NC contacts Material number		Ex 14 R 2Ö-2m on request

Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact Material number	ExM 14 WR 1Ö/1S-2m 1189205	Ex 14 WR 1Ö/1S-2m 1158753
1 change-over contact Material number	ExM 14 WR-2m 1187093	
2 NC contacts Material number		Ex 14 WR 2Ö-2m on request



# Ex position switches with/without safety function

## // Series Ex/ExM 14, actuators

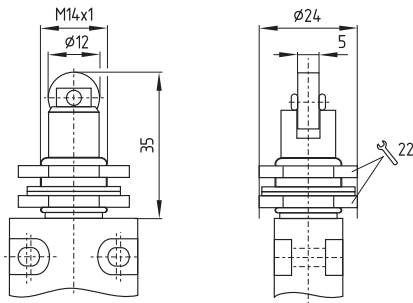
### Features/Options

- Safety switch only version with slow action
- Actuating speed 0.5 m/s with an actuating angle of 25°
- Metal roller
- Available with actuator repositioned by 90°

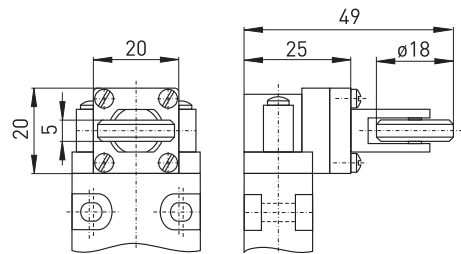
### Features/Options

- Safety switch only version with slow action
- Available with actuator repositioned by 90°
- Wear-resistant thermoplastic roller

## // Roller plunger for front mounting FR



## // Vertical roller plunger VR



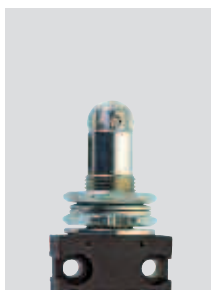
### Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact Material number	<b>ExM 14 FR 1Ö/1S-2m</b> <b>1189206</b> 0 1,5 5,5 BN-BU BK-GY	<b>Ex 14 FR 1Ö/1S-2m</b> <b>1181781</b> 0 3 5,5 BK-GY BN-BU 1,5 2,8
1 change-over contact Material number	<b>ExM 14 FR-2m</b> <b>1175492</b> 0 1,5 5,5 GY-BK GY-BN	
2 NC contacts Material number		<b>Ex 14 FR 2Ö-2m</b> <b>on request</b> 0 5,5 BK-GY BN-BU 1,5 2,8

### Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact Material number	<b>ExM 14 VR 1Ö/1S-2m</b> <b>1189208</b> 0 1,5 5,5 BN-BU BK-GY	<b>Ex 14 VR 1Ö/1S-2m</b> <b>1189141</b> 0 3 5,5 BK-GY BN-BU 1,5 2,8
1 change-over contact Material number	<b>ExM 14 VR-2m</b> <b>1189102</b> 0 1,5 5,5 GY-BK GY-BN	
2 NC contacts Material number		<b>Ex 14 VR 2Ö-2m</b> <b>on request</b> 0 5,5 BK-GY BN-BU 1,5 2,8

✓ in stock



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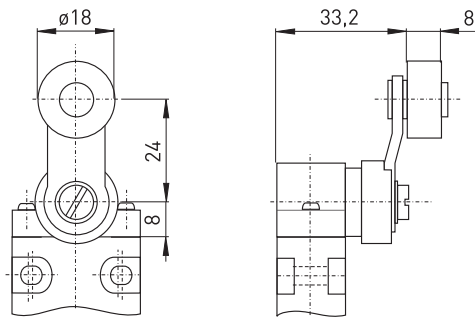
### Features/Options

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

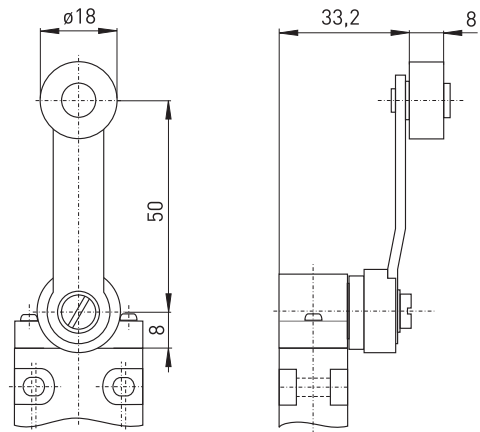
### Features/Options

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

## // Rocking roller lever D



## // Long rocking roller lever DL



Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact Material number	ExM 14 D 10/1S-2m 1176310	Ex 14 D 10/1S-2m 1164918
1 change-over contact Material number	ExM 14 D-2m 1173987	
2 NC contacts Material number		Ex 14 D 20-2m on request

Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact Material number	ExM 14 DL 10/1S-2m 1189209	Ex 14 DL 10/1S-2m 1160793
1 change-over contact Material number	ExM 14 DL-2m 1189104	
2 NC contacts Material number		Ex 14 DL 20-2m on request



# Ex position switches with/without safety function

## // Series Ex/ExM 14, actuators

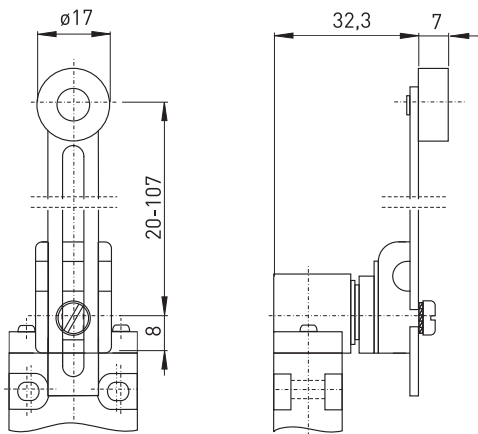
### Features/Options

- No safety switch!
- Actuating speed 0.5 m/s with an actuating angle of 45°
- Wear-resistant thermoplastic roller
- Lever can be repositioned in 10° steps clockwise or counter-clockwise
- Actuator can be repositioned by 180°
- With metal roller available on request

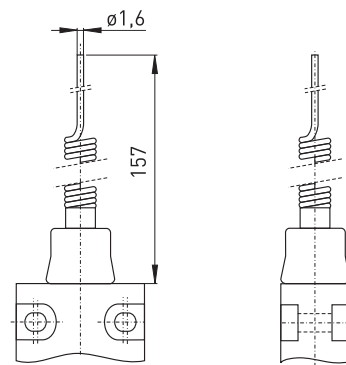
### Features/Options

- No safety switch!
- Spring rod can be actuated from any direction
- Spring rod can be shortened 30 mm in actuating area
- Exact linear actuation not necessary
- Elasticity of spring allows for deflection above the max. switching angle of 18°

## // Adjustable-length roller lever DS



## // Long spring rod TL



### Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact Material number	<b>ExM 14 DS 10/1S-2m</b> <b>1189212</b> 	<b>Ex 14 DS 10/1S-2m</b> <b>1179731</b> 
1 change-over contact Material number	<b>ExM 14 DS-2m</b> <b>1189105</b> 	
2 NC contacts Material number		<b>Ex 14 DS 20-2m</b> <b>on request</b> 

### Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact Material number	<b>ExM 14 TL 10/1S-2m</b> <b>1186536</b> 	<b>Ex 14 TL 10/1S-2m</b> <b>1189193</b> 
1 change-over contact Material number	<b>ExM 14 TL-2m</b> <b>1189107</b> 	
2 NC contacts Material number		<b>Ex 14 TL 20-2m</b> <b>on request</b> 

✓ in stock



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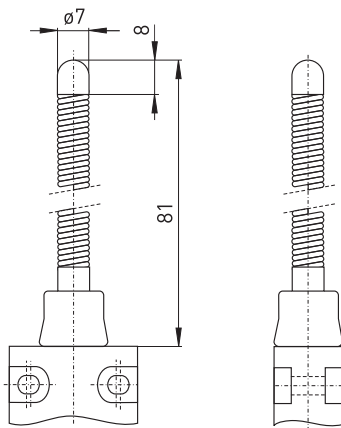
**Features/Options**

- No safety switch!
- With rounded steel tip
- Spring rod can be actuated from any direction
- Elasticity of spring allows for deflection above the max. switching angle of 18°

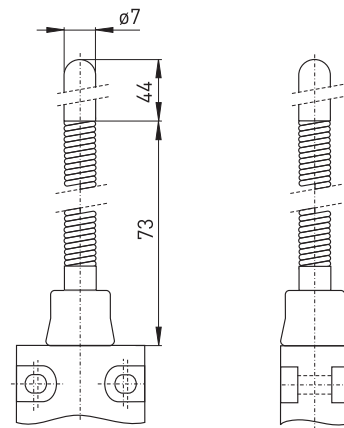
**Features/Options**

- No safety switch!
- Wear-resistant plastic tip
- Spring rod can be actuated from any direction
- Elasticity of spring allows for deflection above the max. switching angle of 18°

// Spring rod with rounded steel tip TF



// Spring rod with plastic tip TK



Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact Material number	ExM 14 TF 10/1S-2m 1189244 18° 10° 0° 10° 18° BK-GY BN-BU	Ex 14 TF 10/1S-2m 1189195 18° 15° 0° 15° 18° BK-GY BN-BU 10° 10°
1 change-over contact Material number	ExM 14 TF-2m 1189137 18° 0° 18° GY-BK GY-BN 10° 10°	
2 NC contacts Material number		Ex 14 TF 20-2m on request 18° 0° 18° BK-GY BN-BU 10° 10°

Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact Material number	ExM 14 TK 10/1S-2m 1176333 18° 10° 0° 10° 18° BK-GY BN-BU	Ex 14 TK 10/1S-2m 1189196 18° 15° 0° 15° 18° BK-GY BN-BU 10° 10°
1 change-over contact Material number	ExM 14 TK-2m 1189138 18° 0° 18° GY-BK GY-BN 10° 10°	
2 NC contacts Material number		Ex 14 TK 20-2m on request 18° 0° 18° BK-GY BN-BU 10° 10°



# Ex position switches with/without safety function

## // Series Ex 97

### Features/Options

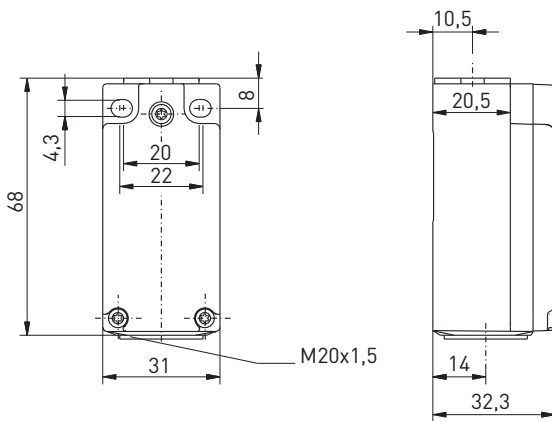
- Ex zone 1 and 21
- Thermoplastic enclosure
- Design according to EN 50047
- Wiring compartment
- Double insulated ☐
- Available with overlapping contacts
- Actuator heads can be repositioned in 4 x 90° steps
- Angle of offset roller lever can be adjusted in 10° steps
- With gold-plated contacts available on request
- Special version only for dust Ex zone 22 available

## // EX 97



## Technical data

<b>Standards</b>	EN 60947-5-1; EN 60079-0, EN 60079-1, EN 60079-7, EN 60079-14, EN 60079-31; EN ISO 13849-1; EN ISO 14119
<b>Enclosure</b>	glass-fibre reinforced, shock-proof thermoplastic, self-extinguishing UL 94-V0 type 1
<b>Switch type</b>	no coding
<b>Coding level</b>	Type 8080/1 ...
<b>Degree of protection</b>	IP 67, IP 66 or IP 69 to IEC/EN 60529
<b>Contact material</b>	silver, nickel-plated
<b>Switching system</b>	slow or snap action, positive break NC contact ⊖
<b>Switching elements</b>	1 NC/1 NO, 2 NC or 1 NC/1 NO contact with contact overlapping, type Zb screw connection terminals
<b>Connection</b>	max. 1.5 mm <sup>2</sup> (incl. conductor ferrules)
<b>Cable section</b>	1 x M20 x 1.5
<b>B<sub>10d</sub> (10 % load)</b>	2 million
<b>T<sub>M</sub></b>	max. 20 years
<b>I<sub>e</sub></b>	max. 2 A or 4 A
<b>U<sub>e</sub></b>	max. 500 VAC, 2Ö: max. 400 VAC, max. 250 VAC for unequal potential
<b>Utilisation category</b>	AC-15
<b>Max. fuse rating</b>	6 A gG/gN fuse
<b>Ambient temperature</b>	-60 °C ... +55 °C max. 4 A, +60 °C max. 2 A
<b>Mechanical life</b>	> 1 million operations
<b>Impact energy</b>	max. 7 J
<b>Ex marking</b>	⊕ II 2G Ex de IIC T5 Gb, II 2D Ex tb IIIC T80°C Db IP67 IECEx Ex de IIC T5 Gb, Ex tb IIIC T80°C Db
<b>Approvals</b>	DMT 01 ATEX E 118, IECEx BVS 14.0018X EAC, S, C-ULUS



### Type code

Ex 97 WH-11-60°C

Cold-resistant down to -60 °C  
 Contact type 10/15, (-02, -11U)  
 Actuator H (R, D, DS, etc. ...)  
 Collar  
 Series  
 Ex certified component

# Ex position switches with/without safety function

## // Series Ex 97, actuators

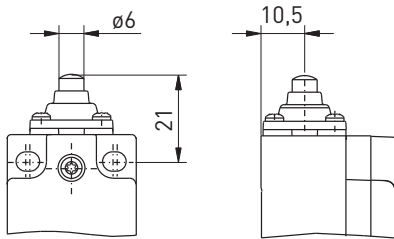
### Features/Options

- Actuator type B to EN 50047
- Actuator with collar

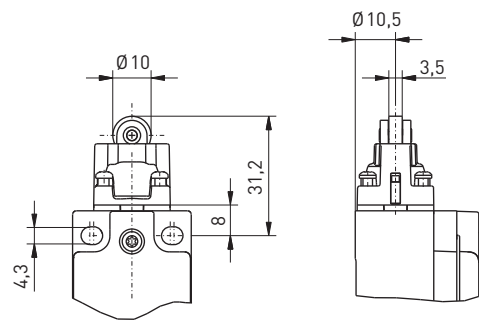
### Features/Options

- Actuator type C to EN 50047
- Wear-resistant thermoplastic roller
- Actuator heads can be repositioned in 4 x 90° steps

### // Plunger W



### // Roller plunger R



#### Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact Material number	Ex EM 97 W-11 1430318 ✓  0 3 4,7 6 23-24 11-12 13-14 23-24 21-22 1,3	Ex ES 97 W-11 1292311 ✓  0 2,3 4 13-14 1,1 2,1 21-22
1 NC/1 NO contact with overlapping Material number		Ex ES 97 W-11U on request  0 3,1 6 27-28 15-16 4,3,5,2
2 NC contacts Material number		Ex ES 97 W-02 1430320  0 4 11-12 1,1 2,3 21-22

#### Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact Material number	Ex EM 95 R-11 1430872 ✓  0 3 4,7 6 23-24 11-12 13-14 23-24 21-22 1,3	Ex ES 97 R-11 1336578 ✓  0 4,3 6 13-14 3,1 4,1 21-22
1 NC/1 NO contact with overlapping Material number		Ex ES 97 R UE on request  0 3,1 6 27-28 15-16 4,3,5,2
2 NC contacts Material number		Ex ES 97 R 20 1430395  0 6 11-12 3 4,3 21-22



# Ex position switches with/without safety function

## // Series Ex 97, actuators

### Features/Options

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

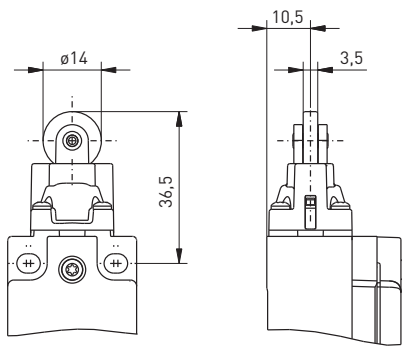
### Features/Options

- Actuating speed 0.5 m/s with an actuating angle of a = 40° and b = 25°
- Actuator type E to EN 50047
- Actuator with collar
- Wear-resistant thermoplastic roller
- Actuator heads can be repositioned in 4 x 90° steps

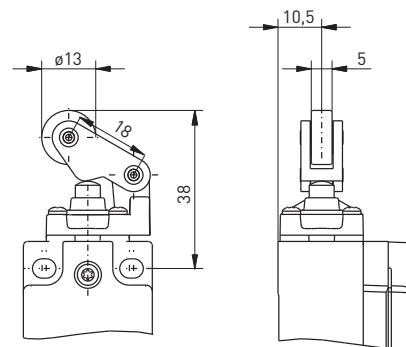
### Note

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

## // Long roller plunger RL



## // Roller lever with collar WH



172

### Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact Material number	<b>Ex EM 97 RL-11</b> <b>1431037</b>	<b>Ex ES 97 RL-11</b> <b>1336619 ✓</b>
1 NC/1 NO contact with overlapping Material number		<b>Ex ES 97 RL-11U</b>  <b>on request</b>
2 NC contacts Material number		<b>Ex ES 97 RL-02</b> <b>1430443</b>

### Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact Material number	<b>Ex EM 97 WH-11</b> <b>1431110 ✓</b>	<b>Ex ES 97 WH-11</b> <b>1336662 ✓</b>
1 NC/1 NO contact with overlapping Material number		<b>Ex ES 97 WH-11U</b>  <b>on request</b>
2 NC contacts Material number		<b>Ex ES 97 WH-02</b> <b>1430485</b>

✓ in stock



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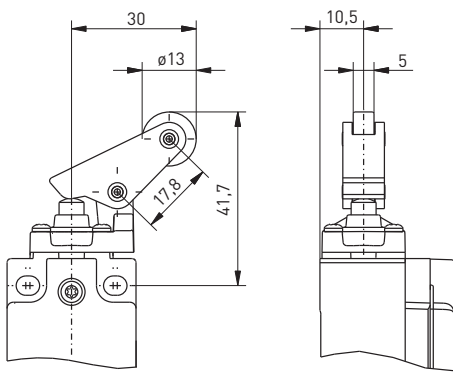
### Features/Options

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

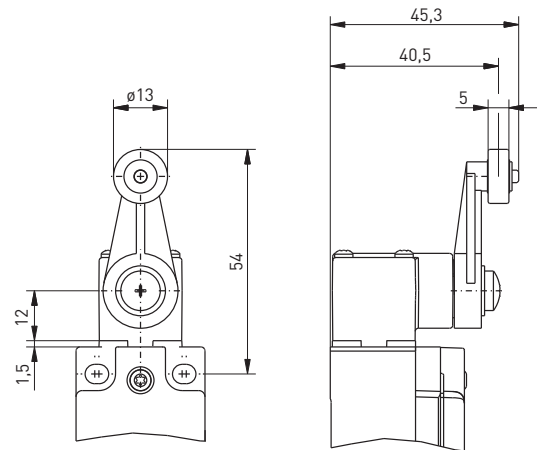
### Features/Options

- Lever angle adjustable in  $10^\circ$  steps
- Wear-resistant thermoplastic roller
- Actuator heads can be repositioned in 4 x  $90^\circ$  steps

## // Parallel roller lever with collar WPH



## // Rocking lever D



### Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact Material number	Ex EM 97 WPH-11 1431162	Ex ES 97 WPH-11 1336702 ✓
1 NC/1 NO contact with overlapping Material number		Ex ES 97 WPH-11U on request
2 NC contacts Material number		Ex ES 97 WPH-02 1430536

### Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact Material number	Ex EM 97 D-11 1431213 ✓	Ex ES 97 D-11 1336746 ✓
1 NC/1 NO contact with overlapping Material number		Ex ES 97 D-11U on request
2 NC contacts Material number		Ex ES 97 D-02 1430584 ✓



# Ex position switches with/without safety function

## // Series Ex 97, actuators

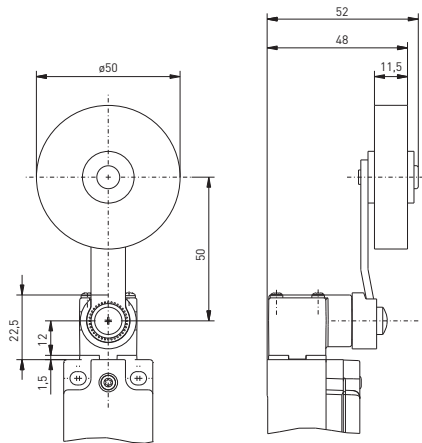
### Features/Options

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

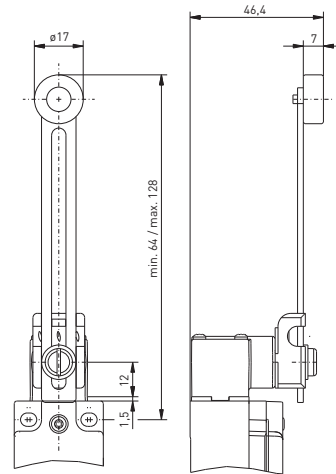
### Features/Options

- No safety switch!
- Lever angle adjustable in 10° steps
- Length of roller lever adjustable
- Wear-resistant thermoplastic roller
- Actuator heads can be repositioned in 4 x 90° steps
- Metal roller available on request

### // Roller lever with rubber roller D50



### // Adjustable-length roller lever DS



#### Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact Material number	<b>Ex EM 97 D50-11</b> <b>1431266</b> 65° 30° 0° 30° 65° 23-24 11-12 23-24 11-12 45,5° 11° 11° 45,5°	<b>Ex ES 97 D50-11</b> <b>1404832</b> 65° 42° 0° 42° 65° 13-14 21-22 41° 29,5° 29,5° 41°
1 NC/1 NO contact with overlapping Material number		<b>Ex ES 97 D50-11U</b>  <b>on request</b> 65° 29,5° 0° 29,5° 65° 13-14 21-22 53° 39,5° 39,5° 53°
2 NC contacts Material number		<b>Ex 95 D 20</b> <b>1430640</b> 65° 42° 0° 42° 65° 11-12 21-22 28,5° 28,5°

#### Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact Material number	<b>Ex EM 97 DS-11</b> <b>1431346 ✓</b> 65° 30° 0° 30° 65° 23-24 11-12 23-24 11-12 11° 11°	<b>Ex ES 97 DS-11</b> <b>1336789 ✓</b> 65° 42° 0° 42° 65° 13-14 21-22 29,5° 29,5°
1 NC/1 NO contact overlapping Material number		<b>Ex ES 97 DS-11U</b> with  <b>on request</b> 65° 29,5° 0° 29,5° 65° 13-14 21-22 39,5° 39,5°
2 NC contacts Material number		<b>Ex ES 97 DS-02</b> <b>1430692 ✓</b> 65° 0° 65° 11-12 21-22 28,5° 28,5°

✓ in stock



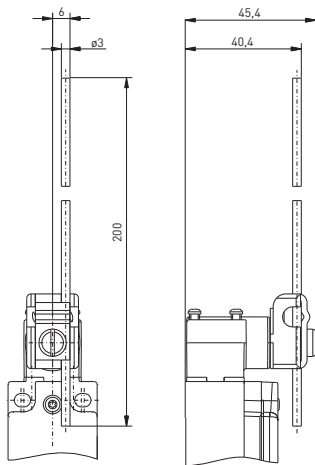
**Features/Options**

- No safety switch!
- Lever angle adjustable in 10° steps
- Actuator heads can be repositioned in 4 x 90° steps

**Features/Options**

- No safety switch!
- Wear-resistant thermoplastic rod
- Spring rod can be actuated from any direction

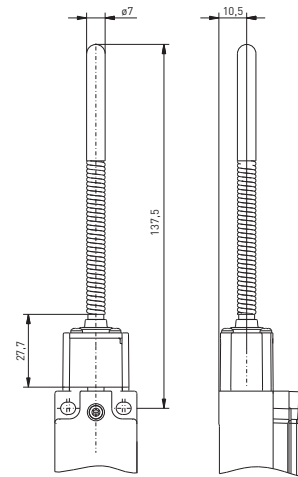
**// Spring lever DD**



Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact Material number	Ex EM 97 DD-11 1431494 ✓ 65° 30° 0° 30° 65° 23-24 11-12 23-24 11-12 11° 11°	Ex ES 97 DD-11 1336834 ✓ 65° 42° 0° 42° 65° 13-14 21-22 29,5° 29,5°
1 NC/1 NO contact with overlapping Material number		Ex ES 97 DD-11U  on request 65° 29,5° 0° 29,5° 65° 13-14 21-22 39,5° 39,5°
2 NC contacts Material number		Ex ES 97 DD-02 1430751 65° 0° 65° 11-12 21-22 28,5° 28,5°

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



Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact Material number	Ex EM 97 TK-11 1336295 ✓ 0 16 30 23-24 11-12 23-24 11-12 4,5	Ex ES 97 TK-11 1415038 ✓ 0 11,5 25 13-14 21-22
2 NC contacts Material number		Ex ES 97 TK-02 1430809 0 25 11-12 21-22 6



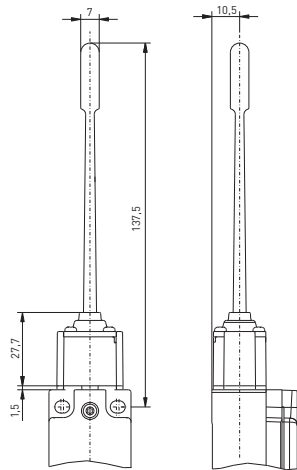
# Ex position switches with/without safety function

## // Series Ex 97, actuators

### Features/Options

- No safety switch!
- Wear-resistant thermoplastic rod
- Spring rod can be actuated from any direction
- Return of TKK spring rod actuator is restricted at temperatures < -20° C

## // Plastic spring rod TKK



176

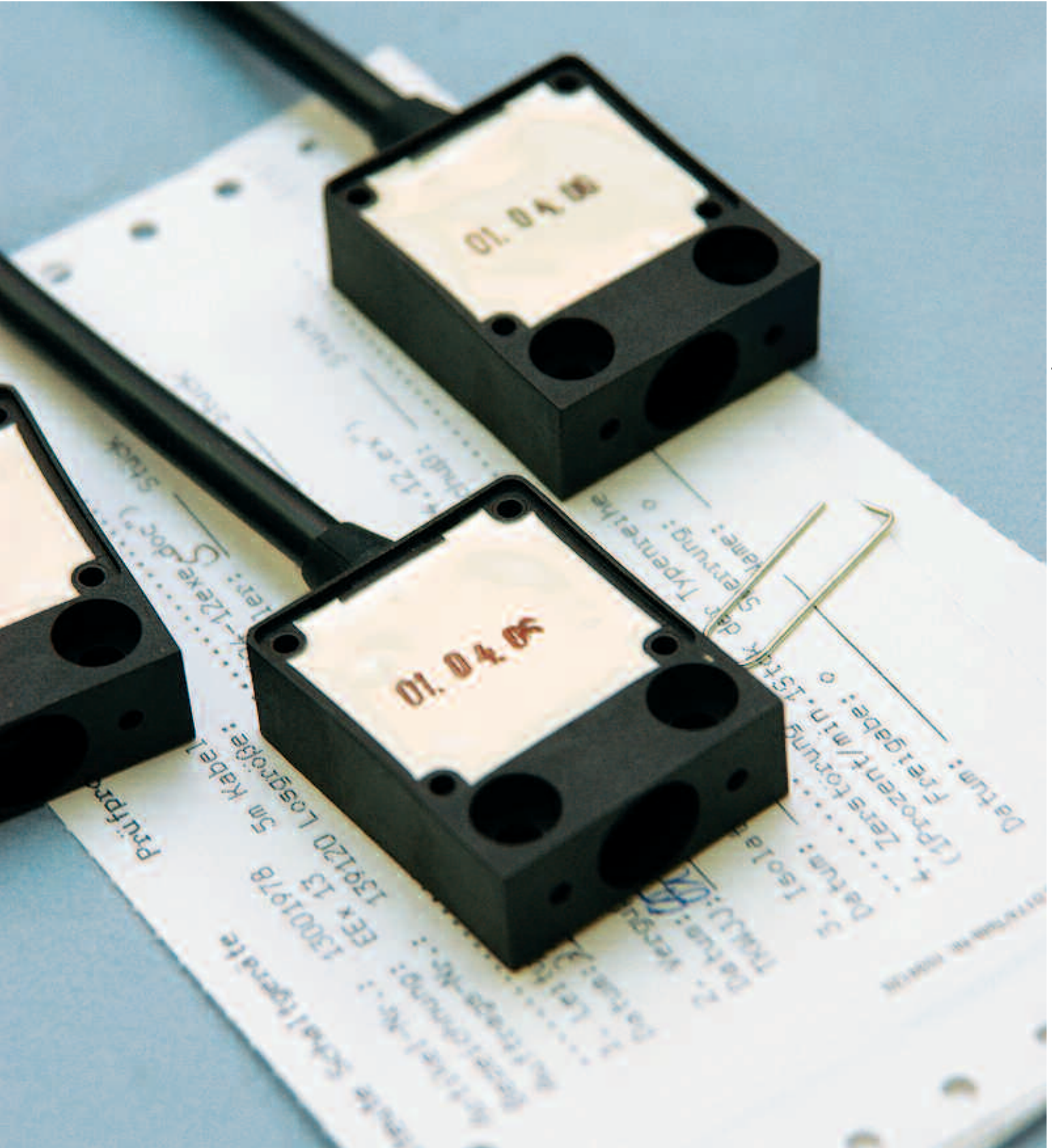
### Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact Material number	Ex EM 97 TKK-11 1450769 ✓ 	Ex ES 97 TKK-11 1451424 
2 NC contacts Material number		Ex ES 97 TKK-02 on request 






PRODUCTION PROCESS POTTING  
POTTED POSITION SWITCHES



# Ex position switches with/without safety function

## // Series Ex 99






### Features/Options

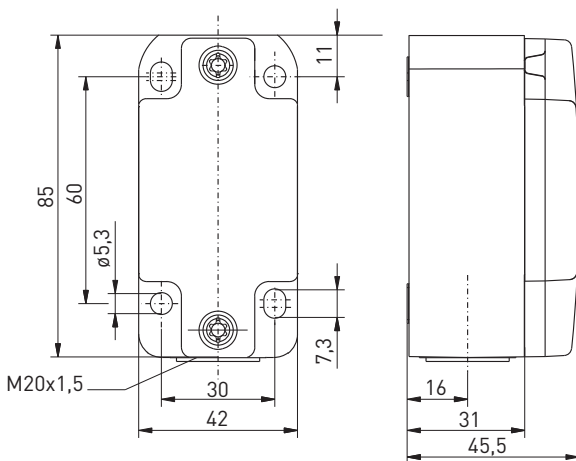
- Ex zone 1 and 21
- Thermoplastic enclosure
- Design according to EN 50041
- Wiring compartment
- Double insulated 
- Available with overlapping contacts
- Actuator heads can be repositioned in 4 x 90° steps
- Angle of offset roller lever can be adjusted in 10° steps
- With gold-plated contacts available on request
- Special version only for dust Ex zone 22 available

## // EX 99



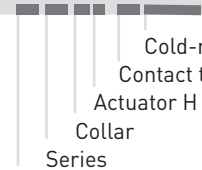
### Technical data

<b>Standards</b>	EN 60947-5-1; EN 60079-0, EN 60079-1, EN 60079-7, EN 60079-14, EN 60079-31; EN ISO 13849-1; EN ISO 14119
<b>Enclosure</b>	glass-fibre reinforced, shock-proof thermoplastic, self-extinguishing UL 94-V0
<b>Switch type</b>	type 1
<b>Coding level</b>	no coding
<b>Switch insert</b>	Type 8080/1 ...
<b>Degree of protection</b>	IP 67, IP 66 or IP 69 to IEC/EN 60529
<b>Contact material</b>	silver, nickel-plated
<b>Switching system</b>	slow or snap action, positive break NC contact 
<b>Switching elements</b>	1 NC/1 NO, 2 NC or 1 NC/1 NO contact with contact overlapping, type Zb
<b>Connection</b>	screw connection terminals
<b>Cable section</b>	max. 1.5 mm <sup>2</sup> (incl. conductor ferrules)
<b>Cable entry</b>	1 x M20 x 1.5
<b>B<sub>10d</sub> (10 % load)</b>	2 million
<b>T<sub>M</sub></b>	max. 20 years
<b>I<sub>e</sub></b>	max. 2 A or 4 A
<b>U<sub>e</sub></b>	max. 500 VAC, 2Ö: max. 400 VAC, max. 250 VAC for unequal potential
<b>Utilisation category</b>	AC-15
<b>Max. fuse rating</b>	6 A gG/gN fuse
<b>Ambient temperature</b>	-60 °C ... +55 °C max. 4 A, +60 °C max. 2 A
<b>Mechanical life</b>	> 1 million operations
<b>Impact energy</b>	max. 7 J down to -40 °C
<b>Ex marking</b>	 II 2G Ex de IIC T5 Gb, II 2D Ex tb IIIC T80°C Db IP67 IECEx Ex de IIC T5 Gb, Ex tb IIIC T80°C Db
<b>Approvals</b>	DMT 01 ATEX E 118, IECEx BVS 14.0018X   



### Type code

Ex 99 WH-11 -60°C X


  
 Cold-resistant down to -60 °C  
 Contact type 1Ö/1S, (-02, -11U)  
 Actuator H (R, D, DS, etc. ...)  
 Collar  
 Series  
 Ex certified component

# Ex position switches with/without safety function

## // Series Ex 99, actuators

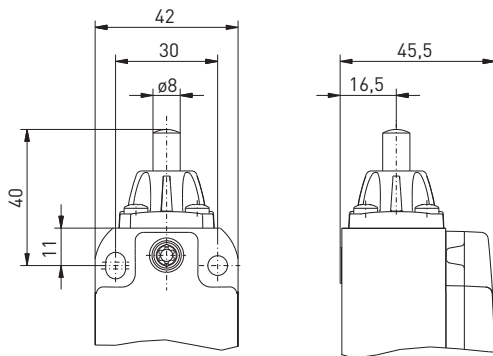
### Features/Options

- Actuator type B to EN 50041
- Actuator with collar

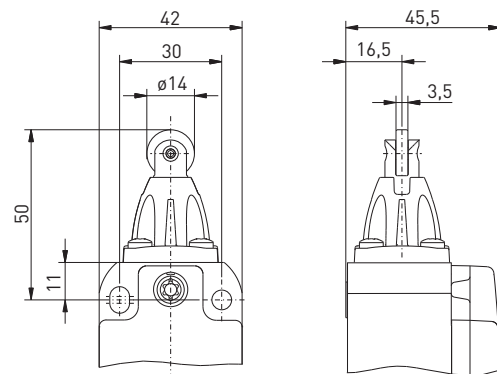
### Features/Options

- Actuator type C to EN 50041
- Wear-resistant thermoplastic roller
- Actuator heads can be repositioned in 4 x 90° steps

### // Plunger S



### // Roller plunger R

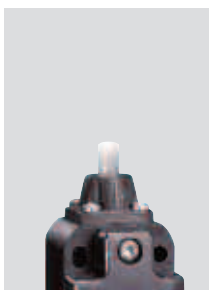


#### Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact Material number	<b>Ex EM 99 S-11</b> <b>1404450 ✓</b>	<b>Ex ES 99 S-11</b> <b>1349234 ✓</b>
1 NC/1 NO contact with overlapping Material number		<b>Ex ES 99 S-11U</b> <b>on request</b>
2 NC contacts Material number		<b>Ex ES 97 S-02</b> <b>1167577</b>

#### Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact Material number	<b>Ex EM 99 R-11</b> <b>1442354 ✓</b>	<b>Ex ES 99 R-11</b> <b>1349302 ✓</b>
1 NC/1 NO contact with overlapping Material number		<b>Ex ES 99 R-11U</b> <b>on request</b>
2 NC contacts Material number		<b>Ex ES 99 R-02</b> <b>1441132</b>



# Ex position switches with/without safety function

## // Series Ex 99, actuators

### Features/Options

- Actuating speed 0.5 m/s with an actuating angle of  $a = 40^\circ$  and  $b = 25^\circ$
- Actuator type E to EN 50041
- Actuator with collar
- Wear-resistant thermoplastic roller
- Actuator heads can be repositioned in 4 x  $90^\circ$  steps

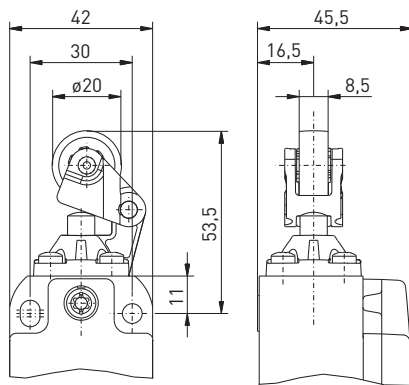
### Note

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

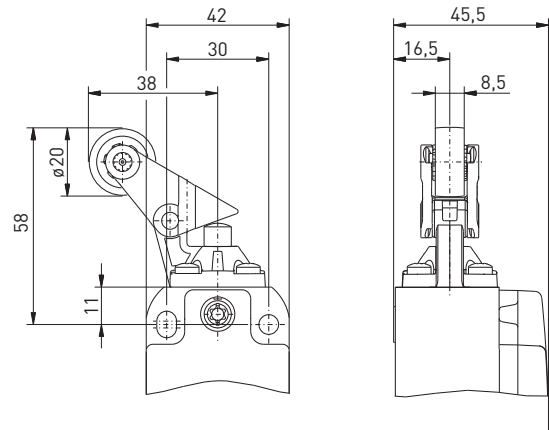
### Features/Options

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

## // Roller lever H



## // Parallel roller lever PH



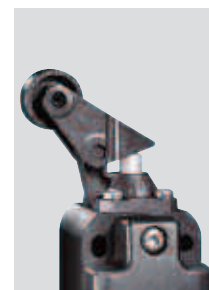
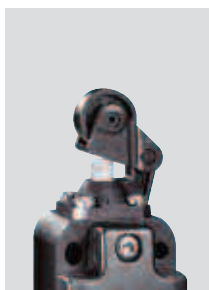
### Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact Material number	<b>Ex EM 99 H-11</b> 1442452 ✓ 	<b>Ex ES 99 H-11</b> 1349368 ✓ 
1 NC/1 NO contact with overlapping Material number		<b>Ex ES 99 H-11U</b> on request 
2 NC contacts Material number		<b>Ex ES 99 H-02</b> 1441184 

### Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact Material number	<b>Ex EM 99 PH-11</b> 1442544 	<b>Ex ES 99 PH-11</b> 1349434 
1 NC/1 NO contact with overlapping Material number		<b>Ex ES 99 PH-11U</b> on request 
2 NC contacts Material number		<b>Ex ES 99 PH-02</b> 1441262 

✓ in stock



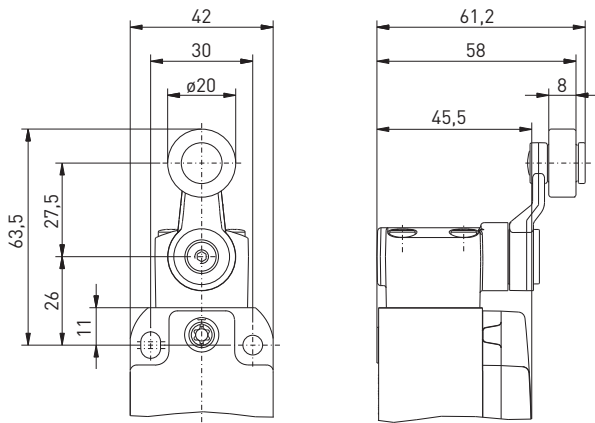
**Features/Options**

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

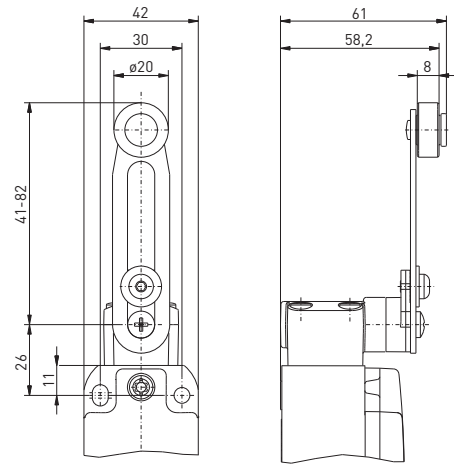
**Features/Options**

- No safety switch!
- Lever angle adjustable in 10° steps
- Length of roller lever adjustable
- Wear-resistant thermoplastic roller
- Actuator heads can be repositioned in 4 x 90° steps

**// Rocking lever D**



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



Contact variants: switch travel/contacts

Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact Material number	Ex EM 99 D-11 <b>1442636 ✓</b>	Ex ES 99 D-11 <b>1349491 ✓</b>
	82° 37° 0° 37° 82° 23-24 11-12 23-24 11-12 61,5° 12° 12° 61,5°	82° 53,5° 0° 53,5° 82° 13-14 21-22 51° 37° 37° 51°
1 NC/1 NO contact with overlapping Material number		Ex ES 99 D-11U <b>on request</b>
		82° 37° 0° 37° 82° 13-14 21-22 70° 50,5° 50,5° 70°
2 NC contacts Material number		Ex ES 99 D-02 <b>1441962</b>
		82° 54° 0° 54° 82° 11-12 21-22 37° 37°

	Snap action	Slow action
1 NC/1 NO contact Material number	Ex EM 99 DS-11 <b>1442717 ✓</b>	Ex ES 99 DS-11 <b>1349735 ✓</b>
	82° 37° 0° 37° 82° 23-24 11-12 23-24 11-12 12° 12°	82° 53,5° 0° 53,5° 82° 13-14 21-22 37° 37°
1 NC/1 NO contact with overlapping Material number		Ex ES 99 DS-11U <b>on request</b>
		82° 37° 0° 37° 82° 13-14 21-22 50,5° 50,5°
2 NC contacts Material number		Ex ES 99 DS-02 <b>1442032</b>
		82° 0° 82° 11-12 21-22 37° 37°



# Ex position switches with/without safety function

## // Series Ex 99, actuators

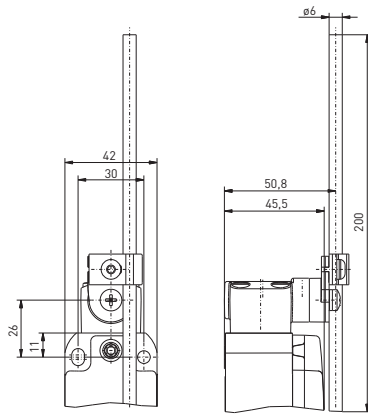
### Features/Options

- No safety switch!
- Lever angle adjustable in 10° steps
- Actuator heads can be repositioned in 4 x 90° steps

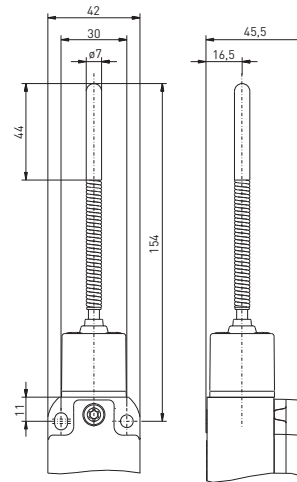
### Features/Options

- No safety switch!
- Wear-resistant thermoplastic rod
- Spring rod can be actuated from any direction

### // Spring lever DD



### // Spring rod with plastic tip TK



182

#### Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact Material number	<b>Ex EM 99 DD-11</b> <b>1443254</b> 82° 37° 0° 37° 82° 23-24 11-12 23-24 11-12 12° 12°	<b>Ex ES 99 DD-11</b> <b>1349879</b> 82° 53,5° 0° 53,5° 82° 13-14 21-22 37° 37°
2 NC contacts Material number		<b>Ex ES 99 DD-02</b> <b>1442086</b> 82° 0° 82° 11-12 21-22 37° 37°

#### Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact Material number	<b>Ex EM 99 TK-11</b> <b>1443893 ✓</b> 0 17,5 30 23-24 11-12 23-24 11-12 6	
2 NC contacts Material number		<b>Ex ES 99 TK-02</b> <b>1442159</b> 0 25 11-12 21-22 17,5

✓ in stock



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QUALITY TEST  
IP TEST: WATER JET



# Ex position switches with/without safety function

## // Series Ex T 356

### Features/Options

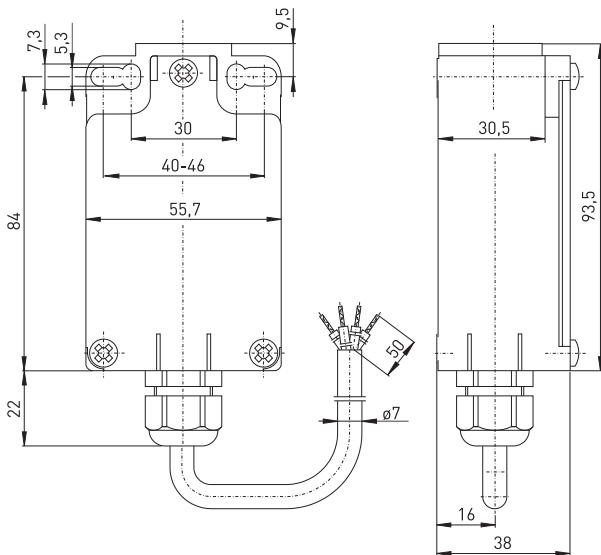
- Ex zone 1 and 21
- Thermoplastic enclosure with metal cover
- Mounting dimensions and switching points to EN 50041
- With pre-wired cable, cable length 2 metres
- Actuator heads can be repositioned in 4 x 90° steps
- Angle of offset roller lever can be adjusted in 10° steps
- Special version only for dust Ex zone 22 available

## // EX T 356



### Technical data

<b>Standards</b>	EN 60947-5-1; EN 60079-0, EN 60079-1, EN 60079-31; EN ISO 13849-1; EN ISO 14119
<b>Enclosure</b>	glass-fibre reinforced, shock-proof thermoplastic, self-extinguishing UL 94-V0 steel enamelled
<b>Cover</b>	type 1
<b>Switch type</b>	no coding
<b>Coding level</b>	Ex 13
<b>Switch insert</b>	IP 65 to IEC/EN 60529
<b>Degree of protection</b>	silver
<b>Contact material</b>	slow action, positive break NC contact ⊖
<b>Switching system</b>	1 NC/1 NO contact, type Zb
<b>Switching elements</b>	cable H05VV-F, 4 x 0.75 mm <sup>2</sup>
<b>Connection</b>	2 or 5 m
<b>Cable length</b>	2 million
<b>B<sub>10d</sub> (10 % load)</b>	max. 20 years
<b>T<sub>M</sub></b>	4 kV
<b>U<sub>imp</sub></b>	250 V
<b>U<sub>i</sub></b>	T6: 6 A, T5: 3 A
<b>I<sub>the</sub></b>	6 A/250 VAC; 0.25 A/230 VDC
<b>I<sub>e</sub>/U<sub>e</sub></b>	AC-15, DC-13
<b>Utilisation category</b>	6 A gG/gN fuse
<b>Max. fuse rating</b>	T6: -20 °C ... +65 °C; T5 -20 °C ... +75 °C, +90 °C with max. 3 A
<b>Ambient temperature</b>	> 1 million operations
<b>Mechanical life</b>	1800/h
<b>Switching frequency</b>	max. 2 x 4.5 mm
<b>Contact gap</b>	max. 7 J
<b>Impact energy</b>	⊕ II 2G Ex d IIC T6/T5 Gb, II 2D Ex tb IIIC T80°C/T95°C Db IP65
<b>Ex marking</b>	IECEx Ex d IIC T6/T5 Gb, Ex tb IIIC T80°C/T95°C Db IP65
<b>Approvals</b>	PTB 03 ATEX 1068 X*, IECEx PTB 06.0053 X
	*referring to the switch insert



### Type code

Ex T 356 S 1Ö/1S-2m-3D

Equipment Categ. 3D,  
dust Ex zone 22  
Cable length 2 m, (5 m)  
Contact type 1Ö/1S  
Actuator S (R, 4VH, 4V7H, etc. ...)  
Series  
Ex certified component



# Ex position switches with/without safety function

## // Series Ex T 356, actuators

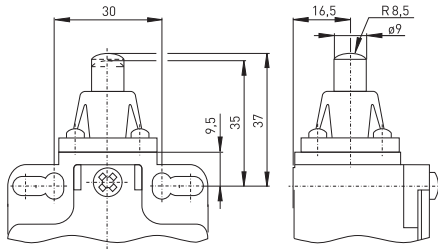
### Features/Options

- Actuator type B to EN 50041
- Actuating speed 0.5 m/s with an actuating angle of  $\alpha = 0^\circ$

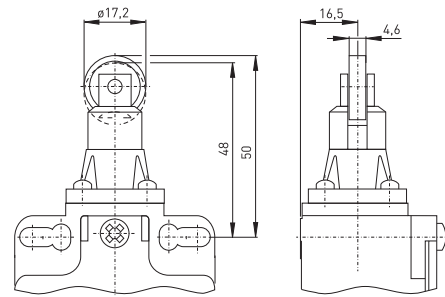
### Features/Options

- Actuator type C to EN 50041
- Actuating speed 0.5 m/s with an actuating angle of  $\alpha = 30^\circ$

### // Plunger S



### // Roller plunger R

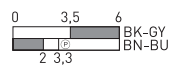


Contact variants: switch travel/contacts

Slow action

1 NC/1 NO contact  
Material number

Ex T 356 S 10/1S-2m  
1172992

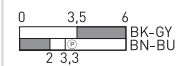


Contact variants: switch travel/contacts

Slow action

1 NC/1 NO contact  
Material number

Ex T 356 R 10/1S-2m  
1173048



# Ex position switches with/without safety function

## // Series Ex T 356, actuators

### Features/Options

- Actuator type A to EN 50041
- Actuating speed 2.5 m/s with an actuating angle of  $\alpha = 30^\circ$
- Wear-resistant thermoplastic roller
- Actuator heads can be repositioned in 4 x 90° steps

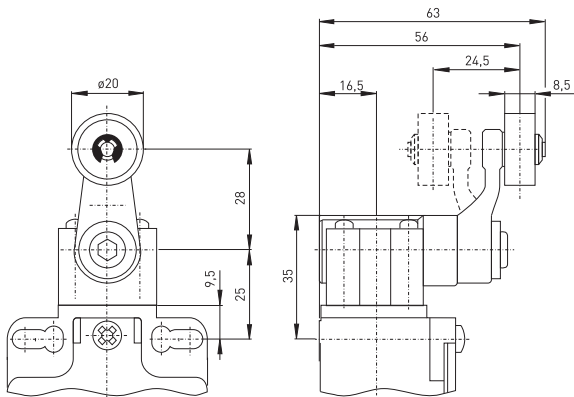
### Features/Options

- Actuating speed 2.5 m/s with an actuating angle of  $\alpha = 30^\circ$
- Wear-resistant thermoplastic roller
- Actuator heads can be repositioned in 4 x 90° steps
- Safety switch  $\ominus$ , positive break, ordering suffix -2138, material No. 1179068

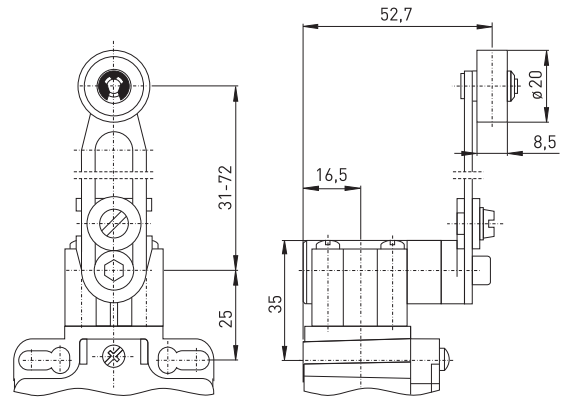
### Note

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

## // Rocking roller lever 4VH



## // Adjustable rocking lever 4V7H

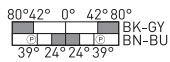


Contact variants: switch travel/contacts

### Slow action

1 NC/1 NO contact  
Material number

Ex T 356 4VH 10/1S-2m  
1173059

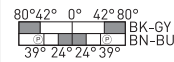


Contact variants: switch travel/contacts

### Slow action

1 NC/1 NO contact  
Material number

Ex T 356 4V7H 10/1S-2m  
1173062



✓ in stock

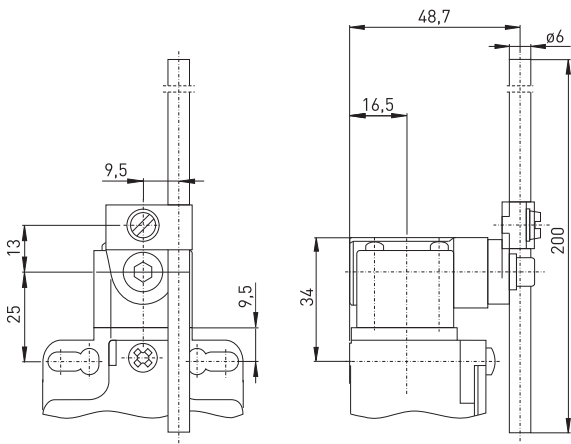


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**Features/Options**

- No safety switch!
- Actuating speed 2.5 m/s with an actuating angle of  $\alpha = 30^\circ$
- Actuator type D to EN 50041

// Rod lever 4V10H



Contact variants: switch travel/contacts

**Slow action**

1 NC/1 NO contact  
Material number

**Ex T 356 4V10H 10/1S-2m**  
**1175269**

80°	42°	0°	42°	80°	BK-GY
39°	24°	24°	39°	BN-BU	



# Ex position switches with/without safety function

## // Series Ex 12

### Features/Options

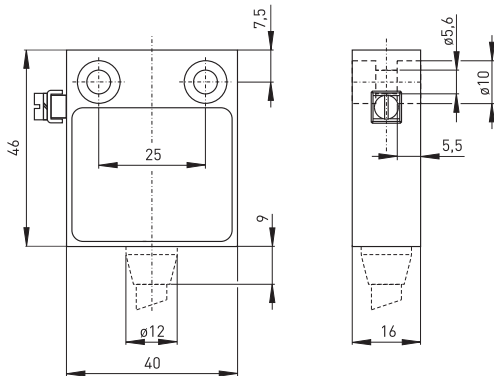
- No safety switch!
- Ex zone 1 and 21
- Metal enclosure
- No safety switch!
- Snap action, change-over contact with single break
- Suitable for in-line mounting
- With pre-wired cable, cable length 2 metres
- Special version only for dust Ex zone 22 available

## // EX 12



## Technical data

<b>Standards</b>	EN 60079-0; EN 60079-1; EN 60079-31; EN 60947-5-1
<b>Enclosure</b>	aluminium die-cast, hard-coated
<b>Degree of protection</b>	IP 65 to IEC/EN 60529
<b>Contact material</b>	silver
<b>Switching system</b>	snap action
<b>Switching elements</b>	change-over contact, type C
<b>Connection</b>	cable H05VV-F, 4 x 0.75 mm <sup>2</sup>
<b>Cable length</b>	2 or 5 m
<b>U<sub>imp</sub></b>	4 kV
<b>U<sub>i</sub></b>	250 V
<b>I<sub>the</sub></b>	5 A
<b>Utilisation category</b>	AC-15; DC-13
<b>Ie/Ue</b>	5 A/250 VAC; 0.16 A/230 VDC
<b>Max. fuse rating</b>	5 A gG/gN fuse
<b>Ambient temperature</b>	T6: -20 °C ... + 60 °C
<b>Mechanical life</b>	> 1 million operations
<b>Switching frequency</b>	1800/h
<b>Repeat accuracy</b>	± 0.1 mm
<b>Impact energy</b>	max. 7 J
<b>Ex marking</b>	⊕ II 2G Ex db IIC T6 Gb, II 2D Ex tb IIIC T80 °C Db IECEx Ex db IIC T6 Gb, Ex tb IIIC T80 °C Db
<b>Approvals</b>	PTB 03 ATEX 1067 X, IECEx PTB 11.0089X EAC



### Type code

Ex 12 WKU-S-B-2 m-3D

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

Features/Options

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

// Cable on side

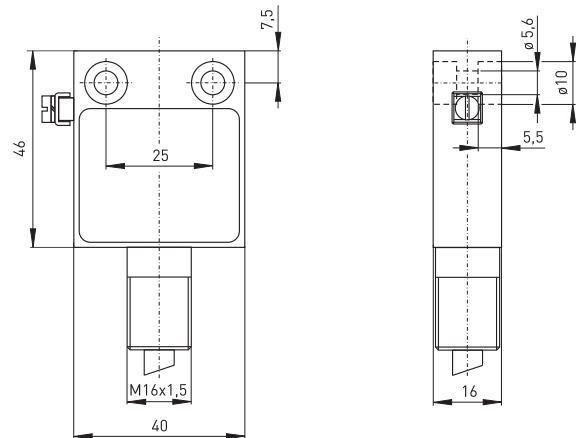
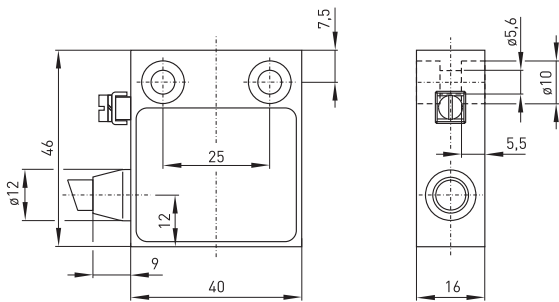


// Cable on side

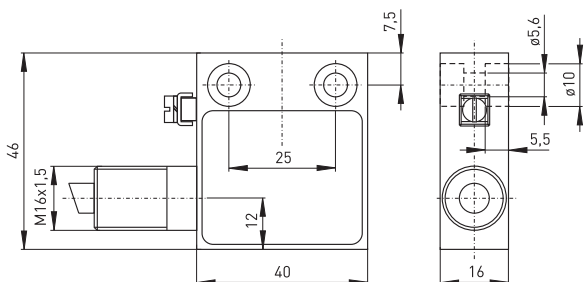
// Mounting thread M16 x 1.5



// Mounting thread M16 x 1.5



// Mounting thread on side M16 x 1.5



# Ex position switches with/without safety function

## // Series Ex 12, actuators

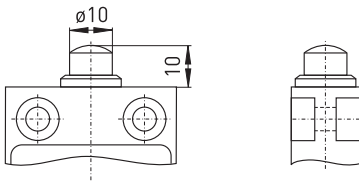
### Features/Options

- No safety switch!
- Actuating speed 0.5 m/s with an actuating angle of 0°

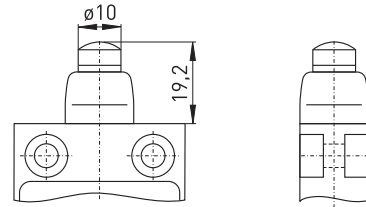
### Features/Options

- No safety switch!
- Actuating speed 0.5 m/s with an actuating angle of 0°
- Collar to protect against the entry of foreign bodies

### // Plunger



### // Plunger with watertight collar W



Contact variants: switch travel/contacts

Contact variants: switch travel/contacts

#### Snap action

1 change-over contact  
Material number

**Ex 12-2m**  
**1044190**



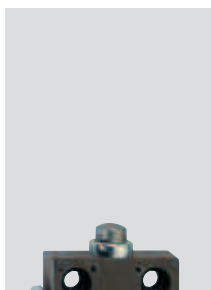
#### Snap action

1 change-over contact  
Material number

**Ex 12 W-2m**  
**1044247**



✓ in stock



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**Features/Options**

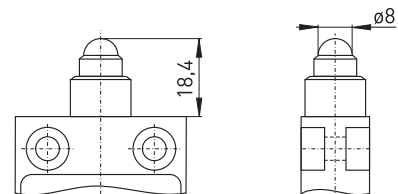
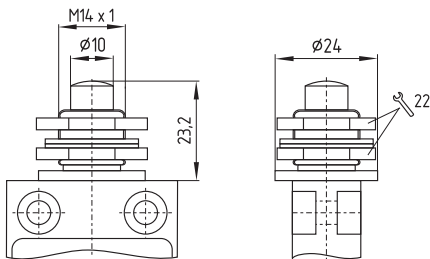
- No safety switch!
- Actuating speed 0.5 m/s with an actuating angle of 0°

**Features/Options**

- No safety switch!
- Actuating speed 0.5 m/s with an actuating angle of 20°
- Can be actuated in line with or from side of switch axis
- Actuator head with captive stainless steel ball actuator
- Exact repeatability of switching point

**// Plunger for front mounting F**

**// Ball plunger KU**



Contact variants: switch travel/contacts

Contact variants: switch travel/contacts

**Snap action**

**Snap action**

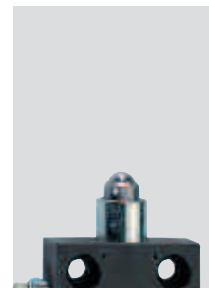
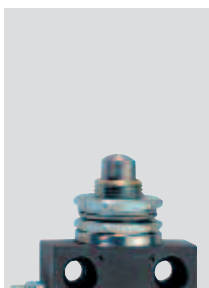
1 change-over contact  
Material number

**Ex 12 F-2m**  
**1044798**



1 change-over contact  
Material number

**Ex 12 KU-2m**  
**1189033**



# Ex position switches with/without safety function

## // Series Ex 12, actuators

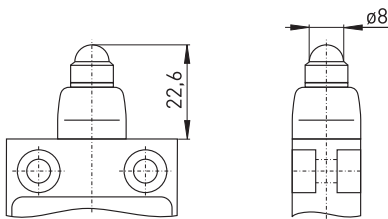
### Features/Options

- No safety switch!
- Actuating speed 0.5 m/s with an actuating angle of 15°
- Can be actuated in line with or from side of switch axis
- Actuator head with captive stainless steel ball actuator
- Exact repeatability of switching point
- Collar to protect against the entry of foreign bodies

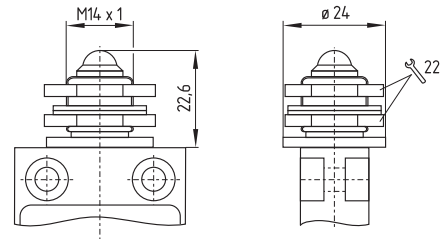
### Features/Options

- No safety switch!
- Actuating speed 0.5 m/s with an actuating angle of 20°
- Can be actuated in line with or from side of switch axis
- Actuator head with captive stainless steel ball actuator
- Ball diameter 8 mm
- Exact repeatability of switching point

### // Ball plunger with collar WKU



### // Ball plunger front mounting FKU



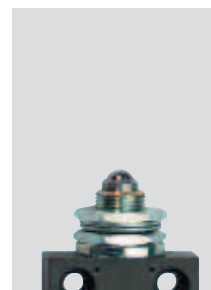
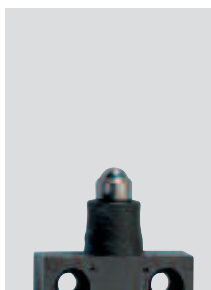
Contact variants: switch travel/contacts

Contact variants: switch travel/contacts

	Snap action
1 change-over contact	Ex 12 WKU-2m
Material number	1189071

	Snap action
1 change-over contact	Ex 12 FKU-2m
Material number	1189073

✓ in stock



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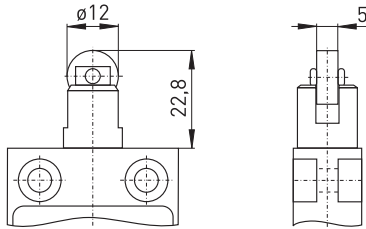
**Features/Options**

- No safety switch!
- Actuating speed 0.5 m/s with an actuating angle of 30°
- Metal roller
- Available with actuator repositioned by 90°

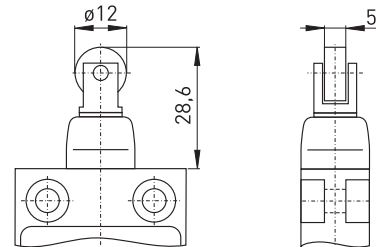
**Features/Options**

- No safety switch!
- Actuating speed 0.5 m/s with an actuating angle of 25°
- Metal roller
- Available with actuator repositioned by 90°
- Collar to protect against the entry of foreign bodies

// Roller plunger R



// Roller plunger collar WR



Contact variants: switch travel/contacts

Contact variants: switch travel/contacts

**Snap action**

1 change-over contact  
Material number

**Ex 12 R-2m**  
**1044379**



**Snap action**

1 change-over contact  
Material number

**Ex 12 WR-2m**  
**1044436**



# Ex position switches with/without safety function

## // Series Ex 12, actuators

### Features/Options

- No safety switch!
- Actuating speed 0.5 m/s with an actuating angle of 25°
- Metal roller
- Available with actuator repositioned by 90°

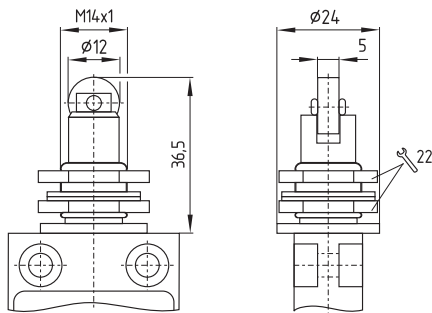
### Features/Options

- No safety switch!
- Actuating speed 0.5 m/s with an actuating angle of  $\alpha = 40^\circ$  and  $\beta = 25^\circ$
- Metal roller
- Available with actuator repositioned by 180°
- Collar to protect against the entry of foreign bodies
- With plastic roller available on request

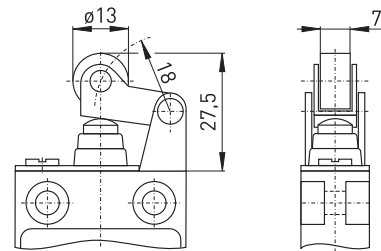
### Note

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

## // Roller plunger for front mounting FR



## // Roller lever with collar WH



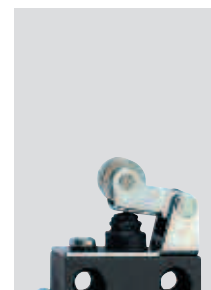
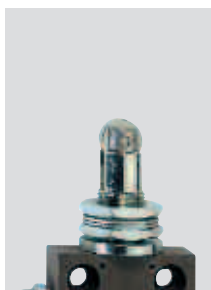
Contact variants: switch travel/contacts

Contact variants: switch travel/contacts

	Snap action
1 change-over contact	Ex 12 FR-2m
Material number	1189083
	GY-BK GY-BN

	Snap action
1 change-over contact	Ex 12 WH-2m
Material number	1044510
	GY-BK GY-BN

✓ in stock



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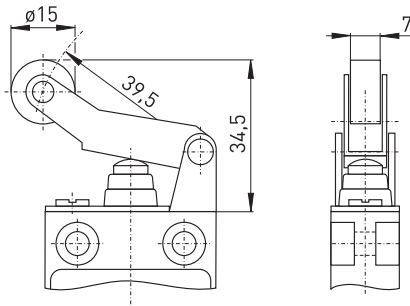
**Features/Options**

- No safety switch!
- Actuating speed 0.5 m/s with an actuating angle of  $\alpha = 40^\circ$  and  $\beta = 30^\circ$
- Metal roller
- Available with actuator repositioned by  $180^\circ$
- Collar to protect against the entry of foreign bodies
- With plastic roller available on request

**Features/Options**

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

// Long roller lever with collar WHL

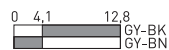


Contact variants: switch travel/contacts

**Snap action**

1 change-over contact  
Material number

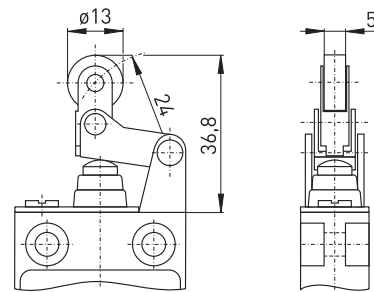
**Ex 12 WHL-2m**  
**1044565**



**Features/Options**

- No safety switch!
- Actuating speed 0.5 m/s with an actuating angle of  $\alpha = 40^\circ$
- Actuation only possible from right-hand side
- Free movement of actuator from the other side
- Metal roller
- Available with actuator repositioned by  $180^\circ$
- Collar to protect against the entry of foreign bodies
- With plastic roller available on request

// Rocking roller lever with collar WHK

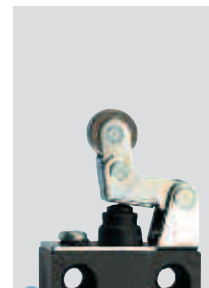
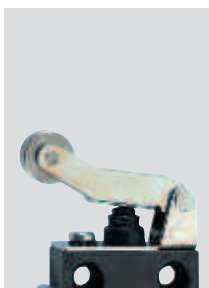


Contact variants: switch travel/contacts

**Snap action**

1 change-over contact  
Material number

**Ex 12 WHK-2m**  
**1051633**



# Ex position switches with/without safety function

## // Series Ex 12, actuators

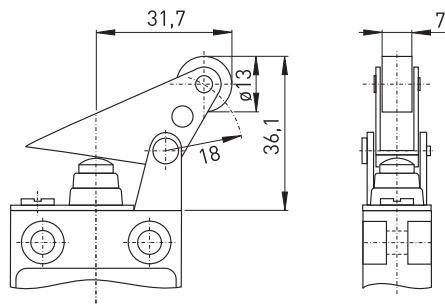
### Features/Options

- No safety switch!
- Actuating speed 0.5 m/s with an actuating angle of  $\alpha = 30^\circ$
- Actuation parallel to axis of switch from below
- Metal roller
- Available with actuator repositioned by  $180^\circ$
- Collar to protect against the entry of foreign bodies
- With plastic roller available on request

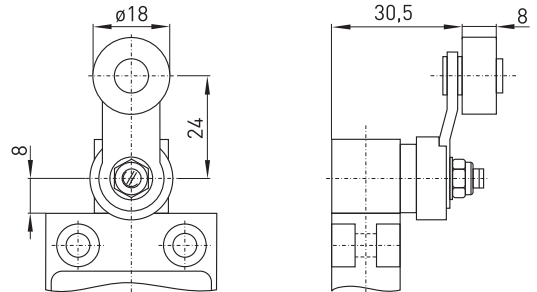
### Features/Options

- No safety switch!
- Actuating speed 0.5 m/s with an actuating angle of  $45^\circ$
- Wear-resistant thermoplastic roller
- Lever can be repositioned in  $10^\circ$  steps clockwise or counter-clockwise
- Actuator can be repositioned by  $180^\circ$
- With metal roller available on request

### // Parallel roller lever with collar WPH



### // Roller lever D



Contact variants: switch travel/contacts

Contact variants: switch travel/contacts

#### Snap action

1 change-over contact  
Material number

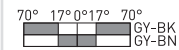
**Ex 12 WPH-2m**  
**1189089**



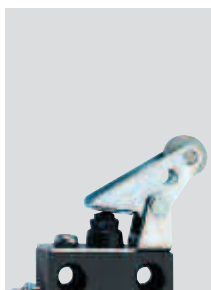
#### Snap action

1 change-over contact  
Material number

**Ex 12 D-2m**  
**1044639**



✓ in stock



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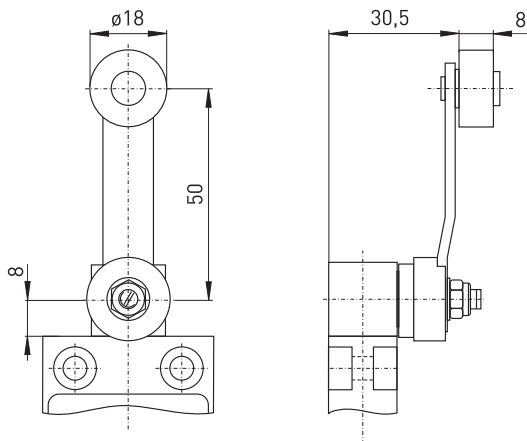
**Features/Options**

- No safety switch!
- Actuating speed 0.5 m/s with an actuating angle of 45°
- Wear-resistant thermoplastic roller
- Lever can be repositioned in 10° steps clockwise or counter-clockwise
- Actuator can be repositioned by 180°
- With metal roller available on request

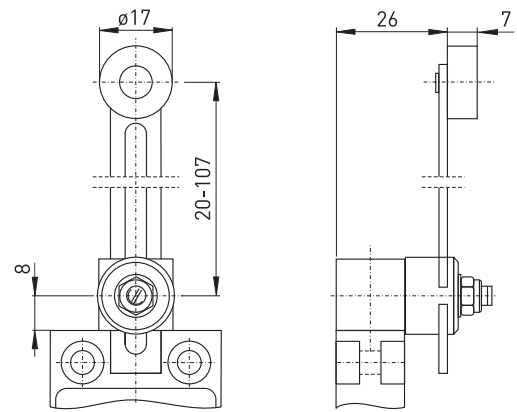
**Features/Options**

- No safety switch!
- Actuating speed 0.5 m/s with an actuating angle of 45°
- Wear-resistant thermoplastic roller
- Lever can be repositioned in 10° steps clockwise or counter-clockwise
- Actuator can be repositioned by 180°
- With metal roller available on request

// Long roller lever DL



// Adjustable-length roller lever DS



Contact variants: switch travel/contacts

Contact variants: switch travel/contacts

**Snap action**

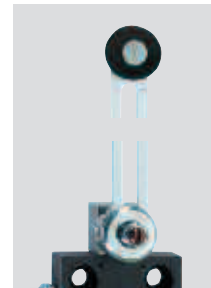
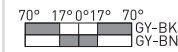
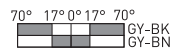
**Snap action**

1 change-over contact  
Material number

**Ex 12 DL-2m**  
**1189096**

1 change-over contact  
Material number

**Ex 12 DS-2m**  
**1189106**



# Ex position switches with/without safety function

## // Series Ex 12, actuators

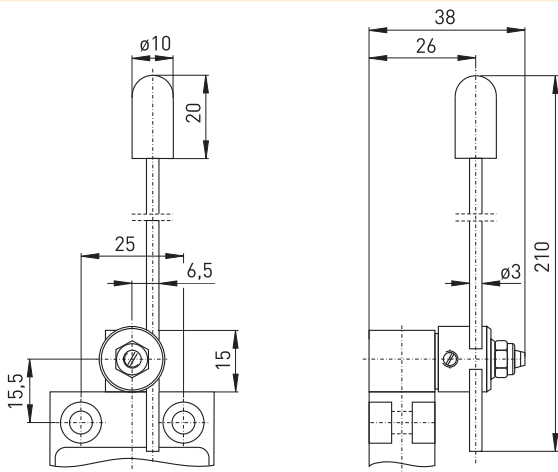
### Features/Options

- No safety switch!
- Wear-resistant thermoplastic tip
- Lever can be repositioned in 10° steps clockwise or counter-clockwise
- Available with actuator repositioned by 180°

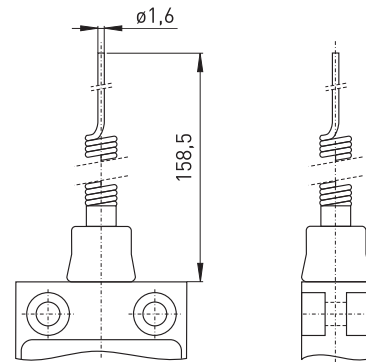
### Features/Options

- No safety switch!
- Spring rod can be actuated from any direction
- Spring rod can be shortened 30 mm in actuating area
- Exact linear actuation not necessary
- Elasticity of spring allows for deflection above the max. switching angle of 18°

### // Spring lever DD



### // Long spring rod TL



Contact variants: switch travel/contacts

Contact variants: switch travel/contacts

	Snap action															
1 change-over contact	Ex 12 DD-2m															
Material number	1189125															
	<table border="1"> <tr> <td>70°</td> <td>17°</td> <td>0°</td> <td>17°</td> <td>70°</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table> GY-BK GY-BN	70°	17°	0°	17°	70°										
70°	17°	0°	17°	70°												

	Snap action									
1 change-over contact	Ex 12 TL-2m									
Material number	1044693									
	<table border="1"> <tr> <td>18°</td> <td>0°</td> <td>18°</td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td>10°</td> <td></td> <td>10°</td> </tr> </table> GY-BK GY-BN	18°	0°	18°				10°		10°
18°	0°	18°								
10°		10°								

✓ in stock



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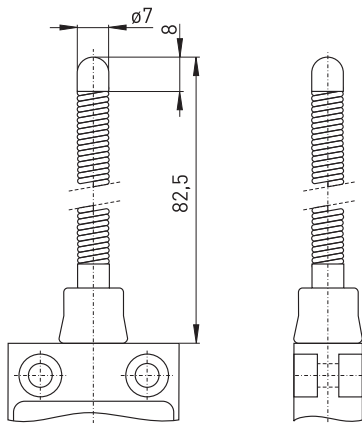
**Features/Options**

- No safety switch!
- With rounded steel tip
- Spring rod can be actuated from any direction
- Elasticity of spring allows for deflection above the max. switching angle of 18°

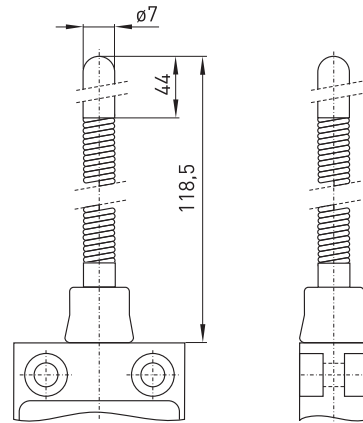
**Features/Options**

- No safety switch!
- Wear-resistant plastic tip
- Spring rod can be actuated from any direction
- Elasticity of spring allows for deflection above the max. switching angle of 18°

// Spring rod with rounded steel tip TF



// Spring rod with plastic tip TK



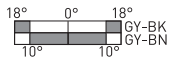
Contact variants: switch travel/contacts

Contact variants: switch travel/contacts

**Snap action**

1 change-over contact  
Material number

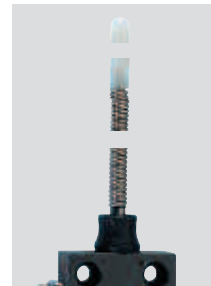
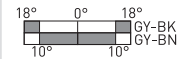
Ex 12 TF-2m  
1044733



**Snap action**

1 change-over contact  
Material number

Ex 12 TK-2m  
1189128



# Ex position switches with analogue output

## // Series Ex HS 98

### Features/Options

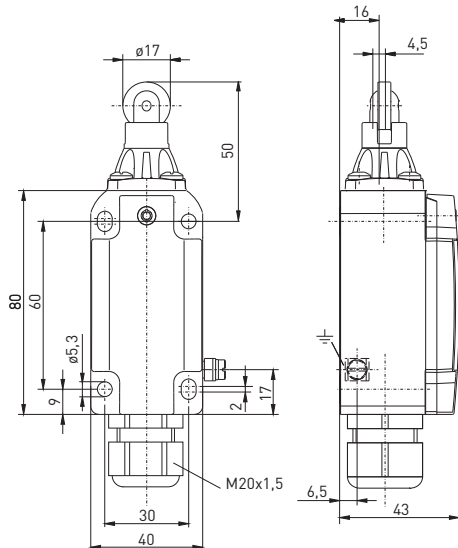
- Ex zone 1 and 21
- With analogue output
- Various output values available:  
0 ... 10 VDC, 0 ... 20 mA or 4 ... 20 mA
- Metal enclosure
- Design to EN 50041
- Wiring compartment
- Actuator can be repositioned by 4 x 90°

// EX HS 98

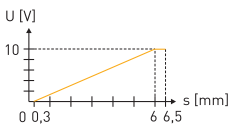
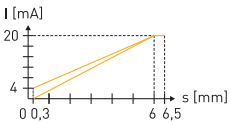


### Technical data

<b>Standards</b>	EN 60947-5-2, -7; EN 50 041; EN 60079-0; -7; -18; -31
<b>Enclosure</b>	Corrosion-resistant aluminium, powder-coated, similar to RAL 7016
<b>Cover</b>	Stainless steel 1.4401, powder-coated, similar to RAL 1003
<b>Degree of protection</b>	IP 65 to IEC/EN 60529
<b>Switching system</b>	Hall sensor with analogue output
<b>Linearity</b>	2 %
<b>Connection</b>	Cage clamps
<b>Cable cross-section</b>	max. 0.08 ... 2.5 mm <sup>2</sup> , AWG 28 ... 12
<b>Cable entry</b>	1 x M20 x 1.5 for Ø 5 ... 9 mm
<b>U<sub>e</sub></b>	24 VDC
<b>Operating voltage range</b>	18-30 VDC
<b>Rated output current</b>	IB (Q2) ≤ 100 mA short-circuit protected
<b>Rated output voltage</b>	UB (Q2) ≤ U <sub>e</sub> - 2 V min.
<b>Variants with output current</b>	
<b>I<sub>e</sub></b>	≤ 135 mA at max. output current (Q1+Q2)
<b>Rated output current</b>	IB (Q1) (0) 4 ... 20 mA; max. 20.4 mA
<b>Working resistance</b>	≤ 400 Ω
<b>Variants with output voltage</b>	
<b>I<sub>e</sub></b>	≤ 25 mA
<b>Rated output voltage</b>	UB (Q1) 0 ... 10 V; max. 10.2 V
<b>Working resistance</b>	≥ 1 kΩ
<b>Attendance delay tv</b>	≤ 0.5 s
<b>Max. fuse rating</b>	internal fuse 0.375 mA F
<b>Ambient temperature</b>	T6: -20 °C ... +50 °C; T5: -20 °C ... +60 °C
<b>Mechanical life</b>	> 1 million operations
<b>Impact energy</b>	max. 7 J
<b>Ex marking</b>	⊕ II 2G Ex e mb IIC T6/T5 Gb, II 2D Ex tb IIIC T80 °C/T95 °C Db IECEx Ex e mb IIC T6/T5 Gb, Ex tb IIIC T80 °C/T95 °C Db
<b>Approvals</b>	BVS 15 ATEX E020, IECx BVS 15.0028



### Contact variants: Travel/contacts

	Hall sensor	Material Number
U <sub>a</sub>	Ex HS 98 R 0-10 VDC ... 	on request
I <sub>a</sub>	Ex HS 98 R 0-20 mA ... Ex HS 98 R 4-20 mA ... 	on request 1354676

### Type code

Ex HS 98 R 0-10V Extreme

Output value 0-10 V  
(0-20 mA, 4-20 mA)  
Actuator R  
Series  
Hall sensor  
Ex certified component

✓ in stock

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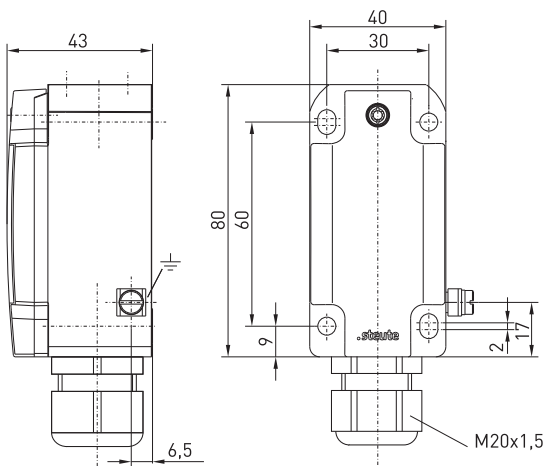
# Ex position switches with/without safety function

## // Series Ex 98

### Features/Options

- Ex zone 1 and 21
- Cold-resistant down to -40 °C
- Design according to EN 50041
- Available with contact overlapping
- Wiring compartment
- Actuator heads can be repositioned in 4 x 90° steps
- Angle of offset roller lever can be adjusted in 10° steps
- Special version only for gas Ex zone 2 and dust Ex zone 22 available

## // EX 98



### Technical data

<b>Standards</b>	EN 60947-5-1; EN 60079-0, EN 60079-1, EN 60079-7, EN 60079-14, EN 60079-31; EN ISO 13849-1; EN ISO 14119
<b>Enclosure</b>	Corrosion-resistant aluminium, powder-coated, similar to RAL 7016
<b>Cover</b>	Stainless steel 1.4401, powder-coated, similar to RAL 1003
<b>Switch type</b>	type 1
<b>Coding level</b>	no coding
<b>Degree of protection</b>	IP 66 to IEC/EN 60529
<b>Contact material</b>	silver
<b>Switching system</b>	slow or snap action, positive break NC contacts ⊖
<b>Switching elements</b>	1 NC/1 NO, 2 NC or 1 NC/1 NO contact with contact overlapping, type Zb
<b>Connection</b>	screw connection terminals
<b>Cable cross-section</b>	min. 0.75 mm <sup>2</sup> AWG 18, max. 1.5 mm <sup>2</sup> AWG 16 (incl. conductor ferrules)
<b>Cable entry</b>	1 x M20 x 1.5 for Ø 5 ... 9 mm
<b>B<sub>10d</sub> (10 % load)</b>	2 million
<b>T<sub>M</sub></b>	max. 20 years
<b>U<sub>imp</sub></b>	4 kV
<b>U<sub>i</sub></b>	250 V
<b>I<sub>the</sub></b>	2 contacts: 6 A, 3 contacts: 1.5 A
<b>I<sub>e</sub></b>	max. 4.4 A T6 / max. 6.6 A T5
<b>U<sub>e</sub></b>	max. 250 VAC; 125 VDC
<b>Utilisation category</b>	AC-15; DC-13
<b>Max. fuse rating</b>	6 A gG/gN fuse
<b>Mechanical life</b>	> 1 million operations
<b>Impact energy</b>	max. 7 J
<b>Ex marking</b>	⊕ II 2G Ex de IIC T6/T5 Gb, II 2D Ex tb IIIC T80 °C/T95 °C Db IECEx Ex de IIC T6/T5 Gb, Ex tb IIIC T80 °C/T95 °C Db
<b>Approvals</b>	DMT 01 ATEX E 178, IECEx BVS 07.0014 <b>ERC</b>

### Type code

**Ex ES 98 R-11-3G/D**

Equipment Categ. 3G/D, gas  
Ex zone 2 and dust Ex zone 22  
Contact type 10/1S, (2Ö, UE)  
Actuator R (H, PH, D, etc.)  
Series  
Slow action (EM snap action)  
Ex certified component

# Ex position switches with/without safety function

## // Series Ex 98, actuators

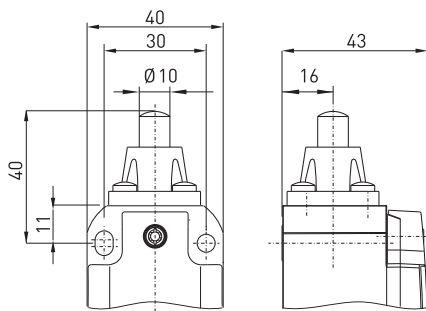
### Features/Options

- Actuator type B to EN 50041

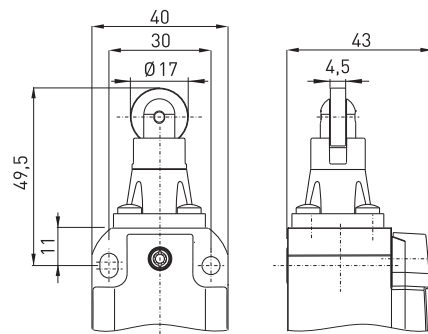
### Features/Options

- Actuator type C to EN 50041
- Wear-resistant thermoplastic roller
- Metal roller available on request
- Actuator heads can be repositioned in 4 x 90° steps

### // Plunger



### // Roller plunger R



202

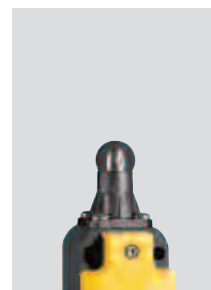
#### Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact Material Number	<b>Ex EM 98-11</b> <b>1407644</b> 	<b>Ex ES 98-11</b> <b>1387893 ✓</b> 
1 NC/1 NO contact with overlapping Material number		<b>Ex ES 98-11U</b> <b>1400703</b> 
2 NC contacts Material Number		<b>Ex ES 98-02</b> <b>1400705</b> 

#### Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact Material Number	<b>Ex EM 98 R-11</b> <b>1442200</b> 	<b>Ex ES 98 R-11</b> <b>1400709 ✓</b> 
1 NC/1 NO contact with overlapping Material number		<b>Ex ES 98 R-11U</b> <b>1400711</b> 
2 NC contacts Material Number		<b>Ex ES 98 R-02</b> <b>1400713</b> 

✓ in stock



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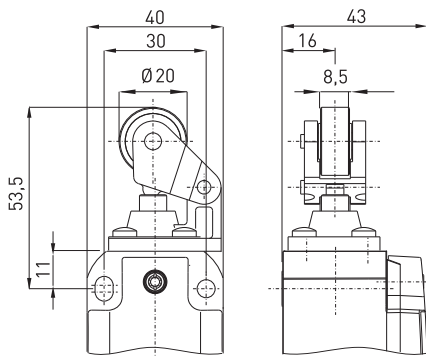
**Features/Options**

- Actuating speed 0.5 m/s with an actuating angle of a = 40° and b = 25°
- Actuator type E to EN 50041
- Actuator with collar
- Wear-resistant thermoplastic roller
- Actuator heads can be repositioned in 4 x 90° steps
- Metal roller available on request

**Note**

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

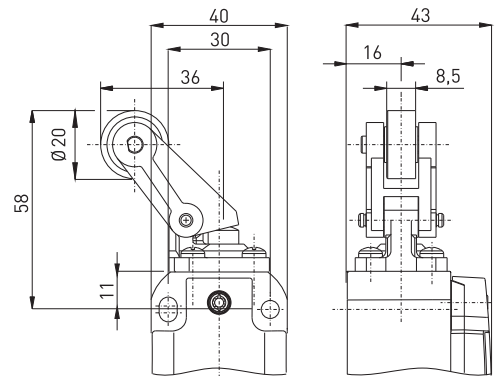
**// Roller lever H**



**Features/Options**

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

**// Parallel roller lever PH**

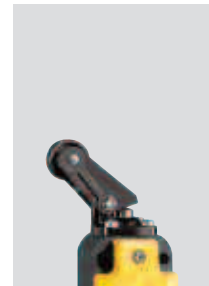
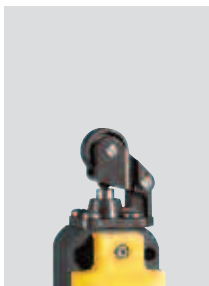


**Contact variants: switch travel/contacts**

	Snap action	Slow action
1 NC/1 NO contact Material Number	Ex EM 98 H-11 1409658 	Ex ES 98 H-11 1400717 ✓ 
1 NC/1 NO contact with overlapping Material number		Ex ES 98 H-11U 1400719 
2 NC contacts Material Number		Ex ES 98 H-02 1400721 ✓ 

**Contact variants: switch travel/contacts**

	Snap action	Slow action
1 NC/1 NO contact Material Number	Ex EM 98 PH-11 1410011 	Ex ES 98 PH-11 1400725 
1 NC/1 NO contact with overlapping Material number		Ex ES 98 PH-11U on request 
2 NC contacts Material Number		Ex ES 98 PH-02 1400729 



# Ex position switches with/without safety function

## // Series Ex 98, actuators

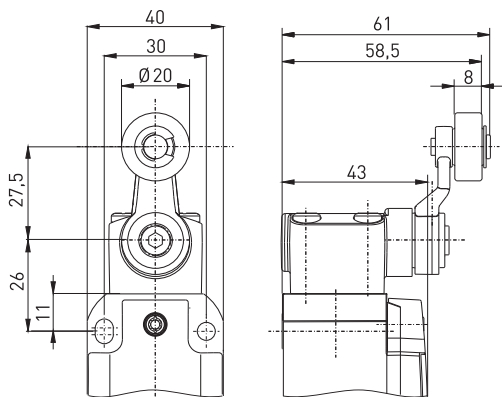
### Features/Options

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

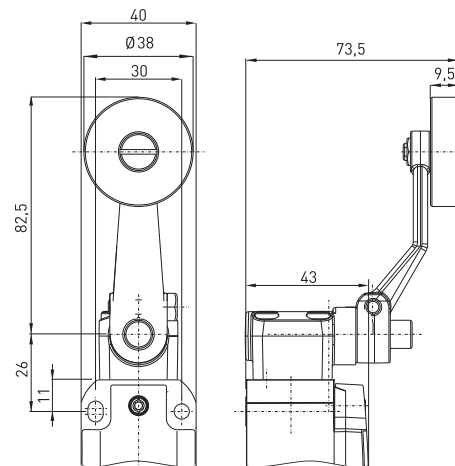
### Features/Options

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

### // Rocking lever D



### // Long rocking lever DL



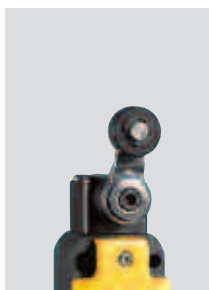
#### Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact Material Number	<b>Ex EM 98 D-11</b> <b>1409961</b> 82° 37° 0° 37° 82° 23-24 11-12 23-24 11-12 61,5° 12° 12° 61,5°	<b>Ex ES 98 D-11</b> <b>1400733 ✓</b> 75° 47° 0° 47° 75° 13-14 21-22 45° 32° 32° 45°
1 NC/1 NO contact with overlapping Material number		<b>Ex ES 98 D-11U</b> <b>1400735</b> 65° 29,5° 0° 29,5° 65° 13-14 21-22 53° 39,5° 39,5° 53°
2 NC contacts Material Number		<b>Ex ES 98 D-02</b> <b>1400737 ✓</b> 75° 47° 0° 47° 75° 11-12 21-22 32° 32°

#### Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact Material Number	<b>Ex EM 98 DL-11</b> <b>1442030</b> 82° 37° 0° 37° 82° 23-24 11-12 23-24 11-12 61,5° 12° 12° 61,5°	<b>Ex ES 98 DL-11</b> <b>1400741 ✓</b> 75° 47° 0° 47° 75° 13-14 21-22 45° 32° 32° 45°
1 NC/1 NO contact with overlapping Material number		<b>Ex ES 98 DL-11U</b> <b>1400743</b> 65° 29,5° 0° 29,5° 65° 13-14 21-22 53° 39,5° 39,5° 53°
2 NC/1 NO contacts Material Number		<b>Ex ES 98 DL-02</b> <b>1400745</b> 75° 47° 0° 47° 75° 11-12 21-22 32° 32°

✓ in stock



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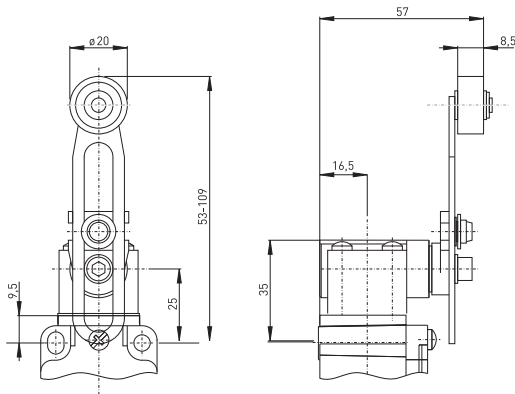
**Features/Options**

- No safety switch!
- Lever angle adjustable in 10° steps
- Length of roller lever adjustable
- Wear-resistant thermoplastic roller
- Actuator heads can be repositioned in 4 x 90° steps
- Metal roller available on request

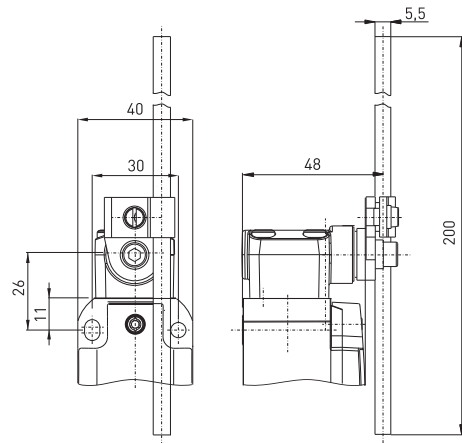
**Features/Options**

- No safety switch!
- Lever angle adjustable in 10° steps
- Actuator heads can be repositioned in 4 x 90° steps

// Adjustable rocking lever DS



// Rod lever DD

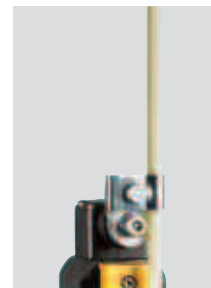


Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact Material Number	Ex EM 98 DS-11 <b>1442493</b> 82° 37° 0° 37° 82° 23-24 11-12 23-24 11-12 12° 12°	Ex ES 98 DS-11 <b>1400749 ✓</b> 75° 47° 0° 47° 75° 13-14 21-22 32° 32°
1 NC/1 NO contact with overlapping Material number		Ex ES 98 DS-11U <b>1400751</b> 75° 32° 0° 32° 75° 13-14 21-22 45° 45°
2 NC contacts Material Number		Ex ES 98 DS-02 <b>1400753</b> 75° 0° 75° 11-12 21-22 32° 32°

Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact Material Number	Ex EM 98 DD-11 <b>1442593</b> 82° 37° 0° 37° 82° 23-24 11-12 23-24 11-12 12° 12°	Ex ES 98 DD-11 <b>1400757</b> 75° 47° 0° 47° 75° 13-14 21-22 32° 32°
1 NC/1 NO contact with overlapping Material number		Ex ES 98 DD-11U <b>1400759</b> 75° 32° 0° 32° 75° 13-14 21-22 45° 45°
2 NC contacts Material Number		Ex ES 98 DD-02 <b>1400761</b> 75° 0° 75° 11-12 21-22 32° 32°



# Ex position switches with/without safety function

## // Series Ex 355

### Features/Options

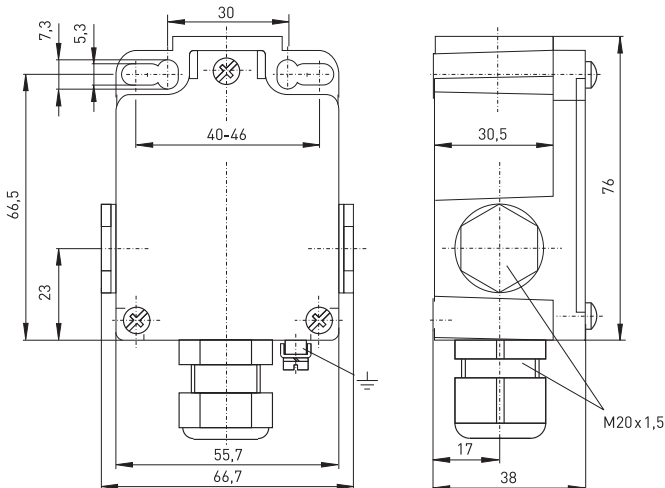
- Ex zone 1 and 21
- Mounting and switching details to EN 50041
- 3 cable entries
- Actuating elements can be repositioned by  $4 \times 90^\circ$
- Rocking lever can be positioned in  $10^\circ$  steps
- With gold-plated contacts available on request
- Special version only for dust Ex zone 22

## // EX 355



### Technical data

<b>Standards</b>	EN 60947-5-1; EN 60079-0, EN 60079-1, EN 60079-7, EN 60079-14, EN 60079-31; EN ISO 13849-1; EN ISO 14119
<b>Design</b>	mounting dimensions and switching points to EN 50041
<b>Enclosure</b>	zinc die-cast, enamelled
<b>Switch type</b>	type 1
<b>Coding level</b>	no coding
<b>Switch insert</b>	Ex 95
<b>Degree of protection</b>	IP 67 to IEC/EN 60529
<b>Contact material</b>	silver
<b>Switching system</b>	slow action, positive break NC contact $\ominus$
<b>Switching elements</b>	1 NC/1 NO, 2 NC or 1 NC/1 NO contact with contact overlapping, type Zb
<b>Connection</b>	screw connection terminals
<b>Cable section</b>	max. $1.5 \text{ mm}^2$ (incl. conductor ferrules)
<b>Cable entry</b>	3 x M20 x 1.5 for $\varnothing 5 \dots 9 \text{ mm}$
<b><math>B_{10d}</math> (10 % load)</b>	2 million
<b><math>T_M</math></b>	max. 20 years
<b><math>U_{imp}</math></b>	4 kV
<b><math>U_i</math></b>	250 V
<b><math>I_{e}^{the}</math></b>	6 A
<b><math>I_e/U_e</math></b>	6 A/250 VAC; 0.25 A/230 VDC
<b>Utilisation category</b>	AC-15, DC-13
<b>Max. fuse rating</b>	6 A gG/gN fuse
<b>Ambient temperature</b>	$-20^\circ \text{C} \dots +60^\circ \text{C}$
<b>Mechanical life</b>	> 1 million operations
<b>Switching frequency</b>	1800/h
<b>Contact gap</b>	max. $2 \times 3.5 \text{ mm}$
<b>Impact energy</b>	max. 7 J
<b>Ex marking</b>	$\text{Ex II 2G Ex db e IIC T6/T5 Gb, II 2D Ex tb IIIC T80 }^\circ\text{C/T95 }^\circ\text{C Db}$ IECEx Ex db e IIC T6/T5 Gb, Ex tb IIIC T80 $^\circ\text{C/T95 }^\circ\text{C Db}$
<b>Approvals</b>	BVS 04 ATEX E 126, IECEx BVS 07.0013 



### Type code

Ex 355 S 1Ö/1S-3D

Equipment Categ. 3D, dust Ex zone 22  
Contact type 1Ö/1S, (2Ö, UE)  
Actuator S (R, 4VH, 4V7H-2138, etc.)  
Series  
Ex certified component

# Ex position switches with/without safety function

## // Series Ex 355, actuators

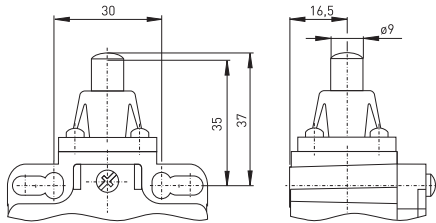
### Features/Options

- Actuator type B to EN 50041
- Actuating speed 0.5 m/s with an actuating angle of  $\alpha = 0^\circ$

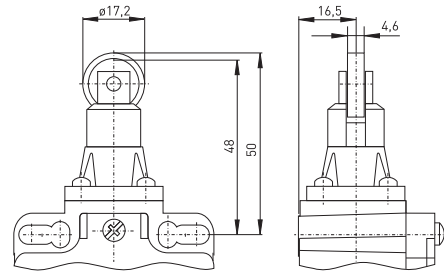
### Features/Options

- Actuator type C to EN 50041
- Actuating speed 0.5 m/s with an actuating angle of  $\alpha = 30^\circ$

### // Plunger S



### // Roller plunger R



Contact variants: switch travel/contacts

Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact Material number	Ex 355 S 10/1S 1178426 
1 NC/1 NO contact with overlapping Material number	Ex 355 S UE auf Anfrage 
2 NC contacts Material number	Ex 355 S 20 1179217 

	Slow action
1 NC/1 NO contact Material number	Ex 355 R 10/1S 1179159 
1 NC/1 NO contact with overlapping Material number	Ex 355 R UE 1280836 
2 NC contacts Material number	Ex 355 R 20 1179218 



# Ex position switches with/without safety function

## // Series Ex 355, actuators

### Features/Options

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

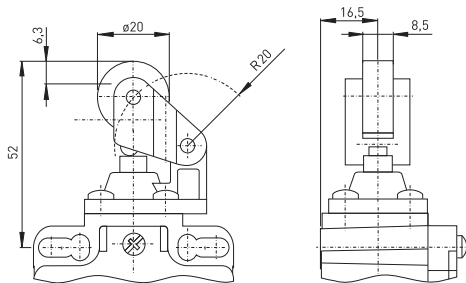
### Note

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

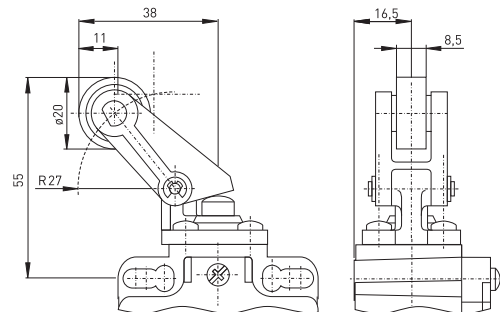
### Features/Options

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

## // Roller lever 1K



## // Angled roller lever 3K



Contact variants: switch travel/contacts

Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact Material number	<b>Ex 355 1K 10/1S</b> <b>1178444</b> 
1 NC/1 NO contact with overlapping Material number	<b>Ex 355 1K UE</b> <b>1188259</b> 
2 NC contacts Material number	<b>Ex 355 1K 20</b> <b>1178641</b> 

	Slow action
1 NC/1 NO contact Material number	<b>Ex 355 3K 10/1S</b> <b>1187048</b> 
1 NC/1 NO contact with overlapping Material number	<b>Ex 355 3K UE</b> <b>1189521</b> 
2 NC contacts Material number	<b>Ex 355 3K 20</b> <b>1189337</b> 

✓ in stock



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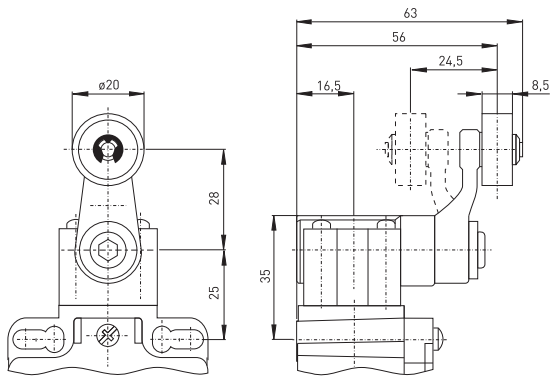
**Features/Options**

- Actuator type A to EN 50041
- Actuating speed 2.5 m/s with an actuating angle of  $\alpha = 30^\circ$
- Wear-resistant thermoplastic roller
- Actuator heads can be repositioned in 4 x 90° steps

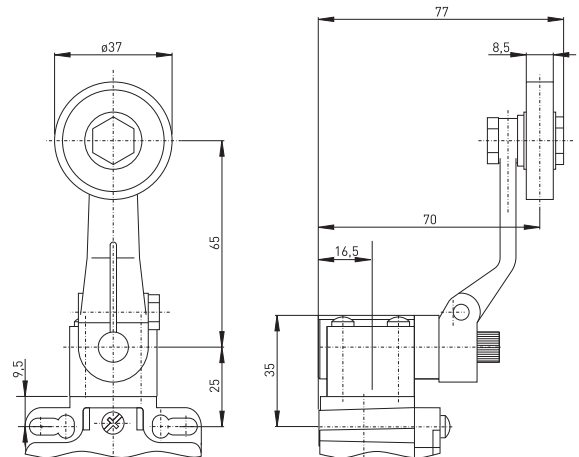
**Features/Options**

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

**// Rocking roller lever 4VH**



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



Contact variants: switch travel/contacts

Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact Material number	Ex 355 4VH 1Ö/1S 1179156 85° 25°0°25° 85° 23-24 30°15°15°30° 11-12
1 NC/1 NO contact with overlapping Material number	Ex 355 4VH UE on request 85° 20°0°20° 85° 23-24 40°25°25°40° 15-16
2 NC contacts Material number	Ex 355 4VH 2Ö 1189527 85° 30° 0° 30° 85° 11-12 15°15° 21-22

	Slow action
1 NC/1 NO contact Material number	Ex 355 4V3H 1Ö/1S 1179072 85° 25°0°25° 85° 23-24 30°15°15°30° 11-12
1 NC/1 NO contact with overlapping Material number	Ex 355 4V3H UE 1317261 85° 20°0°20° 85° 23-24 40°25°25°40° 15-16
2 NC contacts Material number	Ex 355 4V3H 2Ö 1179966 85° 30° 0° 30° 85° 11-12 15°15° 21-22



# Ex position switches with/without safety function

## // Series Ex 355, actuators

### Features/Options

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

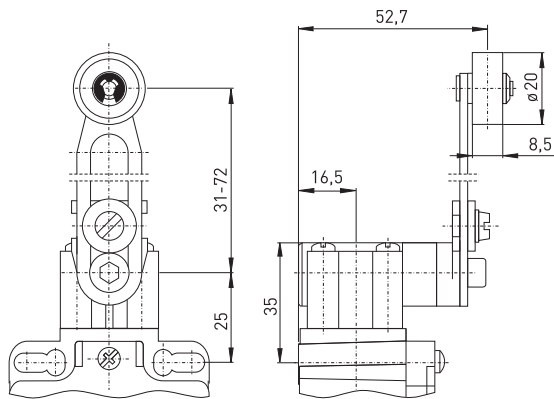
### Note

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

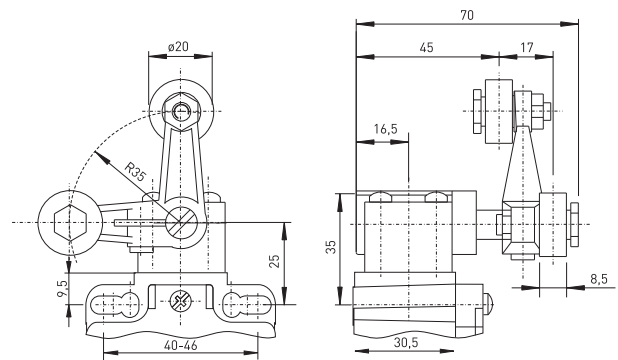
### Features/Options

- No safety switch!
- Actuating speed 2.5 m/s with an actuating angle of  $\alpha = 30^\circ$
- Wear-resistant thermoplastic roller
- Actuator heads can be repositioned in 4 x  $90^\circ$  steps

## // Adjustable rocking lever 4V7H



## // Forked lever latching 3V4D



### Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact Material number	<b>Ex 355 4V7H 10/1S</b> <b>1178443</b> 85° 25° 0° 25° 85° 23-24 30° 15° 15° 30° 11-12
1 NC/1 NO contact with overlapping Material number	<b>Ex 355 4V7H UE</b> <b>on request</b> 85° 20° 0° 20° 85° 23-24 40° 25° 25° 40° 15-16
2 NC contacts Material number	<b>Ex 355 4V7H 20</b> <b>1222698</b> 85° 30° 0° 30° 85° 11-12 15° 15° 21-22

### Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact Material number	<b>Ex 355 3V4D 10/1S</b> <b>1181679</b> 0° 30° 90° 23-24 20° >45° 11-12
1 NC/1 NO contact with overlapping Material number	<b>Ex 355 3V4D UE</b> <b>1189523</b> 0° 20° 90° 23-24 25° >45° 15-16
2 NC contacts Material number	<b>Ex 355 3V4D 20</b> <b>1189522</b> 0° 90° 11-12 20° >45° 21-22

✓ in stock



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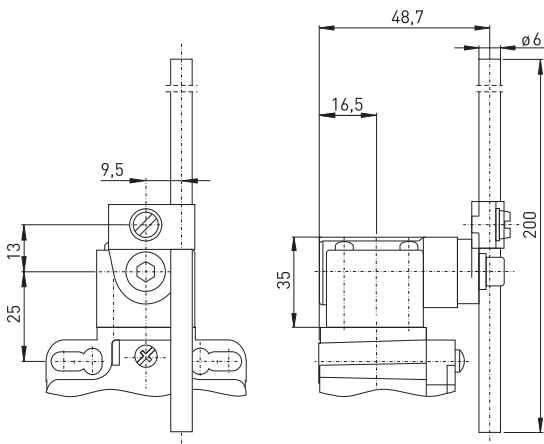
**Features/Options**

- No safety switch!
- Actuating speed 2.5 m/s with an actuating angle of  $\alpha = 30^\circ$
- Actuator type D to EN 50041

**Features/Options**

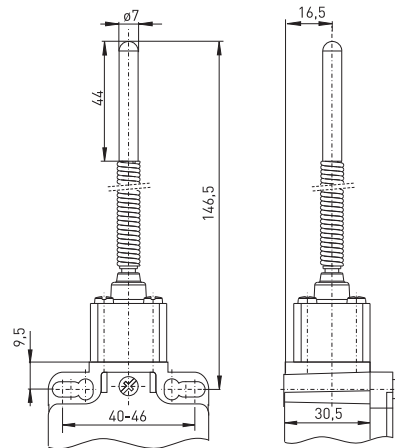
- No safety switch!
- Wear-resistant plastic tip
- Spring rod can be actuated from any direction
- Elasticity of spring allows for deflection above the max. switching angle of  $12^\circ$

// Rod lever 4V10H



Contact variants: switch travel/contacts

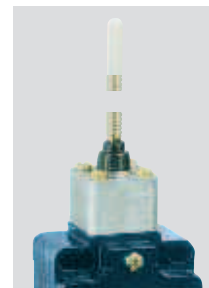
// Spring rod with plastic tip TK



Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact Material number	Ex 355 4V10H 10/1S 1178428 
1 NC/1 NO contact with overlapping Material number	Ex 355 4V10H UE on request 
2 NC contacts Material number	Ex 355 4V10H 20 1189998 

	Slow action
1 NC/1 NO contact Material number	Ex 355 TK 10/1S 1178557 
2 NC contacts Material number	Ex 355 TK 20 on request 



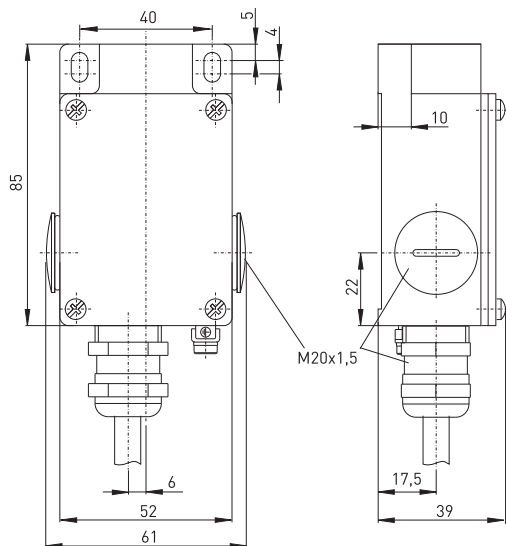
# Ex position switches with/without safety function

## // Series Ex/ExM 61

### Features/Options

- Ex zone 1 and 21
- Safety switch only version with slow action
- Metal enclosure
- With pre-wired cable, cable length 3 metres
- Available with actuator heads repositioned by 4 x 90°

## // EX/EXM 61



## Technical data

<b>Standards</b>	EN 60947-5-1; EN 60079-0, EN 60079-1, EN 60079-31; EN ISO 13849-1; EN ISO 14119
<b>Enclosure</b>	aluminium die-cast, powder-coated
<b>Cover</b>	steel, powder-coated
<b>Switch type</b>	type 1
<b>Coding level</b>	no coding
<b>Switch insert</b>	Ex 14, ExM 14
<b>Degree of protection</b>	IP 65 to IEC/EN 60529
<b>Contact material</b>	silver
<b>Switching system</b>	snap or slow action, positive break NC contact ⊖
<b>Switching elements</b>	ExM 61: change-over contact, type C, Ex 61: 1 NC/1 NO contact, type Zb cable H05VV-F, 3/4 x 0.75 mm <sup>2</sup>
<b>Connection</b>	
<b>Cable length</b>	3 m
<b>B<sub>10d</sub> (10 % load)</b>	Ex 61: 2 million
<b>T<sub>M</sub></b>	Ex 61: max. 20 years
<b>U<sub>imp</sub></b>	4 kV
<b>U<sub>i</sub></b>	250 V
<b>I<sub>the</sub></b>	Ex 61: T6: 6 A; T5: 3 A; ExM 61: 5 A
<b>I<sub>e</sub>/U<sub>e</sub></b>	Ex 61: 6 A/250 VAC, 0.25 A/230 VDC; ExM 61: 5 A/250 VAC, 0.16 A/230 VDC
<b>Utilisation category</b>	AC-15, DC-13
<b>Max. fuse rating</b>	6 A gG/gN fuse
<b>Ambient temperature</b>	Ex 61: T6: -20 °C ... +65 °C, T5: -20 °C ... +75 °C, +90 °C with max. 3 A, ExM 61: -20 °C ... +60 °C
<b>Mechanical life</b>	> 1 million operations
<b>Impact energy</b>	max. 7 J
<b>Ex marking</b>	Ex 61: ⊕ II 2G Ex db IIC T6/T5 Gb, II 2D Ex tb IIIC T80 °C/T95 °C Db ExM 61: ⊕ II 2G Ex d IIC T6 Gb, II 2D Ex tb IIIC T80 °C Db IP65
<b>Approvals</b>	Ex 61: PTB 03 ATEX 1070 X*, IECEx PTB 06.0098X*, ExM 61: PTB 03 ATEX 1069 X* Ex 61:  EAC  , ExM 61:
	*referring to the switch insert

### Type code

<b>ExM 61 W 10/1S-3m</b>

# Ex position switches with/without safety function

## // Series Ex/ExM 61, actuators

### Features/Options

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

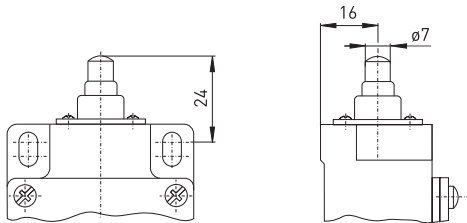
### Features/Options

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

### Note

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

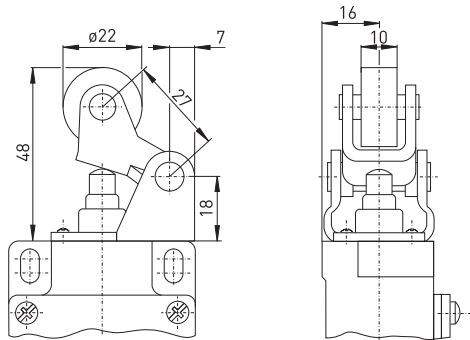
## // Plunger W



Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact	ExM 61 W-3m	Ex 61 W 1Ö/1S-3m
Material number	1174118	1160276

## // Roller lever with collar WH



Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact	ExM 61 WH-3m	Ex 61 WH 1Ö/1S-3m
Material number	1047986	1047808

213



# Ex position switches with/without safety function

## // Series Ex/ExM 61, actuators

### Features/Options

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

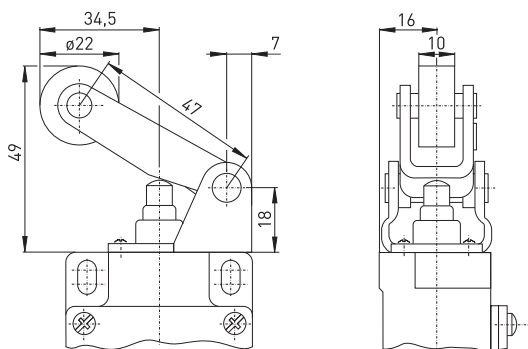
### Note

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

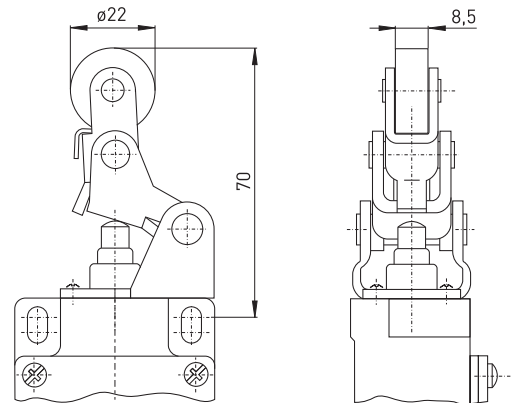
### Features/Options

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

## // Long roller lever with collar WHL



## // Rocking roller lever WHK



Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact Material number	<b>ExM 61 WHL-3m</b> <b>1175509</b>	<b>Ex 61 WHL 1Ö/1S-3m</b> <b>1160277</b>

Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact Material number	<b>ExM 61 WHK-3m</b> <b>1174745</b>	<b>Ex 61 WHK 1Ö/1S-3m</b> <b>1179157</b>

✓ in stock



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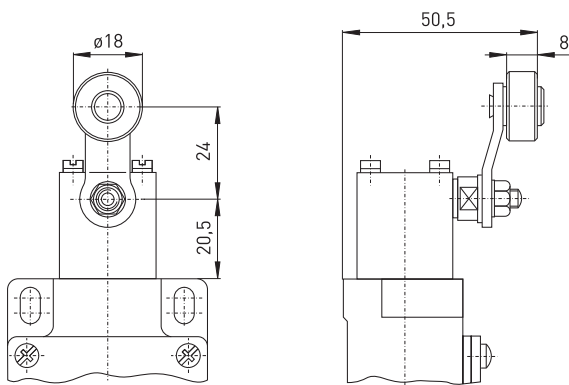
**Features/Options**

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

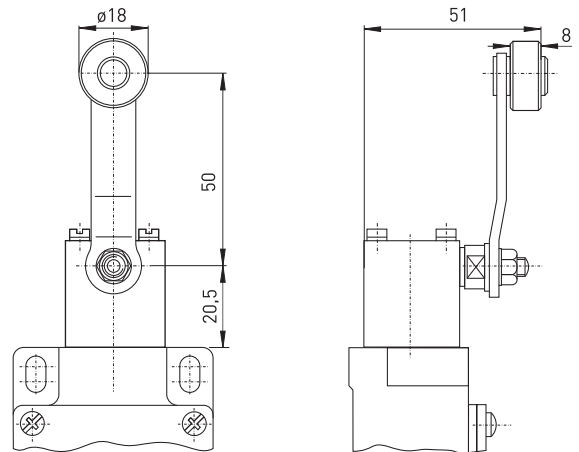
**Features/Options**

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

// Roller lever D



// Long roller lever DL



Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact Material number	<b>ExM 61 D-3m</b> <b>1053626</b>	<b>Ex 61 D 10/1S-3m</b> <b>1172825</b>
	70° 15° 0° 15° 70° GY-BK GY-BN	70° 35° 0° 35° 70° BK-GY BN-BU 15° 15°

Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact Material number	<b>ExM 61 DL-3m</b> <b>1054144</b>	<b>Ex 61 DL 10/1S-3m</b> <b>1053442</b>
	70° 15° 0° 15° 70° GY-BK GY-BN	70° 35° 0° 35° 70° BK-GY BN-BU 15° 15°



# Ex position switches with/without safety function

## // Series Ex/ExM 61, actuators

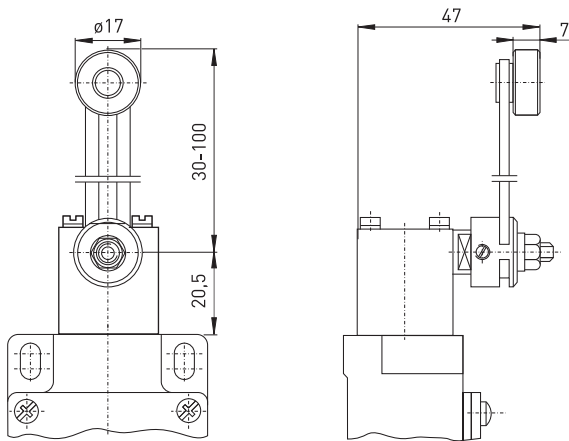
### Features/Options

- No safety switch!
- Actuating speed 0.5 m/s with an actuating angle of 45°
- Wear-resistant thermoplastic roller
- Lever can be repositioned in 10° steps clockwise or counter-clockwise
- Actuator can be repositioned by 180°
- With metal roller available on request

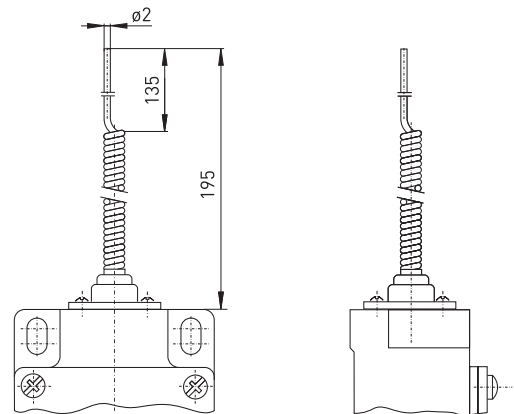
### Features/Options

- No safety switch!
- Spring rod can be actuated from any direction
- Spring rod can be shortened 30 mm in actuating area
- Exact linear actuation not necessary
- Elasticity of spring allows for deflection above the max. switching angle

### // Long roller lever DL



### // Long spring rod TL



Contact variants: switch travel/contacts

	Snap action	Slow action																														
1 NC/1 NO contact Material number	<b>ExM 61 DS-3m</b> <b>1167414</b>	<b>Ex 61 DS 1Ö/1S-3m</b> <b>1175016</b>																														
	<table border="1"> <tr> <td>70°</td> <td>15°</td> <td>0°</td> <td>15°</td> <td>70°</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table> GY-BK GY-BN	70°	15°	0°	15°	70°											<table border="1"> <tr> <td>70°</td> <td>35°</td> <td>0°</td> <td>35°</td> <td>70°</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table> BK-GY BN-BU 15° 15°	70°	35°	0°	35°	70°										
70°	15°	0°	15°	70°																												
70°	35°	0°	35°	70°																												

Contact variants: switch travel/contacts

	Snap action	Slow action																		
1 NC/1 NO contact Material number	<b>ExM 61 TL-3m</b> <b>1167449</b>	<b>Ex 61 TL 1Ö/1S-3m</b> <b>1189069</b>																		
	<table border="1"> <tr> <td>10°</td> <td>0°</td> <td>10°</td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </table> GY-BK GY-BN	10°	0°	10°							<table border="1"> <tr> <td>20°</td> <td>0°</td> <td>20°</td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </table> BK-GY BN-BU 10° 10°	20°	0°	20°						
10°	0°	10°																		
20°	0°	20°																		

✓ in stock



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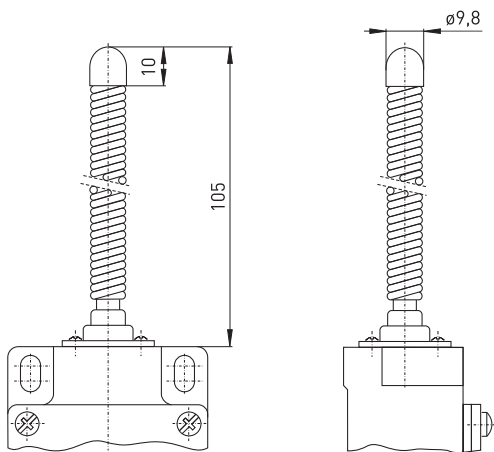
**Features/Options**

- No safety switch!
- With rounded steel tip
- Spring rod can be actuated from any direction
- Elasticity of spring allows for deflection above the max. switching angle

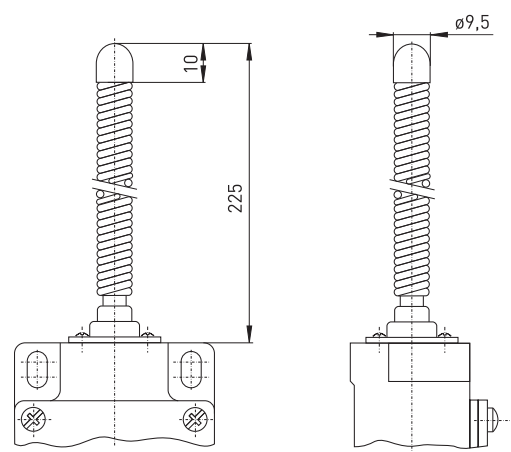
**Features/Options**

- No safety switch!
- With rounded steel tip
- Spring rod can be actuated from any direction
- Elasticity of spring allows for deflection above the max. switching angle

// Spring rod with rounded steel tip TF



// Long spring rod rounded steel tip TFL



Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact Material number	<b>ExM 61 TF-3m</b> <b>1047990</b>	<b>Ex 61 TF 10/1S-3m</b> <b>1183085</b>

Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact Material number	<b>ExM 61 TFL-3m</b> <b>1047992</b>	<b>Ex 61 TFL 10/1S-3m</b> <b>1181343</b>

217



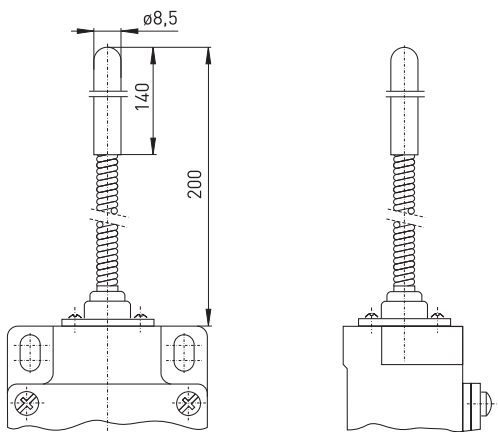
# Ex position switches with/without safety function

## // Series Ex/ExM 61, actuators

### Features/Options

- No safety switch!
- With rounded steel tip
- Spring rod can be actuated from any direction
- Elasticity of spring allows for deflection above the max. switching angle

### // Spring rod with plastic tip TK



218

Contact variants: switch travel/contacts

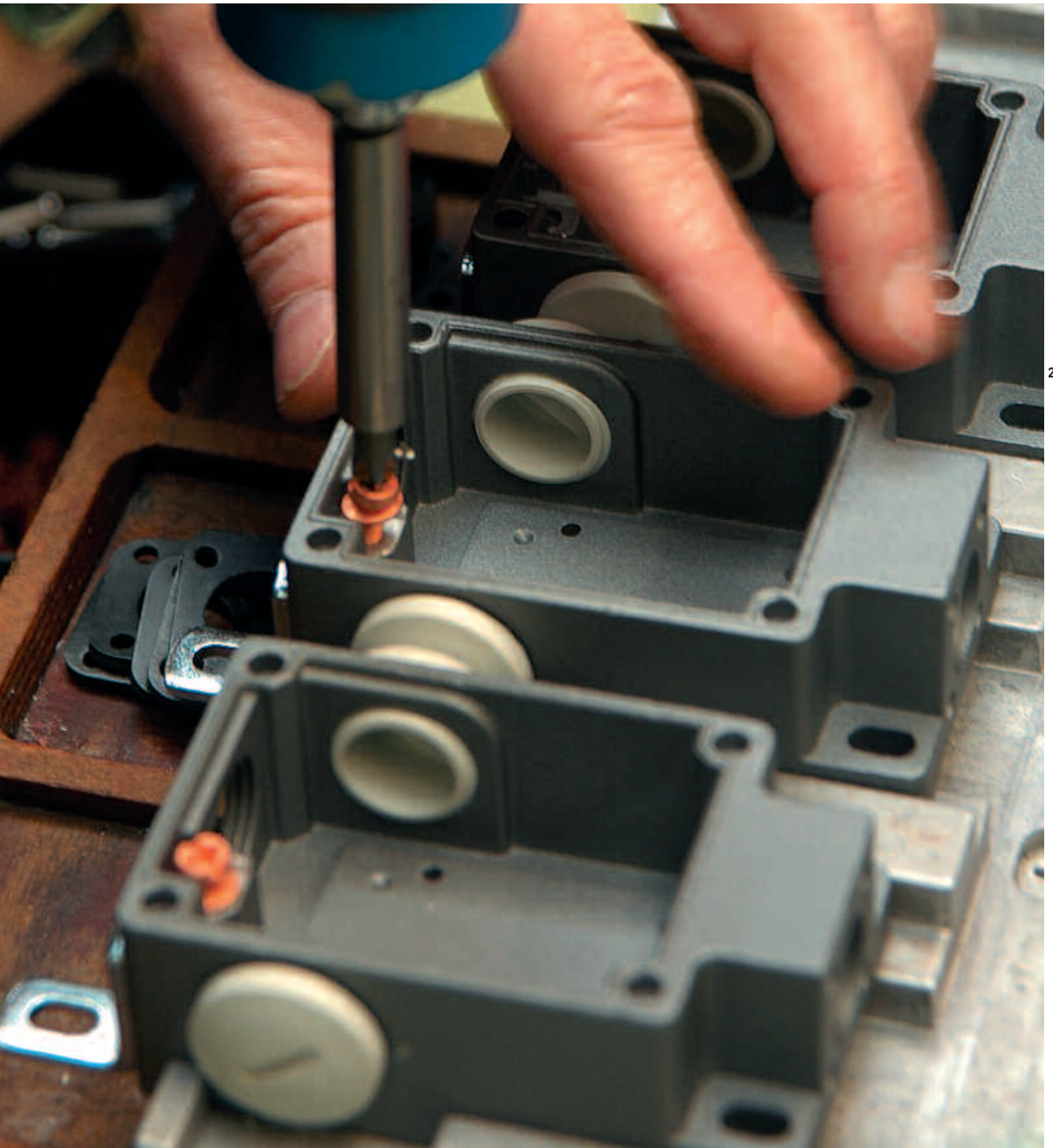
	Snap action	Slow action
1 NC/1 NO contact	ExM 61 TK-3m	Ex 61 TK 1Ö/1S-3m
Material number	1174054	1180172
	 GY-BK GY-BN	 BK-GY BN-BU

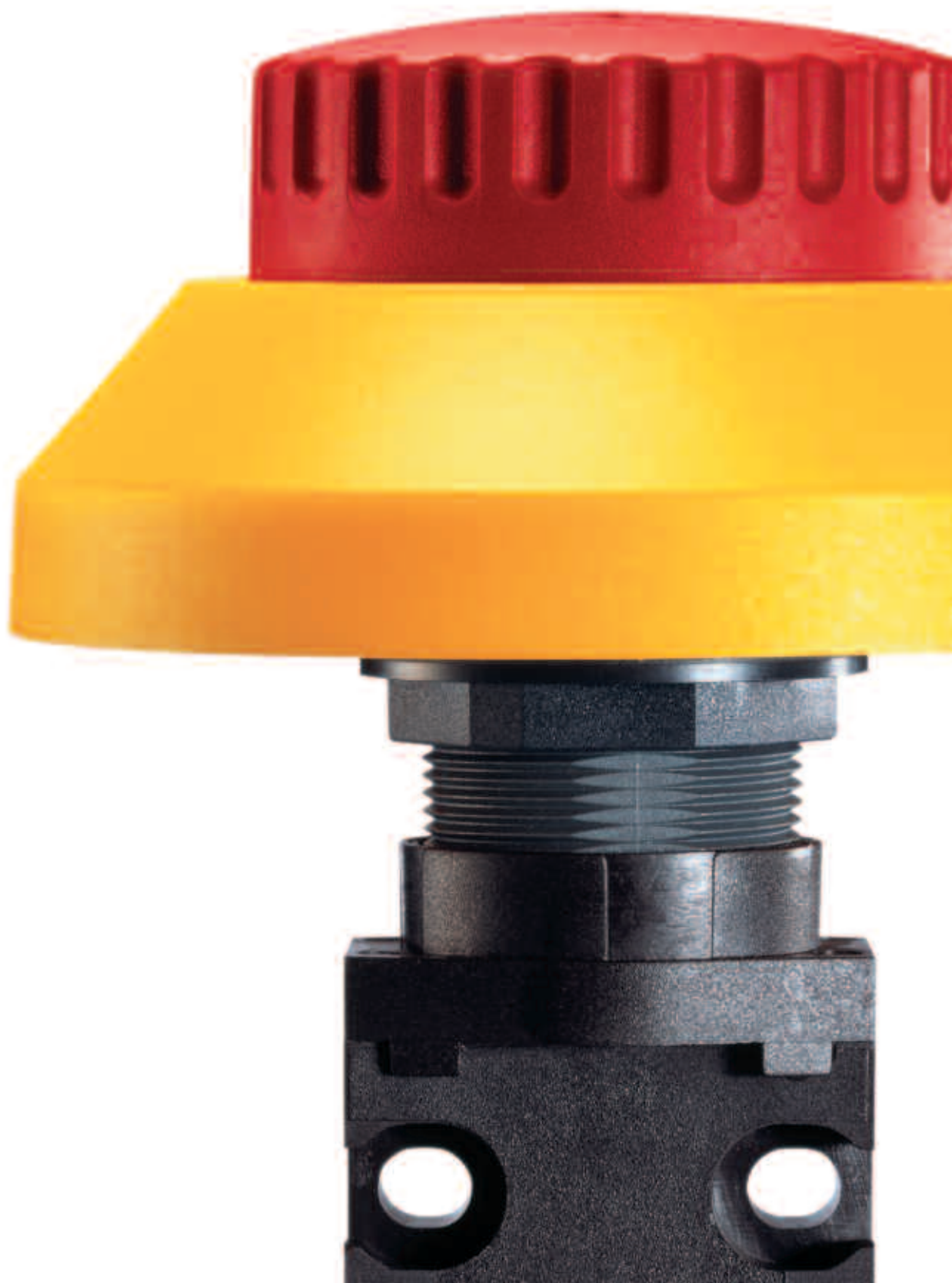
✓ in stock



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PRODUCTION PROCESS ASSEMBLY  
FIXING THE GROUND SCREW





## Ex command devices

### Thermoplastic enclosure

// Series Ex 14

from page 224

// Series Ex BF 80

from page 232





# Ex command devices

## Range of application

Ex command devices can be mounted in Ex»e«switchboards, control panels, two-hand control panels, directly on the machine enclosure and in the lift industry. On manual actuation, the devices start or terminate operating sequences and functional processes.

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

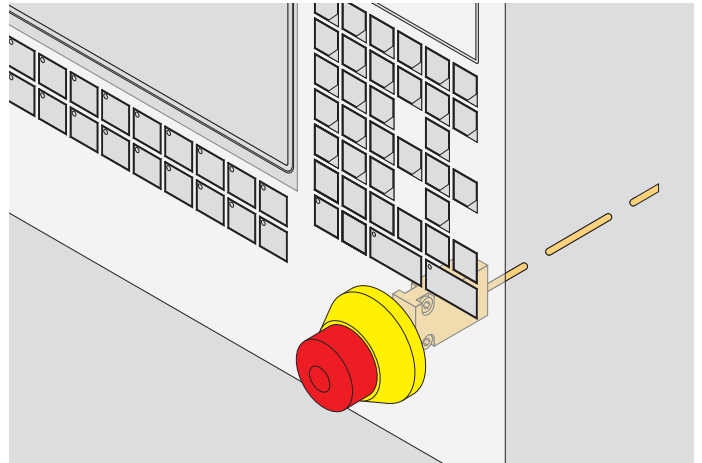
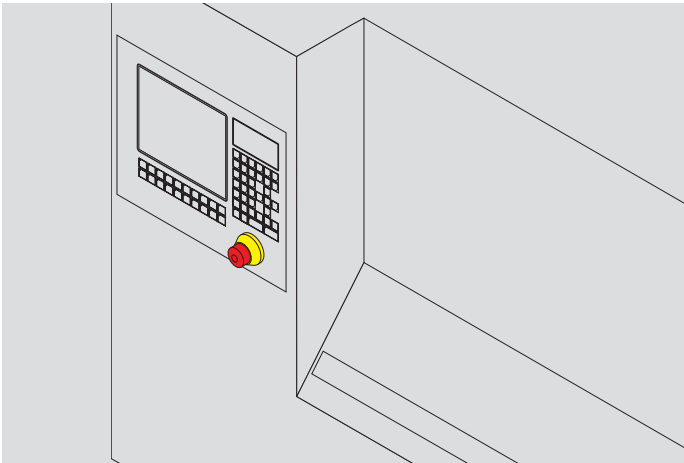
## Design and operating principle

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

All Ex command devices shown in this chapter bear the CE mark according to the Low Voltage Directive 2014/35/EU and to ATEX 2014/34/EU, the emergency-stop push-buttons according to the Machinery Directive 2006/42/EC, as well as to ATEX 2014/34/EU. The Ex command devices per equipment category 3D bear the CE mark without the number of the notified body and have received a CE declaration of manufacturer conformity.

## Application


as emergency-stop push button in a switchboard



# Ex command devices

## // Series Ex 14


### Features/Options

- Ex zone 1 and 21
- Double insulated 
- Mounting hole diameter 22.5 mm
- With pre-wired cable, cable length 1 metre
- Special version only for dust Ex zone 22

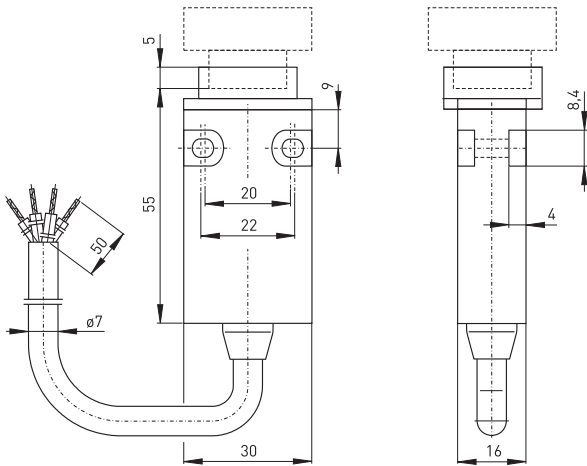
// EX 14



### Technical data

<b>Standards</b>	EN 60947-5-1; EN 60079-0, EN 60079-1, EN 60079-31; EN ISO 13849-1; EN ISO 14119
<b>Enclosure</b>	glass-fibre reinforced, shock-proof thermoplastic, self-extinguishing UL 94-V0
<b>Protection class</b>	IP 65 to IEC/EN 60529
<b>Contact material</b>	silver
<b>Switching system</b>	slow action, positive break NC contact $\ominus$
<b>Switching elements</b>	1 NC/1 NO contact, type Zb
<b>Connection</b>	cable H05VV-F
<b>Cable section</b>	4 x 0.75mm <sup>2</sup>
<b>Cable length</b>	1 m
<b>B<sub>10d</sub> (10 % load)</b>	60 000
<b>T<sub>M</sub></b>	max. 20 years
<b>U<sub>imp</sub></b>	4 kV
<b>U<sub>i</sub></b>	250 V
<b>I<sub>the</sub></b>	T6: 6 A; T5: 3 A
<b>I<sub>e</sub>/U<sub>e</sub></b>	6 A/250 VAC; 0.25 A/230 VDC
<b>Utilisation category</b>	AC-15, DC-13
<b>Max. fuse rating</b>	6 A gG/gN fuse
<b>Ambient temperature</b>	T6: -20 °C ... +65 °C, T5: -20 °C ... +75 °C, +90 °C with max 3 A
<b>Mechanical life</b>	> 30 000 operations
<b>Switching frequency</b>	1800/h
<b>Impact energy</b>	max. 4 J
<b>Ex marking</b>	$\oplus$ II 2G Ex db IIC T6/T5 Gb, II 2D Ex tb IIIC T80°C/T95°C Db IECEx Ex db IIC T6/T5 Gb, Ex tb IIIC T80°C/T95°C Db
<b>Approvals</b>	PTB 03 ATEX 1070 X, IECEx PTB 06.0098 X 
<b>Note</b>	Switch must be protected from mechanical damage!

224



### Type code

Ex 14 RUV-S 10/1S-1m-3D

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

✓ in stock

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# Ex command devices

## // Series Ex 14, Actuator

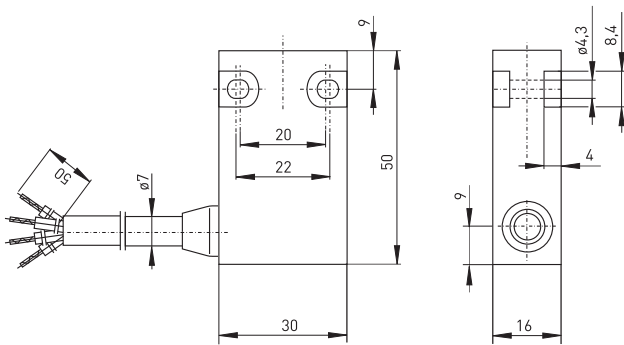
### Features/Options

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

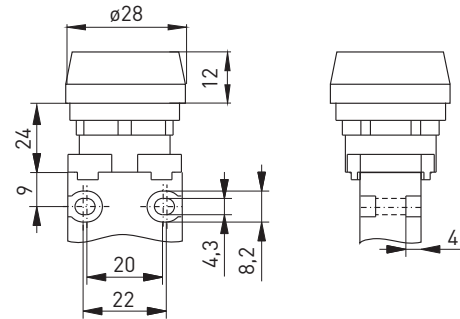
### Features/Options

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

### // Cable on side



### // Push button RT



### // Ex 14 RT-V2A



### // Ex 14 RST-V2A



Contact variants: switch travel/contacts

#### Slow action

1 NC/1 NO contact  
Material Number

Ex 14 RT  
1045472



# Ex command devices

## // Series Ex 14, Actuator

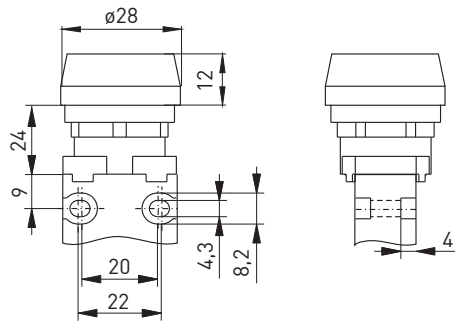
### Features/Options

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

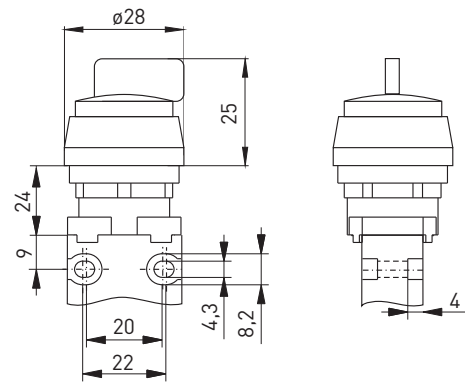
### Features/Options

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

## // Push button with diaphragm RTM



## // Selector RW



Contact variants: switch travel/contacts

Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact Material Number	<b>Ex 14 RTM</b> <b>1045473</b>

	Slow action
1 NC/1 NO contact	<b>Ex 14 RW ...</b> BK — GY BU — BN
2 switching positions Switching angle 90° 0 - I or I - II	<b>Ex 14 RWA 0 - I</b> <b>Ex 14 RWA I - II</b>
Material Number	 <b>1045500</b>
Material Number	 <b>1160191</b>
3 switching positions Switching angle -45° + 45° I - 0 - II	<b>Ex 14 RWB I - 0 - II</b>
Material Number	 <b>1045501</b>
Control switch Left-hand side switching, right-hand side stroke Switching angle -45° + 45° I - 0 ← II	<b>Ex 14 RWC I - 0 ← II</b>
Material Number	 <b>1045502</b>



✓ in stock

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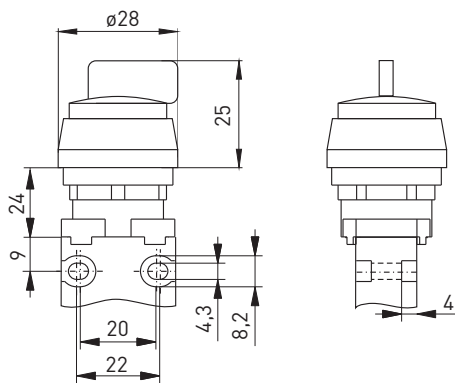
**Features/Options**

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

**Features/Options**

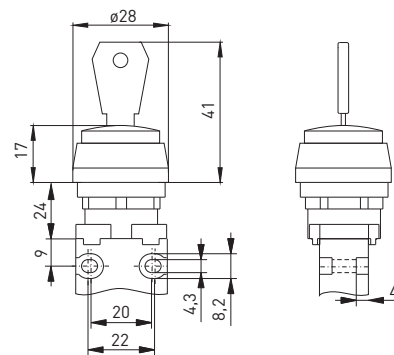
- RSSA key switch with safety cylinder lock (locks against turning)
- Normal version always has same key number
- Available in 9 different versions
- Up to 20 lock combinations available on request
- Protection class IP 65
- With pre-wired cable, cable length 1 metre
- Available with actuator made of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

**// Control switch RST**

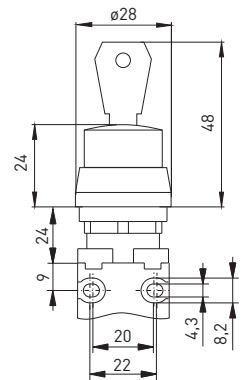


**// Key switch RSSA**

Ex 14 RSSA 12 ... 18



Ex 14 RSSA 23 ... 27



**Contact variants: switch travel/contacts**

	Slow action
1 NC/1 NO contact	Ex 14 RST ... BK — GY BU — BN
Switching angle 90° with return to left position, 0 ← I	Ex 14 RSTA 0 ← I 
Material Number	1045503
Switching angle -45° + 45° with return to central position I → 0 ← II	Ex 14 RSTB I → 0 ← II 
Material Number	1045504

**Legend**

- I — Switching position
- Spring return
- o — Position for key removal



**Contact variants: switch travel/contacts**

	Slow action	2 Schaltstellungen	3 Schaltstellungen
1 NC/1 NO contact	Ex 14 RSSA ... 		
Key switch	Ex 14 RSSA 14	Ex 14 RSSA 12	Ex 14 RSSA 12
Material Number	1045517	1045515	1045515
Material Number	Ex 14 RSSA 15 1045518	Ex 14 RSSA 13 1045516	Ex 14 RSSA 13 1045516
Material Number	Ex 14 RSSA 17 1045519	Ex 14 RSSA 23 1045521	Ex 14 RSSA 23 1045521
Material Number	Ex 14 RSSA 18 1045520	Ex 14 RSSA 24 1045522	Ex 14 RSSA 24 1045522
Material Number	Ex 14 RSSA 27 1045523		

# Ex command devices

## // Series Ex 14, Actuator

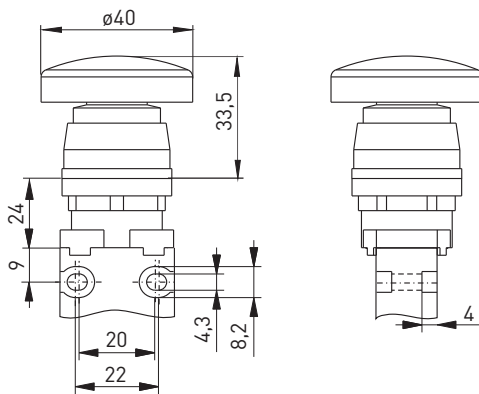
### Features/Options

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

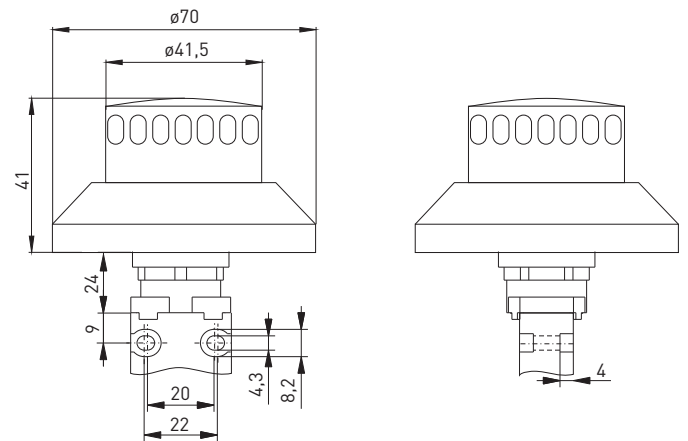
### Features/Options

- Thermoplastic actuator
- according to EN ISO 13850
- 1 NC and 1 NO contact, double break, type Zb or 2 NC contacts
- Projection from front of panel 41 mm
- With collar to prevent blocking
- Reset by turning clockwise
- With pressure-point to protect against unintentional actuation
- Protection class IP 65
- With pre-wired cable, cable length 1 metre

## // Push button RS SW



## // Emergency-stop push button RUV



Contact variants: switch travel/contacts

Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact Material Number	<b>Ex 14 RS SW</b> <b>1179170</b> BK  GY BU  BN
2 NC contacts Material Number	<b>Ex 14 RS SW 2Ö</b> <b>on request</b> BK  GY BU  BN

	Slow action
1 NC/1 NO contact Material Number	<b>Ex 14 RUV</b> <b>1045526</b> BK  GY BU  BN
2 NC contacts Material Number	<b>Ex 14 RUV 2Ö</b> <b>1180200</b> BK  GY BU  BN

✓ in stock



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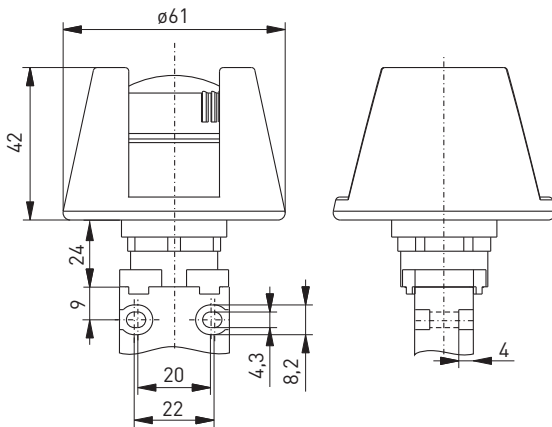
**Features/Options**

- Thermoplastic actuator
- according to EN ISO 13850
- 1 NC and 1 NO contact, double break, type Zb
- With collar to prevent blocking
- Reset by turning right or left
- Protection class IP 65
- With pre-wired cable, cable length 1 metre

**Features/Options**

- Thermoplastic actuator
- according to EN ISO 13850
- 1 NC and 1 NO contact, double break, type Zb
- With key release
- Reset by turning right or left
- Protection class IP 65
- With pre-wired cable, cable length 1 metre

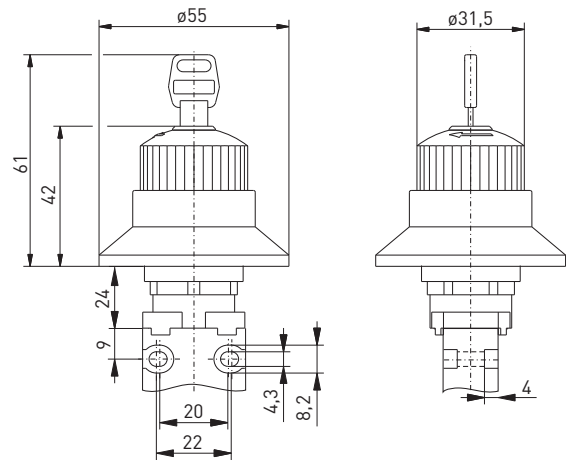
**// Emergency-stop push button QRSKUV**



Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	Ex 14 QRSKUV
Material Number	1183903
	BK — GY
	BU — BN

**// Emergency-stop push button QRBUVSE**



Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	Ex 14 QRBUVSE
Material Number	1462984
	BK — GY
	BU — BN



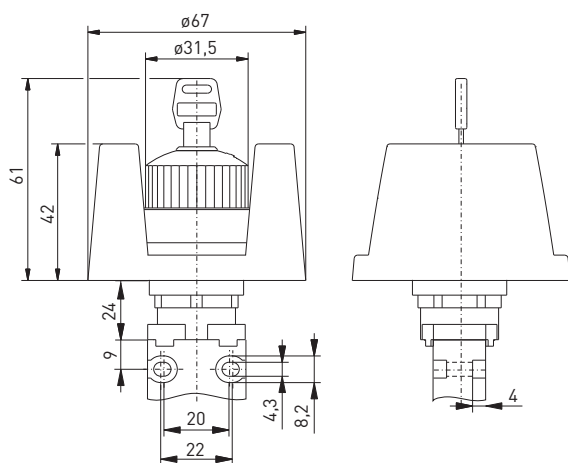
# Ex command devices

## // Series Ex 14, Actuator

### Features/Options

- Thermoplastic actuator
- according to EN ISO 13850
- 1 NC and 1 NO contact, double break, type Zb
- With collar to prevent blocking and key release
- Reset by turning right or left
- Protection class IP 65
- With pre-wired cable, cable length 1 metre

## // Emergency-stop push butt. QRSKUVSE



Contact variants: switch travel/contacts

### Slow action

1 NC/1 NO contact  
Material Number

Ex 14 QRSKUVSE  
1462982

BK GY  
BU BN

✓ in stock



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PRODUCTION PROCESS ASSEMBLY  
ASSEMBLY OF CONTACT BRIDGES



# Ex Command devices

## // Series Ex BF 80

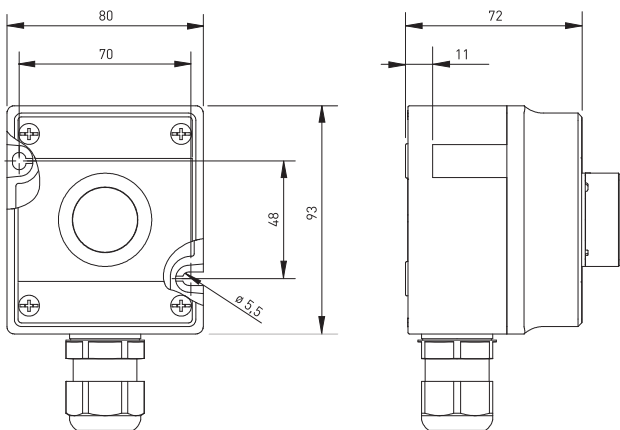
### Features/options

- Ex zone 1 and 21
- Polyester resin enclosure
- PU foam gaskets
- Different actuating elements like push-buttons, selector- or key switches available
- Versions with two or three actuating elements available
- 3 enclosure sizes

## // EX BF 80



232



## Technical Data

<b>Standards</b>	EN 60079-0, EN 60079-1, EN 60079-7, EN 60079-18, EN 60079-31; EN ISO 13849-1
<b>Enclosure</b>	Polyester resin (glass fibre-reinforced)
<b>Protection class</b>	IP 66 to IEC/EN 60529
<b>Switching system</b>	slow action, positive break NC contacts ⊖
<b>Connection</b>	screw connection terminals, max. 6 mm <sup>2</sup> (incl. conductor ferrules), serial/connection clamps max. 4 mm <sup>2</sup>
<b>Ambient temperature</b>	T6: -40 °C ... +40 °C, T5: -40 °C ... +55 °C, -50 °C ... +60 °C on request
<b>B<sub>10d</sub> (10 % load)</b>	6050
<b>T<sub>M</sub></b>	max. 20 years
<b>Mechanical life</b>	50 000 operations
<b>Temperature class</b>	T6 / T5
<b>Impact energy</b>	max. 7 J
<b>Contact element</b>	
<b>I<sub>e</sub>/U<sub>e</sub></b>	4 A/400 V
<b>Utilisation category</b>	AC-15
<b>Signalling device LM / LDT</b>	
<b>U<sub>e</sub></b>	12 ... 240 V
<b>Power consumption</b>	max. 1 W
<b>Frequency</b>	0 ... 60 Hz
<b>Ex marking</b>	⊕ II 2G Ex de IIC T6 Gb II 2D Ex tb IIIC T80 °C Db IP66 IECEX Ex de IIC T6 Gb Ex tb IIIC T80 °C Db IP66
<b>Approvals</b>	PTB 10 ATEX 1018, IECEx PTB 12.0029

### Type code

**Ex BF 80 3 DT/DT/DT**

Actuator DT (LDT, DDT, LM, WS, SLS, PZTNA)  
3 enclosure (1=single, 2=double, 3=triple)  
Series  
Command device  
Ex certified component



## Ex Command devices

### // Series Ex BF 80, actuators

#### Features/Options

- Three different sizes of enclosures available for 1, 2, or 3 actuators

### // Emergency-stop push-button PZTNA



#### Features/Options

- With 1 NC/1 NO contact or 2 NC/1NO contacts
- Different diameters available: 38 mm or 55 mm

#### Diameter 38 mm

Ex BF 80 1 PZTNA 1Ö/1S 38 mm

Ex BF 80 1 PZTNA 2Ö/1S 38 mm

#### Material Number

✓ 1186777

✓ 1186778

#### Diameter 55 mm

Ex BF 80 1 PZT55NA 1Ö/1S 55 mm

#### Material Number

✓ 1186779

233

### // Emergency-stop push-button with key unlocking PZSTNA



#### Features/Options

- With 1 NC/1 NO contact
- Diameter 38 mm

#### Diameter 38 mm

Ex BF 80 1 PZSTNA 1Ö/1S 38 mm

#### Material Number

1186780

### // Black mushroom push-button PZDTSW



#### Features/Options

- Black mushroom push-button

#### Mushroom push-button

Ex BF 80 1 PZDTSW 1Ö/1S

#### Material Number

✓ 1186776

Ex Command devices  
// Series Ex BF 80, actuators

// Push-button DT



Features/Options

- Push-buttons DT can be equipped with red 0 plate or green I plate

Push-button  
Ex BF 80 1 DT 10/1S

Material Number  
✓ 1186775

// Illuminated push-button LDT



Features/Options

- Colours: clear, red, yellow, green, blue

Illuminated push-button  
Ex BF 80 1 LDT 10/1S

Material Number  
✓ 1186784

// Double push-button DDT



Features/Options

- Double push-buttons DDT can be equipped with red 0 plate or green I plate
- Red push-button: 1 NC contact, green push-button: 1 NO contact

Double push-button  
Ex BF 80 1 DDT 10/1S

Material Number  
✓ 1186783

Ex Command devices  
// Series Ex BF 80, actuators

// Signalling device LM



Features/Options

- All coloured filters included: clear, red, yellow, green, blue

Signalling device  
Ex BF 80 1 LM LED

Material Number  
1186785

// Selector switch WS



Features/Options

- Two versions available: 0 - I and I - 0 - II

Version 0 - I  
Ex BF 80 1 WS 0 - I 10/1S

Material Number  
✓ 1186786

Version I - 0 - II  
Ex BF 80 1 WS I - 0 - II 1S/1S

Material Number  
1186787

// Key switch SLS



Features/Options

- Two versions available: 0 - I and I - 0 - II

Version 0 - I  
Ex BF 80 1 SLS 0 - I 10/1S ✓

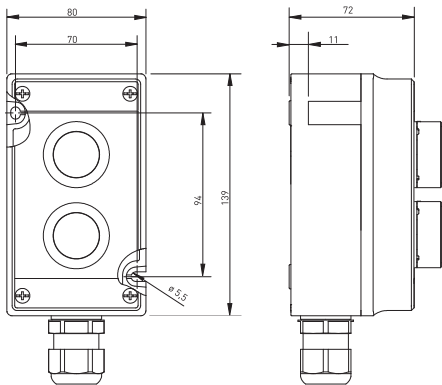
Material Number  
1186781

Version I - 0 - II  
Ex BF 80 1 SLS I - 0 - II 1S/1S

Material Number  
✓ 1186782

**Ex Command devices**  
**// Series Ex BF 80, actuators**

**// Version with 2 push-buttons**



**Features/Options**

- With 1 NC/1 NO contact per push-button

**2 push-buttons**

Ex BF 80 2 DT/DT IÖS/IÖS

**Material Number**  
1186788

**1 signalling device, 1 push-buttons**

Ex BF 80 2 LM/DT LED/IÖS

**Material Number**  
1186789

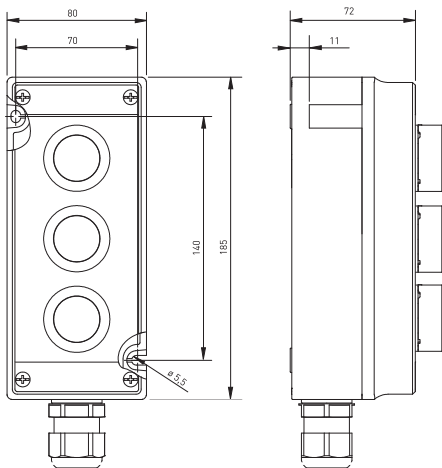
**1 signalling device, 1 double push-button**

Ex BF 80 2 LM/DDT LED/IÖS

**Material Number**  
✓ 1186790

236

**// Version with 3 push-buttons**



**Features/Options**

- With 1 NC/1 NO contact per push-button

**3 push-buttons**

Ex BF 80 3 DT/DT/DT IÖS/IÖS1ÖS/

**Material Number**  
✓ 1186791

**1 signalling device, 2 push-buttons**

Ex BF 80 3 LM/DT/DT LED/IÖS/IÖS

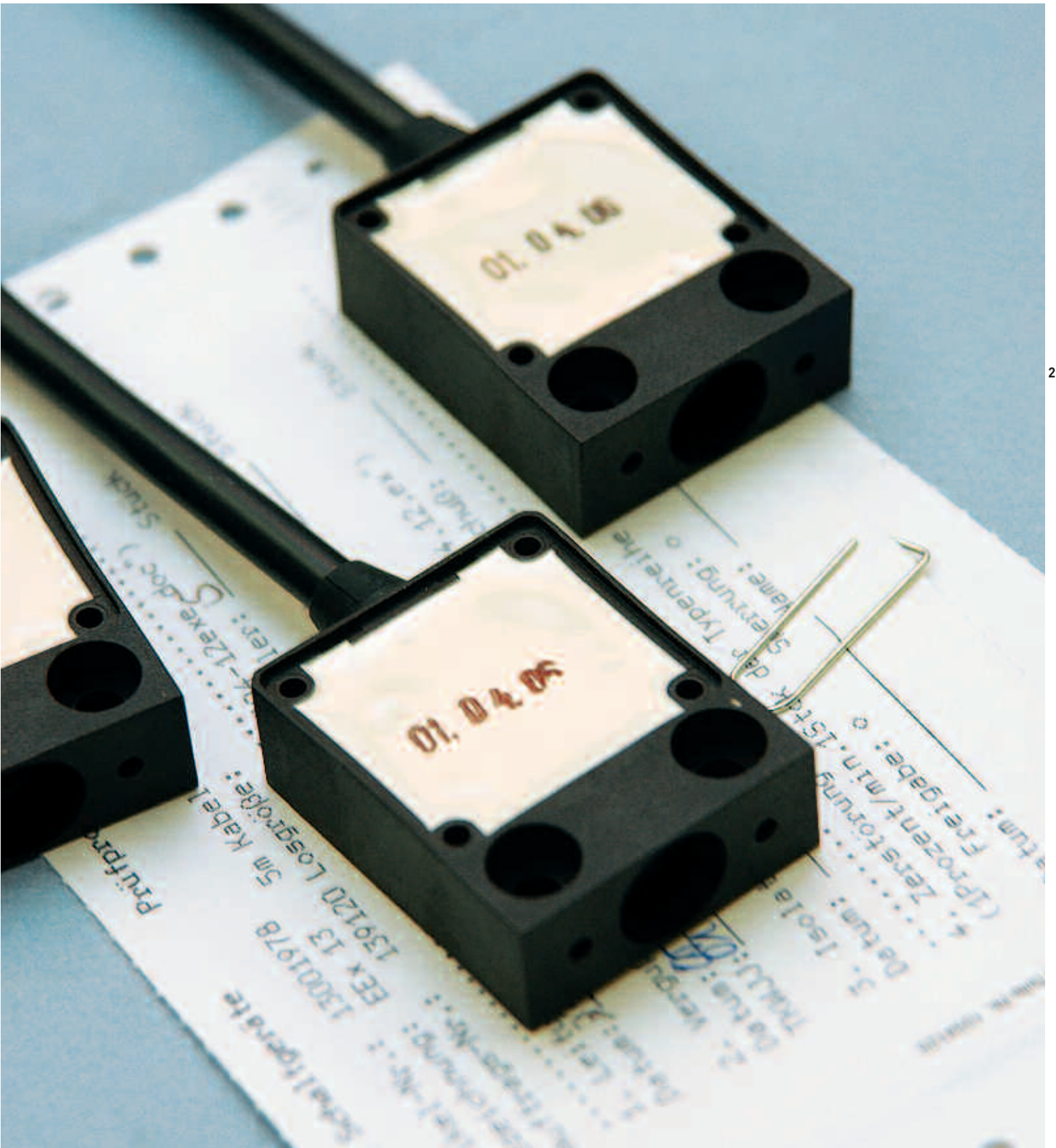
**Material Number**  
1186792

**1 signalling device, 1 double push-b., 1 e.-stop**

Ex BF 80 3 LM/DDT/PZSTNA 38mm LED/IÖS/IÖS

**Material Number**  
1186793

PRODUCTION PROCESS  
POTTED SWITCHES





## Ex foot switches

### Single-pedal types

// Series Ex GF

from page 242

// Series Ex GFS

from page 244

// Series Ex GFI Extreme

from page 246

// Series Ex GFSI Extreme

from page 247

### Double-pedal types

// Series Ex GF 2

from page 248

// Series Ex GFS 2

from page 250

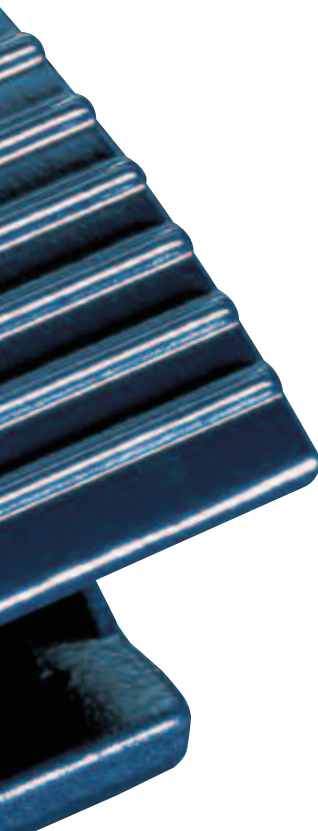
### Triple-pedal types

// Series Ex GF 3

from page 252

// Series Ex GFS 3

from page 253







# Ex foot switches

## Range of application

Ex foot switches are mounted on machines and plants in cases where operation by hand is not possible. They are used to start and stop operations and production processes. Depending on the environmental conditions and mechanical duty, different versions of foot switches are used.

## Design and operating principle

The Ex GFS and Ex GFSI range foot switches are mounted with a shield to protect against unintentional actuation.

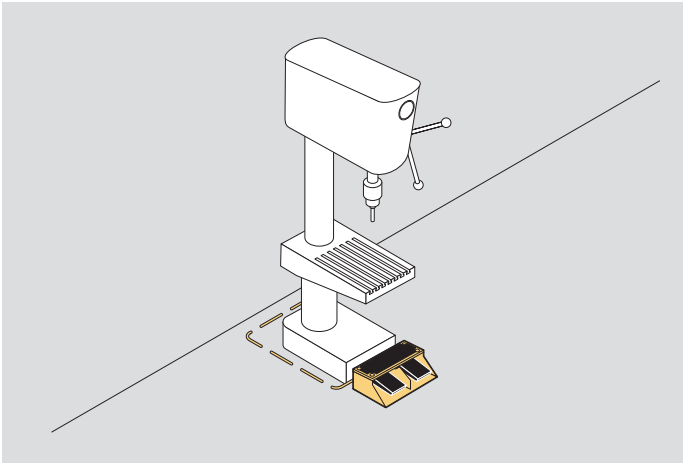
All Ex foot switches are equipped with slow or snap action contacts. They have IP 65 degree of protection.

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

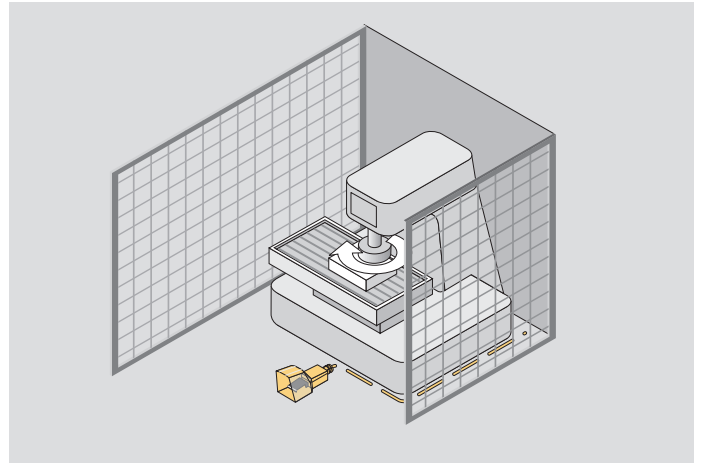
The foot switches bear the CE mark according to the Low Voltage Directive 2014/35/EU and to ATEX 2014/34/EU. The Ex foot switches per equipment category 3D bear the CE mark without the number of the notified body and have received a CE declaration of manufacturer conformity.

## Application

### Foot switch on a drill machine



### Foot switch on a CNC machining centre







# Ex foot switches

## // Series Ex GF

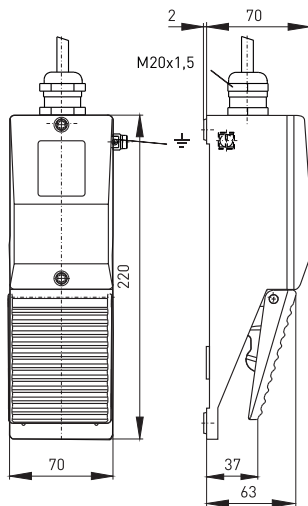
### Features/Options

- Ex zone 1 and 21
- Single-pedal
- Metal enclosure
- Without protective shield
- Max. 2 contacts
- Low pedal height
- With pre-wired cable, cable length 3 metres
- Available with special finish in RAL colour tones
- Special version only for dust Ex zone 22 available

### Technical data

<b>Standards</b>	EN 60947-5-1; EN 60079-0, EN 60079-1, EN 60079-31; EN ISO 13849-1
<b>Enclosure</b>	aluminium die-cast, powder-coated
<b>Cover</b>	glass-fibre reinforced thermoplastic
<b>Pedal</b>	glass-fibre reinforced thermoplastic
<b>Connection</b>	cable H05VV-F, length 3 m
<b>Cable section</b>	3 or 4 x 0.75mm <sup>2</sup> (incl. conductor ferrules)
<b>Contact material</b>	silver
<b>Protection class</b>	IP 65 to IEC/EN 60529
<b>Switching system</b>	slow action type Zb: 1 NC/1 NO contact with positive break ⊖; snap action type C: change-over contact with single break, type Za: 1 NC/1 NO contact with double break
<b>Switch insert</b>	slow action Ex GF: type Zb: Ex 14 snap action Ex GFM: type C: ExM 14, type Za: ExM 14 1Ö/1S
<b>B<sub>10d</sub> (10 % load)</b>	Ex GF: 2 million
<b>T<sub>M</sub></b>	Ex GF: max. 20 years
<b>Utilisation category</b>	AC-15; DC-13
<b>I<sub>e</sub>/U<sub>e</sub></b>	Ex GF: 6 A/250 VAC; 0,25 A/230 VDC, Ex GFM 1Ö/1S: 5 A/250 VAC; 0,2 A/230 VDC, Ex GFM: 5 A/250 VAC; 0,16 A/230 VDC
<b>Max. fuse rating</b>	Ex GF: 6 A gG/gN-fuse Ex GFM: 5 A gG/gN-fuse
<b>Ambient temperature</b>	T6: -20 °C ... +60 °C; T5: -20 °C ... +75 °C
<b>Mechanical life</b>	> 1 million operations
<b>Impact energy</b>	max. 7 J
<b>Ex marking</b>	⊕ II 2G Ex d IIC T6/T5 Gb, II 2D Ex tb IIIC T80°C/T95°C Db IP65 IECEX Ex d IIC T6/T5 Gb Ex tb IIIC T80°C/T95°C Db IP65
<b>Approvals</b>	PTB 11 ATEX 1002 X; IECEX PTB 11.0090 X Ex GF: IECEX    

// EX GF

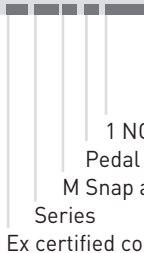


### Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact	<b>Ex GFM 1Ö/1S</b> BN 3 4 BU BK 1 2 GY	<b>Ex GF 1Ö/1S</b> BN 11 12 BU BK 23 24 GY
1 change-over	<b>Ex GFM</b> BN 1 GY BK 1	

### Type code

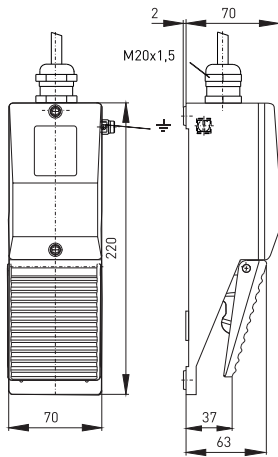
Ex GFM K 1Ö/1S-3D-3m


 Cable length 3 m  
 Equipment Categ. 3D,  
 dust Ex zone 22  
 1 NC/1 NO contact  
 Pedal cover  
 M Snap action (without M slow action)  
 Series  
 Ex certified component

# Ex foot switches

## // Series Ex GF, variants

### // Ex GF



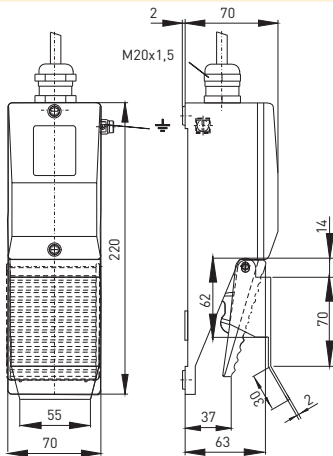
Snap action  
Ex GFM - 3m  
Ex GFM 10/1S - 3m

Material number  
1048539  
on request

Slow action  
Ex GF 10/1S - 3m

Material number  
✓ 1048461

### // Pedal cover K



Pedal cover  
Ex GFK 10/1S - 3m

Material number  
on request





# Ex foot switches

## // Series Ex GFS

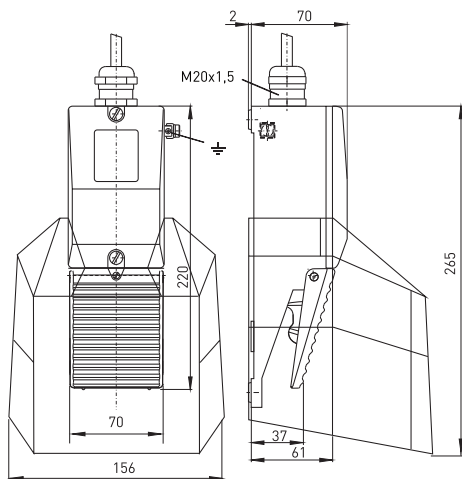
### Features/Options

- Ex zone 1 and 21
- Single-pedal
- Metal enclosure
- With protective shield
- Max. 2 contacts
- Low pedal height
- With pre-wired cable, cable length 3 metres
- Available with special finish in RAL colour tones
- Special version only for dust Ex zone 22 available

### Technical data

<b>Standards</b>	EN 60947-5-1; EN 60079-0, EN 60079-1, EN 60079-31; EN ISO 13849-1
<b>Enclosure</b>	aluminium die-cast, powder-coated
<b>Pedal</b>	glass-fibre reinforced thermoplastic
<b>Protective shield</b>	aluminium die-cast, powder-coated
<b>Connection</b>	cable H05VV-F, length 3 m
<b>Cable section</b>	3 or 4 x 0.75mm <sup>2</sup> (incl. conductor ferrules)
<b>Contact material</b>	silver
<b>Protection class</b>	IP 65 to IEC/EN 60529
<b>Switching system</b>	slow action type Zb: 1 NC/1 NO contact with positive break ⊖; snap action type C: change-over contact with single break, type Za: 1 NC/1 NO contact with double break
<b>Switch insert</b>	slow action Ex GF: type Zb: Ex 14 snap action Ex GFM: type C: ExM 14, type Za: ExM 14 1Ö/1S
<b>B<sub>10d</sub> (10 % load)</b>	Ex GFS: 2 million
<b>T<sub>M</sub></b>	Ex GFS: max. 20 years
<b>Utilisation category</b>	AC-15; DC-13
<b>I<sub>e</sub>/U<sub>e</sub></b>	Ex GFS: 6 A/250 VAC; 0,25 A/230 VDC, Ex GFSM 1Ö/1S: 5 A/250 VAC; 0,2 A/230 VDC, Ex GFSM: 5 A/250 VAC, 0,16 A/230 VDC
<b>Max. fuse rating</b>	Ex GFS: 6 A gG/gN-fuse Ex GFSM: 5 A gG/gN-fuse
<b>Ambient temperature</b>	T6: -20 °C ... +60 °C; T5: -20 °C ... +75 °C
<b>Mechanical life</b>	> 1 million operations
<b>Impact energy</b>	max. 7 J
<b>Ex marking</b>	⊕ II 2G Ex d IIC T6/T5 Gb, II 2D Ex tb IIIC T80°C/T95°C Db IP65 IECEx Ex d IIC T6/T5 Gb Ex tb IIIC T80°C/T95°C Db IP65
<b>Approvals</b>	PTB 11 ATEX 1002 X; IECEx PTB 11.0090 X Ex GFS: IECEx    

// EX GFS



### Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact Material number	<b>Ex GFSM 1Ö/1S</b> 1283481 BN 3 — 4 BU BK 1 — 2 GY	<b>Ex GFS 1Ö/1S</b> 1048585 ✓ BN 11 — 12 BU BK 23 — 24 GY
1 change-over Material number	<b>Ex GFSM</b> 1048714 BN — GY BK	
2 Öffner/2 Schließer Material number		<b>Ex GFS 2Ö/2S-3m</b> 1186320 BN 11 — 12 BU BN 11 — 12 BU BK 23 — 24 GY BK 23 — 24 GY

✓ in stock

### Type code

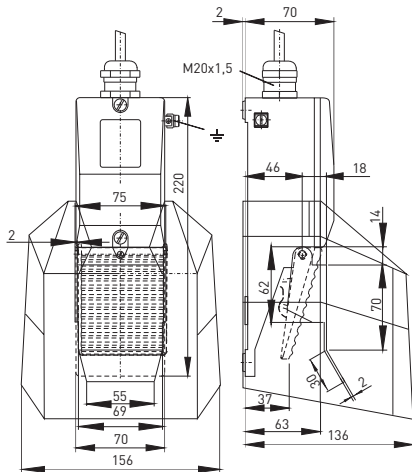
Ex GFSM K 1Ö/1S-3D-3m

- Cable length 3 m
- Equipment Categ. 3D, dust Ex zone 22
- 1 NC/1 NO contact
- Pedal cover
- M Snap action (without M slow action)
- S Protective shield
- Series
- Ex certified component

# Ex foot switches

## // Series Ex GFS, variants

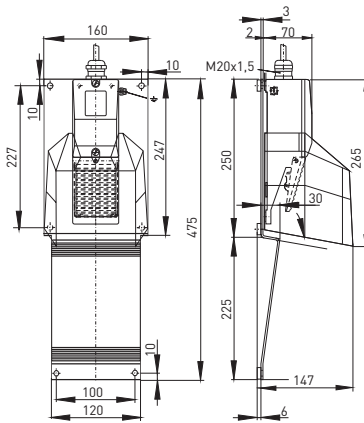
### // Pedal cover K



Pedal cover  
Ex GFSK 10/1S - 3m

Material number  
on request

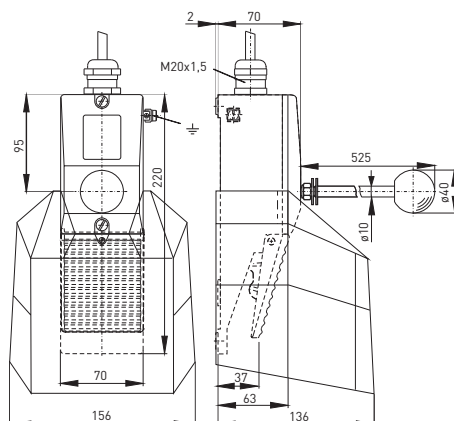
### // Foot rest FST



Foot rest  
Ex GFS FST 10/1S - 3m

Material number  
on request

### // Carrying handle TST



Features/Options  
- Carrying handle:  
stainless steel 1.1.4104 with thermoplastic grip

Carrying handle  
Ex GFS TST 10/1S - 3m

Material number  
1051685

# Ex foot switches

## // Series Ex GFI Extreme

### Features/Options

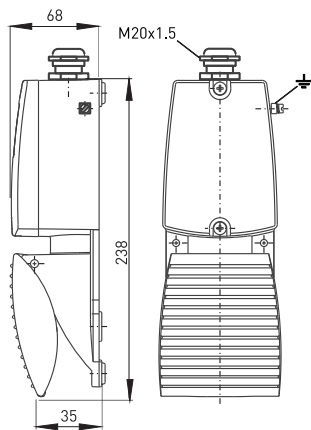
- Ex zone 1 and 21
- Single-pedal
- Corrosion-resistant aluminium enclosure
- Without protective shield
- Salt-mist spray test to DIN EN ISO 9227
- Low pedal height
- Wiring compartment
- Screws and metal parts made of stainless steel

## // EX GFI EXTREME



### Technical data

<b>Standards</b>	EN 60947-5-1; EN 60079-0, EN 60079-1, EN 60079-7, EN 60079-31, EN ISO 13849-1
<b>Enclosure</b>	Corrosion-resistant aluminium, powder-coated, similar to RAL 7016 and RAL 1003
<b>Pedal</b>	Corrosion-resistant aluminium, hard- and powder-coated, similar to RAL 7016
<b>Connection</b>	screw connection terminals
<b>Cable section</b>	max. 2.5 mm <sup>2</sup> (incl. conductor ferrules)
<b>Contact material</b>	silver
<b>Protection class</b>	IP 66/67 to IEC/EN 60529
<b>Switching system</b>	slow action, positive break NC contacts
<b>Switching elements</b>	1 NC/1 NO contact, type Zb
<b>B<sub>10d</sub> (10 % load)</b>	2 million
<b>T<sub>M</sub></b>	max. 20 years
<b>Utilisation category</b>	AC-15; DC-13
<b>I<sub>e</sub>/U<sub>e</sub></b>	5 A/250 VAC; 0.2 A/230 VDC
<b>Max. fuse rating</b>	5 A gG/gN-fuse
<b>Ambient temperature</b>	T6: -40 °C ... +55 °C
<b>Mechanical life</b>	> 1 million operations
<b>Impact energy</b>	max. 7 J
<b>Ex marking</b>	⊕ II 2G Ex de IIC T6 Gb, II 2D Ex tb IIIA T80°C Db IECEX Ex de IIC T6 Gb Ex tb IIIA T80°C Db
<b>Approvals</b>	PTB 15 ATEX 1010; IECEX PTB 15.0035 Ex GFI: IECEX



### Contact variants: switch travel/contacts

	Slow action	Material number
1 NC/1 NO contact	<b>Ex GFI 10/1S</b> 	1318066

### Type code

<b>Ex GFI 10/1S</b>	<b>-40°C...+55°C</b>	<b>IP66/67</b>
		Degree of protection IP 66/67
		-40°C ... +55°C ambient temperature
		1 NC/1 NO contact
		Series
		Ex certified component

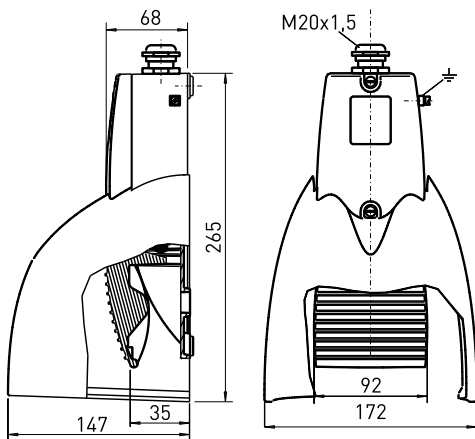
# Ex foot switches

## // Series Ex GFSI Extreme

### Features/Options

- Ex zone 1 and 21
- Single-pedal
- Corrosion-resistant aluminium enclosure
- With protective shield
- Salt-mist spray test to DIN EN ISO 9227
- Low pedal height
- Wiring compartment
- Screws and metal parts made of stainless steel

## // EX GFSI EXTREME



### Technical data

<b>Standards</b>	EN 60947-5-1; EN 60079-0, EN 60079-1, EN 60079-7, EN 60079-31, EN ISO 13849-1
<b>Enclosure</b>	Corrosion-resistant aluminium, powder-coated, similar to RAL 7016 and RAL 1003
<b>Pedal</b>	Corrosion-resistant aluminium, hard- and powder-coated, similar to RAL 7016
<b>Protective shield</b>	aluminium die-cast, powder-coated
<b>Connection</b>	screw connection terminals
<b>Cable section</b>	max. 2.5 mm <sup>2</sup> (incl. conductor ferrules)
<b>Contact material</b>	silver
<b>Protection class</b>	IP 66/67 to IEC/EN 60529
<b>Switching system</b>	slow action, positive break NC contacts
<b>Switch insert</b>	1 NC/1 NO contact, type Zb
<b>B<sub>10d</sub> (10 % load)</b>	2 million
<b>T<sub>M</sub></b>	max. 20 years
<b>Utilisation category</b>	AC-15; DC-13
<b>I<sub>e</sub>/U<sub>e</sub></b>	5 A/250 VAC; 0.2 A/230 VDC
<b>Max. fuse rating</b>	5 A gG/gN-fuse
<b>Ambient temperature</b>	T <sub>6</sub> : -40 °C ... +55 °C
<b>Mechanical life</b>	> 1 million operations
<b>Impact energy</b>	max. 7 J
<b>Ex marking</b>	⊕ II 2G Ex de IIC T <sub>6</sub> Gb, II 2D Ex tb IIIA T <sub>80</sub> °C Db IECEX Ex de IIC T <sub>6</sub> Gb Ex tb IIIA T <sub>80</sub> °C Db
<b>Approvals</b>	PTB 15 ATEX 1010; IECEx PTB 15.0035 Ex GFSI: IECEx

247

### Contact variants: switch travel/contacts

	Slow action	Material number
1 NC/1 NO contact	Ex GFSI 1Ö/1S 	1296855

### Type code

Ex	GFSI	1Ö/1S	-40°C...+55°C	IP66/67
				Degree of protection IP 66/67
				-40°C ... +55°C ambient temperature
				1 NC/1 NO contact
				Series, S Protective shield
				Ex certified component

# Ex foot switches

## // Series Ex GF 2

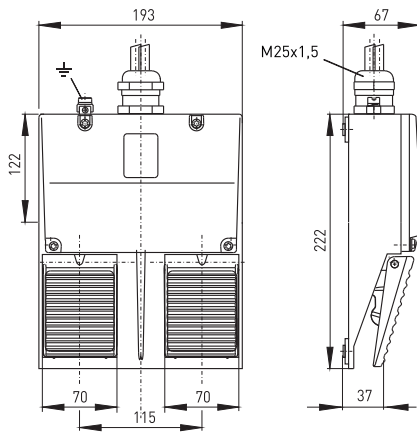
### Features/Options

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



### Technical data

<b>Standards</b>	EN 60947-5-1; EN 60079-0, EN 60079-1, EN 60079-31; EN ISO 13849-1
<b>Enclosure</b>	aluminium die-cast, powder-coated
<b>Cover</b>	aluminium die-cast, powder-coated
<b>Pedal</b>	glass-fibre reinforced thermoplastic
<b>Connection</b>	cable H05VV-F, length 3 m
<b>Cable section</b>	3 or 4 x 0.75mm <sup>2</sup> (incl. conductor ferrules)
<b>Contact material</b>	silver
<b>Protection class</b>	IP 65 to IEC/EN 60529
<b>Switching system</b>	slow action type Zb: 1 NC/1 NO contact with positive break ⊖; snap action type C: change-over contact with single break, type Za: 1 NC/1 NO contact with double break
<b>Switch insert</b>	slow action Ex GF: type Zb: Ex 14 snap action Ex GFM: type C: ExM 14, type Za: ExM 14 1Ö/1S
<b>B<sub>10d</sub> (10 % load)</b>	Ex GF 2: 2 million
<b>T<sub>M</sub></b>	Ex GF 2: max. 20 years
<b>Utilisation category</b>	AC-15; DC-13
<b>I<sub>e</sub>/U<sub>e</sub></b>	Ex GF 2: 6 A/250 VAC; 0,25 A/230 VDC, Ex GFM 2 1ÖS/1ÖS: 5 A/250 VAC; 0,2 A/230 VDC, Ex GFM 2: 5 A/250 VAC, 0.16 A/230 VDC
<b>Max. fuse rating</b>	Ex GF 2: 6 A gG/gN-fuse Ex GFM 2: 5 A gG/gN-fuse
<b>Ambient temperature</b>	T6: -20 °C ... +60 °C; T5: -20 °C ... +75 °C
<b>Mechanical life</b>	> 1 million operations
<b>Impact energy</b>	max. 7 J
<b>Ex marking</b>	⊕ II 2G Ex d IIC T6/T5 Gb, II 2D Ex tb IIIC T80°C/T95°C Db IP65 IECEx Ex d IIC T6/T5 Gb Ex tb IIIC T80°C/T95°C Db IP65
<b>Approvals</b>	PTB 11 ATEX 1002 X; IECEx PTB 11.0090 X Ex GF 2: IECEx



248

### Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact per pedal	<b>Ex GFM 2 1ÖS/1ÖS</b> BN 3 — 4 BU BK 1 — 2 GY	<b>Ex GF 2 1ÖS/1ÖS</b> BN 11 — 12 BU BK 23 — 24 GY
1 change-over per pedal	<b>Ex GFM 2</b> BN — GY BK	

### Type code

**Ex GFM 2 1ÖS/1ÖS-3D-3m**

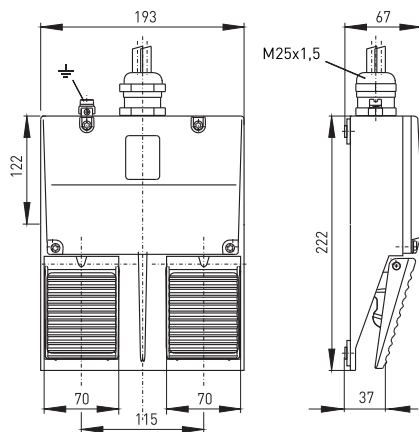
- Cable length 3 m
- Equipment Categ. 3D, dust Ex zone 22
- 1 NC/1 NO contact per pedal
- 2 pedals
- M Snap action (without M slow action)
- Series
- Ex certified component



# Ex foot switches

## // Series Ex GF 2, variants

### // Ex GF 2



#### Snap action

Ex GFM 2- 3m  
Ex GFM 2 1Ö/1S - 3m

#### Material number

1180291  
on request

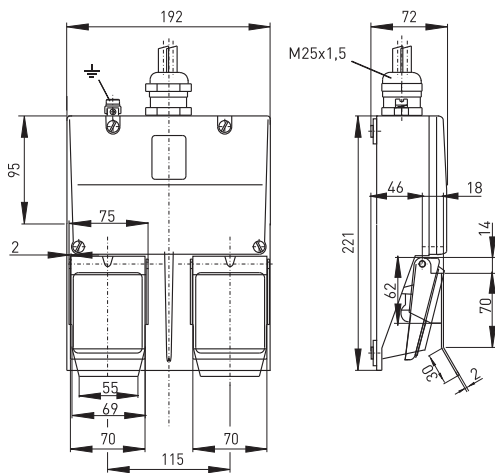
#### Slow action

Ex GF 2 1Ö/1S - 3m

#### Material number

1048771

### // Pedal cover K



#### Pedal cover

Ex GFK 2 1Ö/1S - 3m

#### Material number

on request





# Ex foot switches

## // Series Ex GFS 2

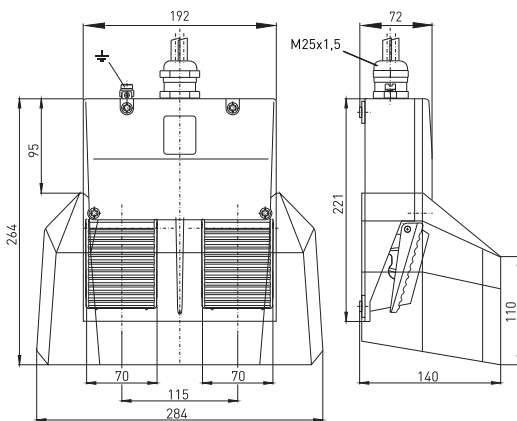
### Features/Options

- Ex zone 1 and 21
- Double-pedal
- Metal enclosure
- With protective shield
- Max. 2 contacts per pedal
- Low pedal height
- With pre-wired cable, cable length 3 metres
- Available with special finish in RAL colour tones
- Special version only for dust Ex zone 22 available

### Technical data

<b>Standards</b>	EN 60947-5-1; EN 60079-0, EN 60079-1, EN 60079-31; EN ISO 13849-1
<b>Enclosure</b>	aluminium die-cast, powder-coated
<b>Pedal</b>	glass-fibre reinforced thermoplastic
<b>Protective shield</b>	aluminium die-cast, powder-coated
<b>Connection</b>	cable H05VV-F, length 3 m
<b>Cable section</b>	3 or 4 x 0.75mm <sup>2</sup> (incl. conductor ferrules)
<b>Contact material</b>	silver
<b>Protection class</b>	IP 65 to IEC/EN 60529
<b>Switching system</b>	slow action type Zb: 1 NC/1 NO contact with positive break ⊖; snap action type C: change-over contact with single break, type Za: 1 NC/1 NO contact with double break
<b>Switch insert</b>	slow action Ex GF: type Zb: Ex 14 snap action Ex GFM: type C: ExM 14, type Za: ExM 14 1Ö/1S
<b>B<sub>10d</sub> (10 % load)</b>	Ex GFS 2: 2 million
<b>T<sub>M</sub></b>	Ex GFS 2: max. 20 years
<b>Utilisation category</b>	AC-15; DC-13
<b>I<sub>e</sub>/U<sub>e</sub></b>	Ex GFS2: 6 A/250 VAC; 0,25 A/230 VDC, Ex GFSM2 1Ö/1S: 5 A/250 VAC; 0,2 A/230 VDC, Ex GFSM2: 5 A/250 VAC, 0.16 A/230 VDC
<b>Max. fuse rating</b>	Ex GFS 2: 6 A gG/gN-fuse Ex GFSM 2: 5 A gG/gN-fuse
<b>Ambient temperature</b>	T6: -20 °C ... +60 °C; T5: -20 °C ... +75 °C
<b>Mechanical life</b>	> 1 million operations
<b>Impact energy</b>	max. 7 J
<b>Ex marking</b>	⊕ II 2G Ex d IIC T6/T5 Gb, II 2D Ex tb IIIC T80°C/T95°C Db IP65 IECEX Ex d IIC T6/T5 Gb Ex tb IIIC T80°C/T95°C Db IP65
<b>Approvals</b>	PTB 11 ATEX 1002 X; IECEX PTB 11.0090 X Ex GFS 2: IECEX    

// EX GFS 2



### Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact per pedal	Ex GFSM 2 1ÖS/1ÖS BN 3 — 4 BU BK 1 — 2 GY	Ex GFS 2 1ÖS/1ÖS BN 11 — 12 BU BK 23 — 24 GY
1 change-over per pedal	Ex GFSM 2 BN — GY BK	

### Type code

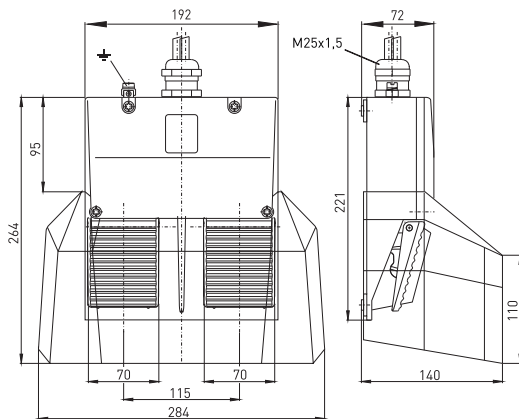
<b>Ex GFSM 2 K 1ÖS/1ÖS-3D-3m</b>	
	Cable length 3 m
	Equipment Categ. 3D, dust Ex zone 22
	1 NC/1 NO contact per pedal
	Pedal cover
	2 pedals
	M Snap action (without M slow action)
	S Protective shield
	Series
	Ex certified component

✓ in stock

# Ex foot switches

## // Series Ex GFS 2, variants

### // Ex GFS 2



#### Snap action

Ex GFSM 2- 3m  
Ex GFSM 2 10/1S - 3m

#### Material number

1051997  
on request

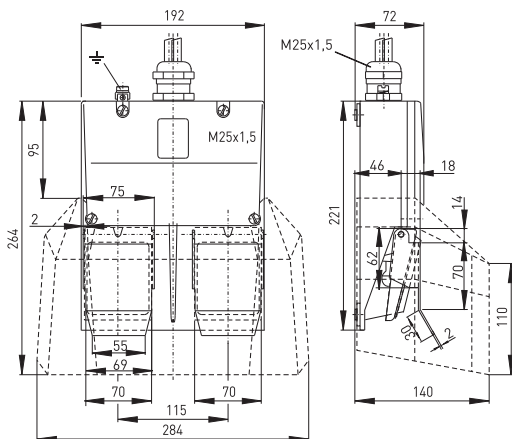
#### Slow action

Ex GFS 2 10/1S - 3m

#### Material number

1048847

### // Pedal cover K



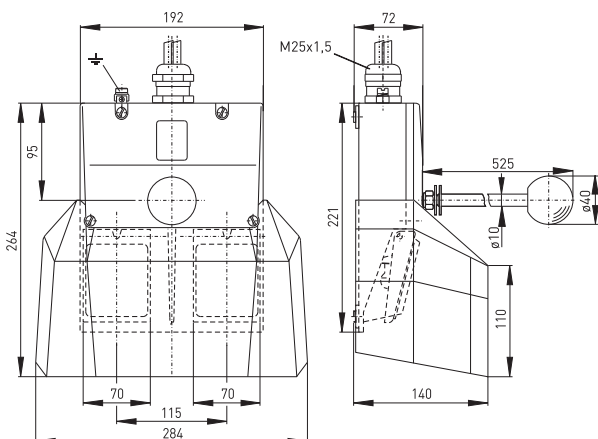
#### Pedal cover

Ex GFK 2 10/1S - 3m

#### Material number

on request

### // Carrying handle TST



#### Features/Options

- Carrying handle:  
stainless steel 1.4104 with thermoplastic grip

#### Carrying handle

Ex GFS 2 TST 10/1S - 3m

#### Material number

1051685

# Ex foot switches

## // Series Ex GF 3

### Features/Options

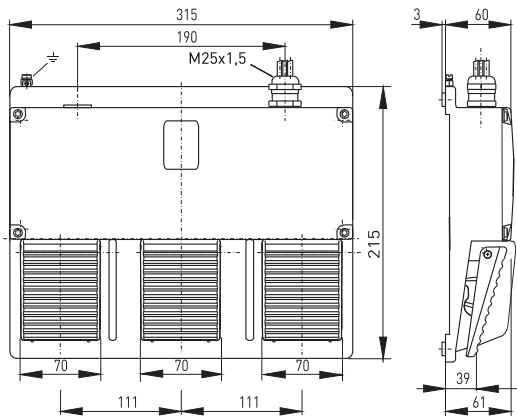
- Ex zone 1 and 21
- Triple-pedal
- Metal enclosure
- Without protective shield
- Max. 2 contacts per pedal
- Low pedal height
- With pre-wired cable, cable length 3 metres
- Available with special finish in RAL colour tones
- Special version only for dust Ex zone 22 available

// EX GF 3



### Technical data

<b>Standards</b>	EN 60947-5-1; EN 60079-0, EN 60079-1, EN 60079-31; EN ISO 13849-1
<b>Enclosure</b>	aluminium die-cast, powder-coated
<b>Cover</b>	aluminium die-cast, powder-coated
<b>Pedal</b>	glass-fibre reinforced thermoplastic
<b>Connection</b>	cable H05VV-F, length 3 m
<b>Cable section</b>	3 or 4 x 0.75mm <sup>2</sup> (incl. conductor ferrules)
<b>Contact material</b>	silver
<b>Protection class</b>	IP 65 to IEC/EN 60529
<b>Switching system</b>	slow action type Zb: 1 NC/1 NO contact with positive break ⊖; snap action type C: change-over contact with single break, type Za: 1 NC/1 NO contact with double break
<b>Switch insert</b>	slow action Ex GF: type Zb: Ex 14 snap action Ex GFM: type C: ExM 14, type Za: ExM 14 1Ö/1S
<b>B<sub>10d</sub> (10 % load)</b>	Ex GF 3: 2 million
<b>T<sub>M</sub></b>	Ex GF 3: max. 20 years
<b>Utilisation category</b>	AC-15; DC-13
<b>I<sub>e</sub>/U<sub>e</sub></b>	Ex GF 3: 6 A/250 VAC; 0,25 A/230 VDC, Ex GFM 3 1ÖS/1ÖS: 5 A/250 VAC; 0,2 A/230 VDC, Ex GFM 3: 5 A/250 VAC, 0,16 A/230 VDC
<b>Max. fuse rating</b>	Ex GF 3: 6 A gG/gN-fuse Ex GFM 3: 5 A gG/gN-fuse
<b>Ambient temperature</b>	T6: -20 °C ... +60 °C; T5: -20 °C ... +75 °C
<b>Mechanical life</b>	> 1 million operations
<b>Ex marking</b>	⊕ II 2G Ex d IIC T6/T5 Gb, II 2D Ex tb IIIC T80°C/T95°C Db IP65 IECEx Ex d IIC T6/T5 Gb Ex tb IIIC T80°C/T95°C Db IP65
<b>Approvals</b>	PTB 11 ATEX 1002 X; IECEx PTB 11.0090 X Ex GF 3: IECEx

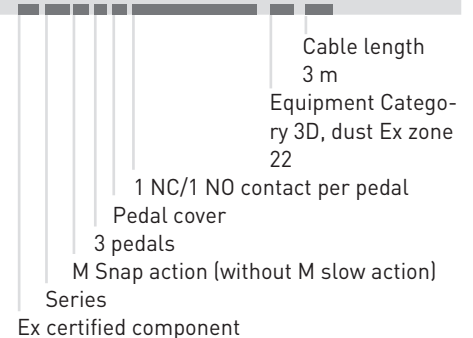


### Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact per pedal Material number	<b>Ex GFM 3 1ÖS/1ÖS/1ÖS</b>  on request BN 3  4 BU BK 1  2 GY	<b>1048946</b> BN 11  12 BU BK 23  24 GY
1 change-over per pedal Material number	<b>Ex GFM 3</b>  <b>1048946</b> BN  GY BK	

### Type code

Ex GFM 3 K 1ÖS/1ÖS/1ÖS-3D-3m



Ex certified component

# Ex foot switches

## // Series Ex GFS 3

### Features/Options

- Ex zone 1 and 21
- Triple-pedal
- Metal enclosure
- With protective shield
- Max. 2 contacts per pedal
- Low pedal height
- With pre-wired cable, cable length 3 metres
- Available with special finish in RAL colour tones
- Special version only for dust Ex zone 22 available

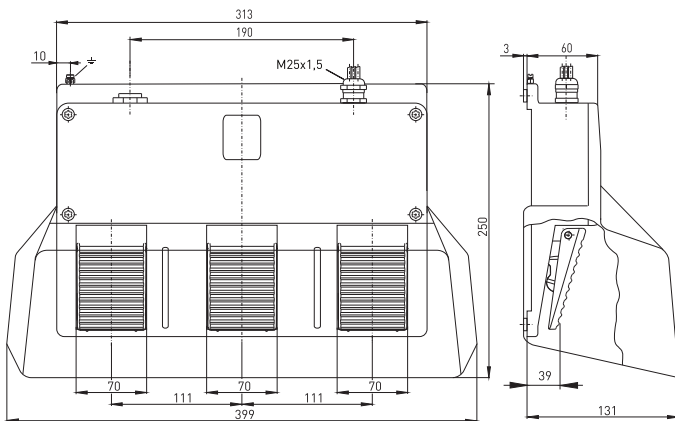
// EX GFS 3



### Technical data

<b>Standards</b>	EN 60947-5-1; EN 60079-0, EN 60079-1, EN 60079-31; EN ISO 13849-1
<b>Enclosure</b>	aluminium die-cast, powder-coated
<b>Pedal</b>	glass-fibre reinforced thermoplastic
<b>Protective shield</b>	aluminium die-cast, enamel finish, RAL 5011
<b>Connection</b>	cable H05VV-F, length 3 m
<b>Cable section</b>	3 or 4 x 0.75mm <sup>2</sup> (incl. conductor ferrules)
<b>Contact material</b>	silver
<b>Protection class</b>	IP 65 to IEC/EN 60529
<b>Switching system</b>	slow action type Zb: 1 NC/1 NO contact with positive break ⊖; snap action type C: change-over contact with single break, type Za: 1 NC/1 NO contact with double break
<b>Switch insert</b>	slow action Ex GF: type Zb: Ex 14 snap action Ex GFM: type C: ExM 14, type Za: ExM 14 1Ö/1S
<b>B<sub>10d</sub> (10 % load)</b>	Ex GFS 3: 2 million
<b>T<sub>M</sub></b>	Ex GFS 3: max. 20 years
<b>Utilisation category</b>	AC-15; DC-13
<b>I<sub>e</sub>/U<sub>e</sub></b>	Ex GFS 3: 6 A/250 VAC; 0,25 A/230 VDC, Ex GFSM 3 1ÖS/1ÖS: 5 A/250 VAC; 0,2 A/230 VDC, Ex GFSM 3: 5 A/250 VAC, 0,16 A/230 VDC
<b>Max. fuse rating</b>	Ex GFS 3: 6 A gG/gN-fuse Ex GFSM 3: 5 A gG/gN-fuse
<b>Ambient temperature</b>	T6: -20 °C ... +60 °C; T5: -20 °C ... +75 °C
<b>Mechanical life</b>	> 1 million operations
<b>Ex marking</b>	⊕ II 2G Ex d IIC T6/T5 Gb, II 2D Ex tb IIIC T80°C/T95°C Db IP65 IECEx Ex d IIC T6/T5 Gb Ex tb IIIC T80°C/T95°C Db IP65
<b>Approvals</b>	PTB 11 ATEX 1002 X; IECEx PTB 11.0090 X Ex GFS 3: IECEx

253



### Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact per pedal	Ex GFSM 3 1ÖS/1ÖS/1ÖS	Ex GFS 3 1ÖS/1ÖS/1ÖS
Material number	on request	1048957
1 change-over per pedal	Ex GFSM 3	
Material number	1209486	

### Type code

Ex GFSM 3 K 1ÖS/1ÖS/1ÖS-3D-3m

- Cable length 3 m
- Equipment Category 3D, dust Ex zone 22
- 1 NC/1 NO contact per pedal
- Pedal cover
- 3 pedals
- M Snap action (without M slow action)
- S Protective shield
- Series
- Ex certified component



## Ex emergency pull-wire switches

### // Selection table

from page 260

### // Pre-stress and travel limitation

from page 261

### One-side actuation

#### // Series Ex ZS 71

from page 262

#### // Series Ex ZS 73

from page 266

#### // Series Ex ZS 75

from page 270

#### // Series Ex ZS 80

from page 274

### Two-side actuation

#### // Series Ex ZS 73 S

from page 276

#### // Series Ex ZS 75 S

from page 278

### // Accessories

from page 280





# Ex emergency pull-wire switches

## Application

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

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

## Design and mode of operation

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

by pre-tensioning the pull-wire, i.e. the NC contacts are then closed and the NO contacts are open. All devices are equipped with wire-breakage detection. In the chapter accessories of the appendix the required accessories for installation are presented.

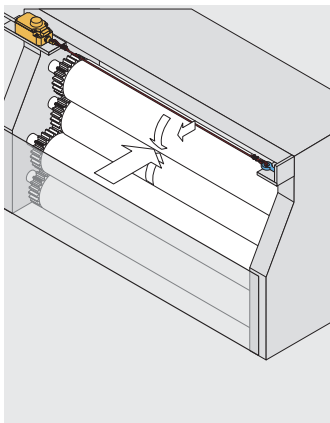
Ex emergency pull-wire switches without mechanical latching VD do not conform to the EN ISO 13850 and IEC/EN 609745-5-5. It is possible to meet the requirements of these two standards by suitable measurement of the circuitry and control technology.

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

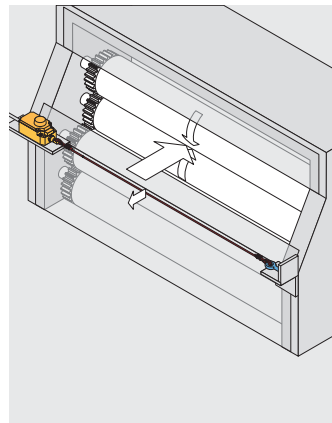
All emergency pull-wire switches bear the CE mark according to the Machinery Directive 2006/42/EC and to ATEX 2014/34/EU.

## Application

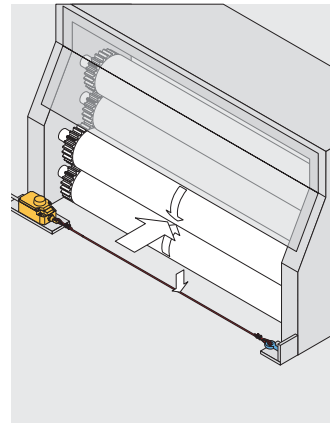
Mounting at head level



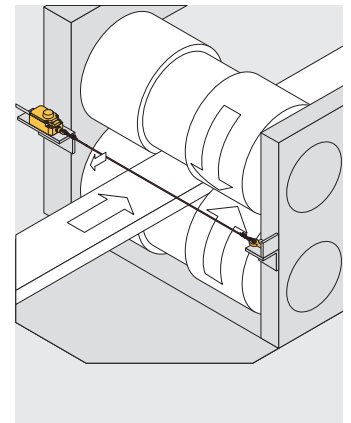
Mounting at hand level



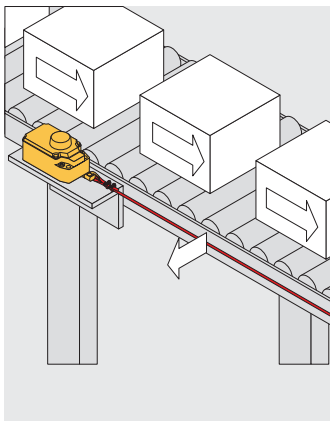
Mounting at foot level



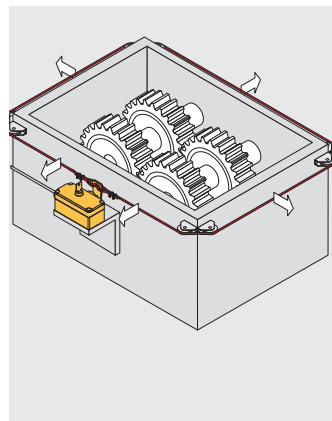
Mounting at hazardous inrunning nips



Mounting at conveyor-belts



Complete fencing



# Ex emergency pull-wire switches

## // Technical information

### Function principle

All emergency pull-wire switches from steute are provided with a wire-break detection so that the wire must be mounted with a defined pre-tension force. This value of the pre-tension force varies depending on the different devices. The appropriate value can be found on the data sheet of the emergency pull-wire switch. With an incorrect mounting cannot be taken in operation, i. e. an unlocking is not possible. By vertically pulling the pull-wire the switching function is carried out. The actuating force is exclusively depending on the spring rate of the reset spring. There are emergency pull-wire switches with one-side and two-side actuation, see drawings below. Ex emergency pull-wire switches with two-side actuation must always be mounted with two compensation springs. According to EN 60947-5-5 the maximum values of the actuating force  $F = 200 \text{ N}$  and of the actuating travel  $s = 400 \text{ mm}$  must not be exceeded on vertical actuation of the emergency pull-wire switch. In addition, the pull-wire must withstand the 10 times higher vertical pulling force that is required in order to generate the emergency-stop signal.

### Maximum pull-wire length

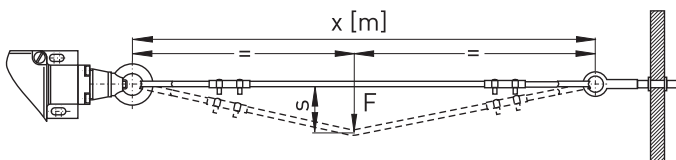
The maximum pull-wire length is mainly limited by two basic conditions. On the one hand by the maximum admissible actuating travel  $s$  of 400 mm and on the other hand by the thermal change in length of the pull-wire with a fluctuating ambient temperature that may not lead to an undesired actuation of the switch. Because the first basic condition requires a preferably low and the second requires a preferably high elasticity of the system it is necessary to optimise such systems in respect to both basic conditions depending on the operational conditions. In addition, it must be checked if the actuating force  $F$  of 200 N is adhered.

### Application of compensation springs / Travel limitation

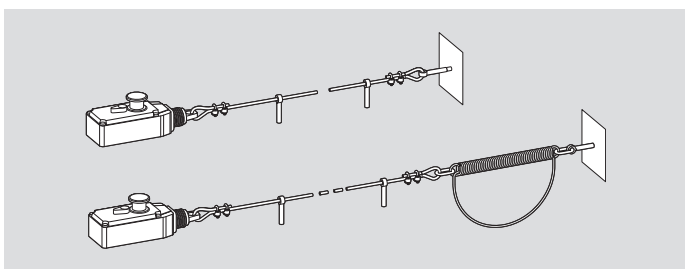
Compensation springs are applied to compensate thermal changes in lengths of the pull-wire and therefore allow for higher pull-wire lengths. In general the following is valid:

- Soft compensation spring with a low spring rate can compensate higher thermal changes in length.
- Though on pull-wire actuation soft compensation springs have a high expansion behaviour and therefore earlier reach the limit of the maximum actuating travel  $s = 400 \text{ mm}$ . Thus the expansion behaviour limitates the maximum pull-wire length at a constant temperature range or the temperature range at a constant pull-wire length.
- The dimensioning of the compensation spring is determined by the reset spring of the switches (Value of the pre-tension force and

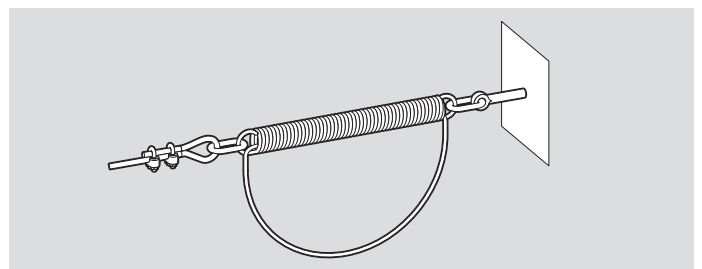
### Interrelation of actuating travel / distance wire support



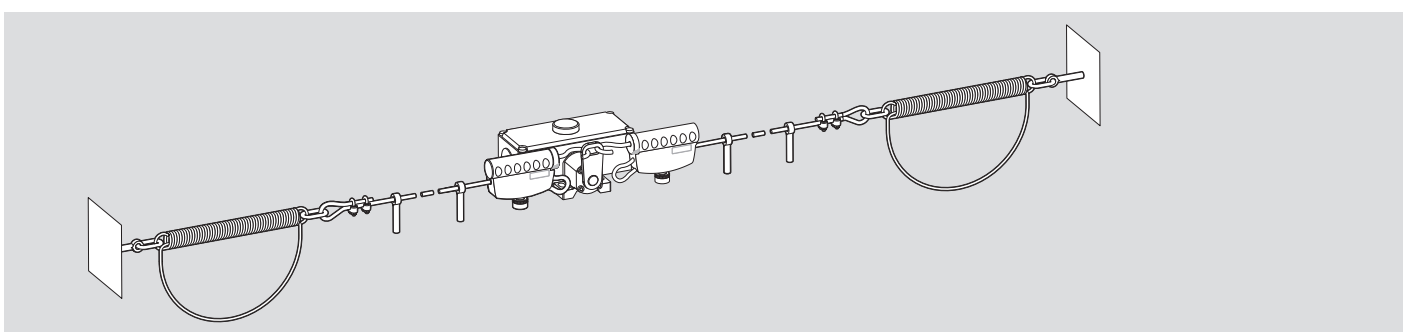
### Mounting of one-side actuation



### Compensation spring with travel limitation



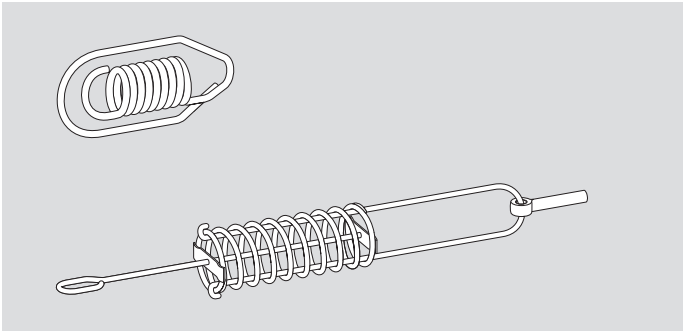
### Mounting of two-side actuation



# Ex emergency pull-wire switches

## // Technical information

### Examples of other compensation springs variants

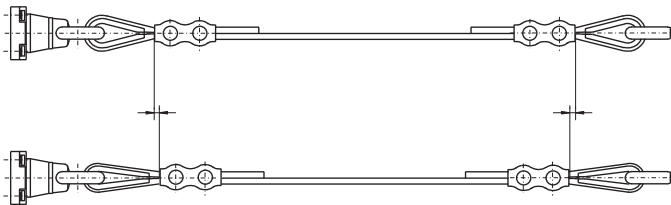


spring rate of the rest spring), the pull-wire length (length and elasticity of the pull-wire) and the maximum actuating travel of  $s = 400$  mm.

- With two-side actuation a travel limitation must be installed, see drawing left page, in order to prevent overstretching of the tension spring
- Before mounting the pull-wire, the red PVC sheath must be removed from the the pull-wire in the clamping range of the pull-wire!

An overstress of the compensation spring is in general prevented by a travel limitation. In practice either additional travel limitations are applied or self-protecting compensation springs are used. Additional travel limitations made of catch-ropes are critical when the function relevant length of the travel limitation is set but have a clear advantage in cost in comparison to compensation springs.

### Wire thimble deformation



### Distance of wire support

The actuating travel required to vertically actuate the switch results from the sum of the spring travels of the switch, pull-wire and where required compensation spring as well as the distance of the wire supports  $x$  [m]. This means a larger actuating travel is required with a larger distance of the wire supports when actuating the pull-wire in order to achieve the same actuating distance. Securing a safe switching at a constant pull-wire length the distance of the wire supports must be reduced in order to aim for a wider temperature range.

### Type of pull-wire

The expansion behaviour of the pull-wire is determined by the type of wire. Besides elastic elongation permanent elongations can occur when actuating the pull-wire. Under certain conditions higher pre-tension forces can lead to relaxation processes (temporal pre-tension loss). Statistical spread of the manufacturing process also have an effect on the expansion behaviour.

Therefore it is urgently recommended at least for longer pull-wire lengths to apply pull-wires from steute. These are much tougher and thus optimised for such applications.

Pull-wires from other manufacturers often lengthen gradually because of the creep characteristics of the plastic core (relaxation). If so, it is necessary to regularly check the pull-wire tension and if required to retension the pull-wire. The appropriate security note in the mounting and wiring instructions and the standard application of a tensioner are the prerequisite for a safe function.

### Mounting notes



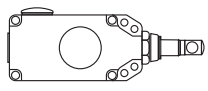
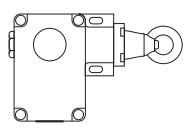
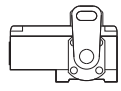
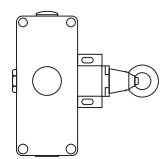
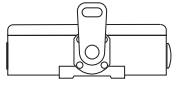
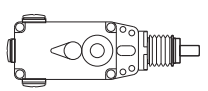
- After fitting the wire, pull strongly on it several times, as the pull-wire and the wire thimble will deform.
- Subsequently, retense the wire using the wire clamp, eye-bolt or tensioner.
- In order to guarantee safe operation, observe the enclosed mounting and wiring instructions.
- According to EN ISO 13850, pulleys may only be mounted such that the complete length of the pull-wire can be observed.

# Selection table

## Ex emergency pull-wire switches

// Series

// Maximum pull-wire length

		→	↔	
				
<p>Ex ZS 71, on page 262</p> <ul style="list-style-type: none"> <li>- Metal enclosure</li> <li>- One-side actuation</li> <li>- 2 contacts</li> </ul>		35 m	-	
<p>Ex ZS 73, on page 266 and 276</p> <ul style="list-style-type: none"> <li>- Metal enclosure</li> <li>- One-side actuation: ZS 73</li> <li>- two-side actuation: ZS 73 S</li> <li>- 2 contacts</li> </ul>		130 m	2 x 100 m	
<p>Ex ZS 75, on page 270 and 278</p> <ul style="list-style-type: none"> <li>- Metal enclosure</li> <li>- One-side actuation: ZS 75</li> <li>- Two-side actuation: ZS 75 S</li> <li>- 4 contacts</li> </ul>		130 m	2 x 100 m	
<p>Ex ZS 80, on page 274</p> <ul style="list-style-type: none"> <li>- Metal enclosure</li> <li>- One-side actuation</li> <li>- 2 contacts</li> </ul>		100 m	-	

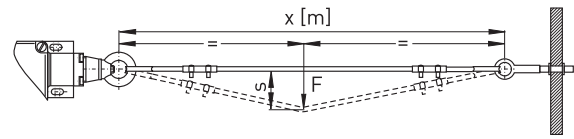
# Ex emergency pull-wire switches

## // Pre-stress and actuating forces

### Notes

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

Actuating forces and travel between supports



Emergency pull-wire switch	Wire length betw. supports x [m]	Pre-stress force [N]	Actuating travel s [cm]	Actuating force F [N]	Wire length [m]	Ordering index
Ex ZS 71	3	100	7	12	10	
Ex ZS 73	5	120-180	13	19-25	50-130	/120-180N
Ex ZS 73 S	5 4	295-390 -	13 13	38-60 51-85	50-130 2 x 30-65	/295-390N -
Ex ZS 75	5	120-180	13	19-25	50-130	/120-180N
Ex ZS 75 S	5 4	295-390 -	13 13	38-60 51-85	50-130 2 x 30-65	/295-390N -
Ex ZS 80	5	100	22	32	75	-

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

## // Series Ex ZS 71


### Features/Options

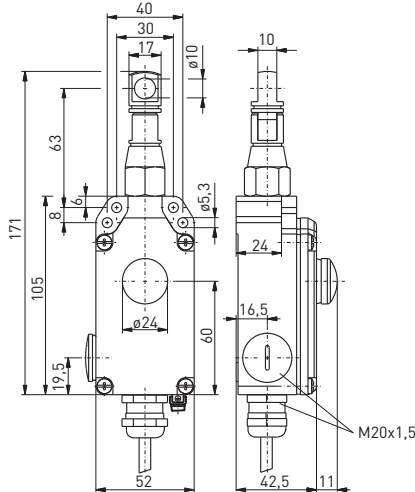
- Ex zone 1 and 21
- Metal enclosure
- 2 contacts
- Small design
- Wire length up to 35 m
- Release by push button
- Available without unlocking mechanism (per DIN EN 60947-5-1)
- Wire pull and breakage detection
- Special version only for dust Ex zone 22
- IP 69K version available, see [www.steute.com](http://www.steute.com) section »Extreme«

## // EX ZS 71

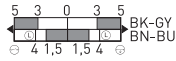



### Technical data

<b>Standards</b>	EN 60947-5-1, -5; EN 60079-0, EN 60079-1, EN 60079-31; EN ISO 13850; EN ISO 13849-1
<b>Enclosure Cover</b>	aluminium die-cast, powder-coated glass-fibre reinforced, shock-proof thermoplastic, (PA 66)
<b>Switch insert</b>	Ex 14
<b>Protection class</b>	IP 65 to IEC/EN 60529
<b>Contact material</b>	silver
<b>Switching system</b>	slow action, positive break NC contacts ⊕
<b>Switching elements</b>	1 NC/1 NO or 2 NC contacts, type Zb
<b>Connection</b>	cable H05VV-F, length 3 m
<b>Cable section</b>	4 x 0.75mm <sup>2</sup> (incl. conductor ferrules)
<b>B<sub>10d</sub> (10 % load)</b>	200 000
<b>T<sub>M</sub></b>	max. 20 years
<b>U<sub>imp</sub></b>	4 kV
<b>U<sub>i</sub></b>	250 V
<b>I<sub>the</sub></b>	T6: 6 A, T5: 3 A
<b>Utilisation category</b>	AC-15, DC-13
<b>I<sub>e</sub>/U<sub>e</sub></b>	6 A/250 VAC, 0.25 A/230 VDC
<b>Max. fuse rating</b>	6 A gG/gN-fuse
<b>Ambient temperature</b>	T6: -20 °C ... +65 °C, T5: -20 °C ... +90 °C
<b>Mechanical life</b>	> 100 000 operations
<b>Max. wire length</b>	35 m
<b>Features</b>	wire pull and breakage detection
<b>Impact energy</b>	max. 7 J
<b>Ex marking</b>	⊕ II 2G Ex d IIC T6/T5 Gb, II 2D Ex tb IIIC T80°C/T95°C Db IECEx Ex d IIC T6/T5 Gb, Ex tb IIIC T80°C/T95°C Db
<b>Approvals</b>	PTB 11 ATEX 1003 X, IECEx PTB 07.0034 X 



### Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<b>Ex ZS 71 10/1S</b> 
2 NC contacts	<b>Ex ZS 71 20</b> 

### Type code

<b>Ex ZS 71 10/1S WVD-A/100 N-3D</b>	
	Ex zone 22
	100 N Pre-stress force
	A Position indicator
	VD Push button release (blank without latching)
	W Watertight collar
	1 NC/1 NO contact (20)
	Series
	Emergency pull-wire switch
	Ex certified component

At 3 m distance intermediate wire supports are required. One wire thimble is provided. Details related to pre-stress and actuating forces see table on page 261.

✓ in stock

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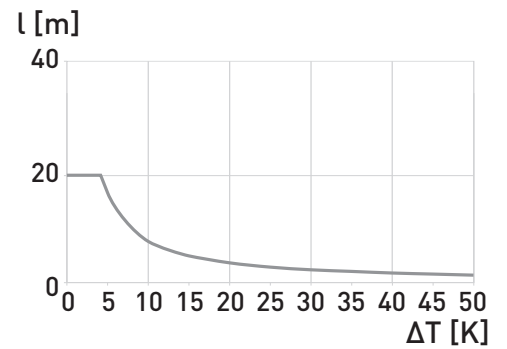
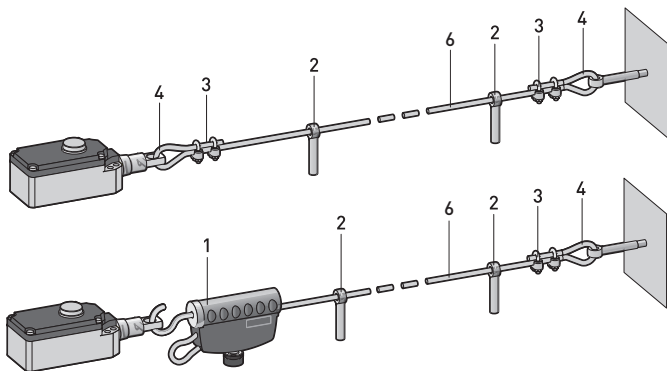
# Ex emergency pull-wire switches, one-side actuation

## // Series Ex ZS 71, mounting

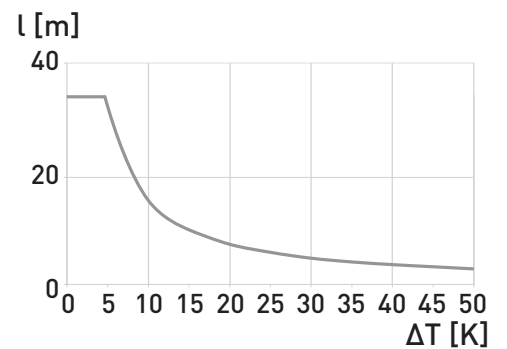
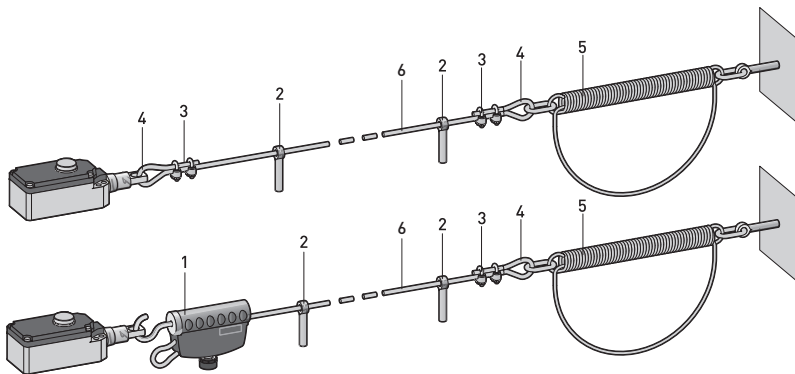
### Legend

1 Cable tensioner system TS 65	1186621
2 Eye bolt M8 x 70 with nut	1170601
3 Wire clamp	1033247
4 Wire thimble 3B	1033245
5 Tension spring ZS 71-100N	1187921
6 Pull-wire per metre	1032984

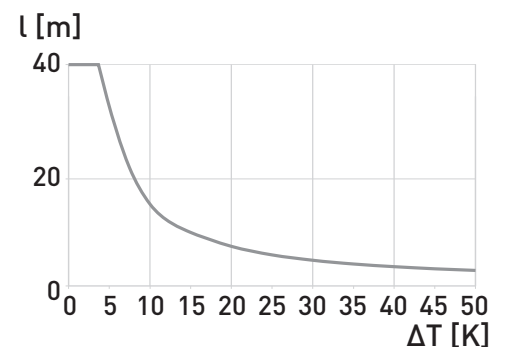
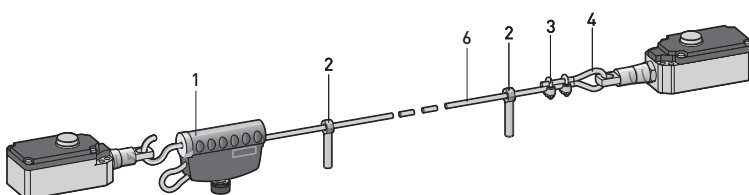
### // Mounting without tension spring



### // Mounting with tension spring



### // Mounting with 2 emergency pull-wire switches



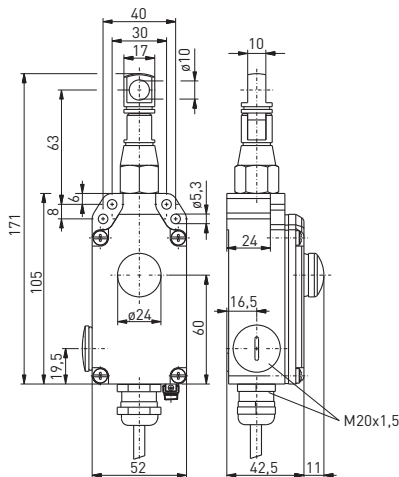
# Ex emergency pull-wire switches, one-side actuation

## // Series Ex ZS 71, variants

### Features/Options

- Indicator lamps for zone 22 for 24VDC are indicated at the end of this chapter
- Indicator lamp position in the left side cable entry
- Ex emergency pull-wire switches are also available without mechanical latching
- Version for equipment category 3D, dust Ex zone 22 is equipped with a wiring compartment

## // Push-button release VD



### Push-button release

Ex ZS 71 1Ö/1S VD/100 N-3m

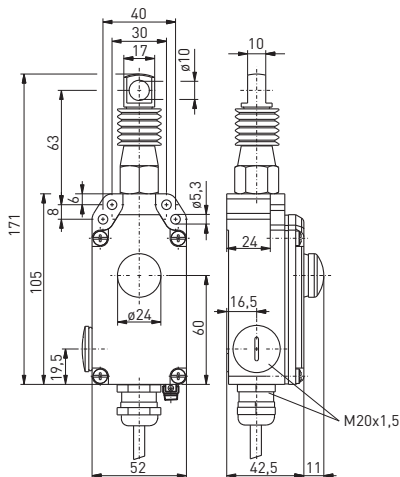
Ex ZS 71 2Ö VD/100 N-3m

### Material Number

1189317

1189325

## // Watertight collar W



### Features/Options

- Watertight collar for protection against penetration of dirt

### Watertight collar/Push-button release

Ex ZS 71 1Ö/1S WVD/100 N-3m

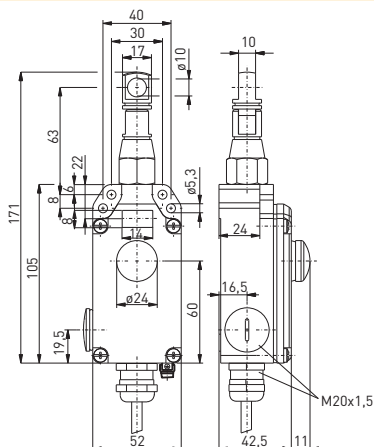
Ex ZS 71 2Ö WVD/100 N-3m

### Material Number

1189321

1189336

## // Position indicator A



### Position indicator

Ex ZS 71 1Ö/1S VD-A/100 N-3m

Ex ZS 71 2Ö VD-A/100 N-3m

### Material Number

1189318

1189335

### Position indicator/Watertight collar

Ex ZS 71 1Ö/1S WVD-A/100 N-3m

Ex ZS 71 2Ö WVD-A/100 N-3m

### Material Number

1189324

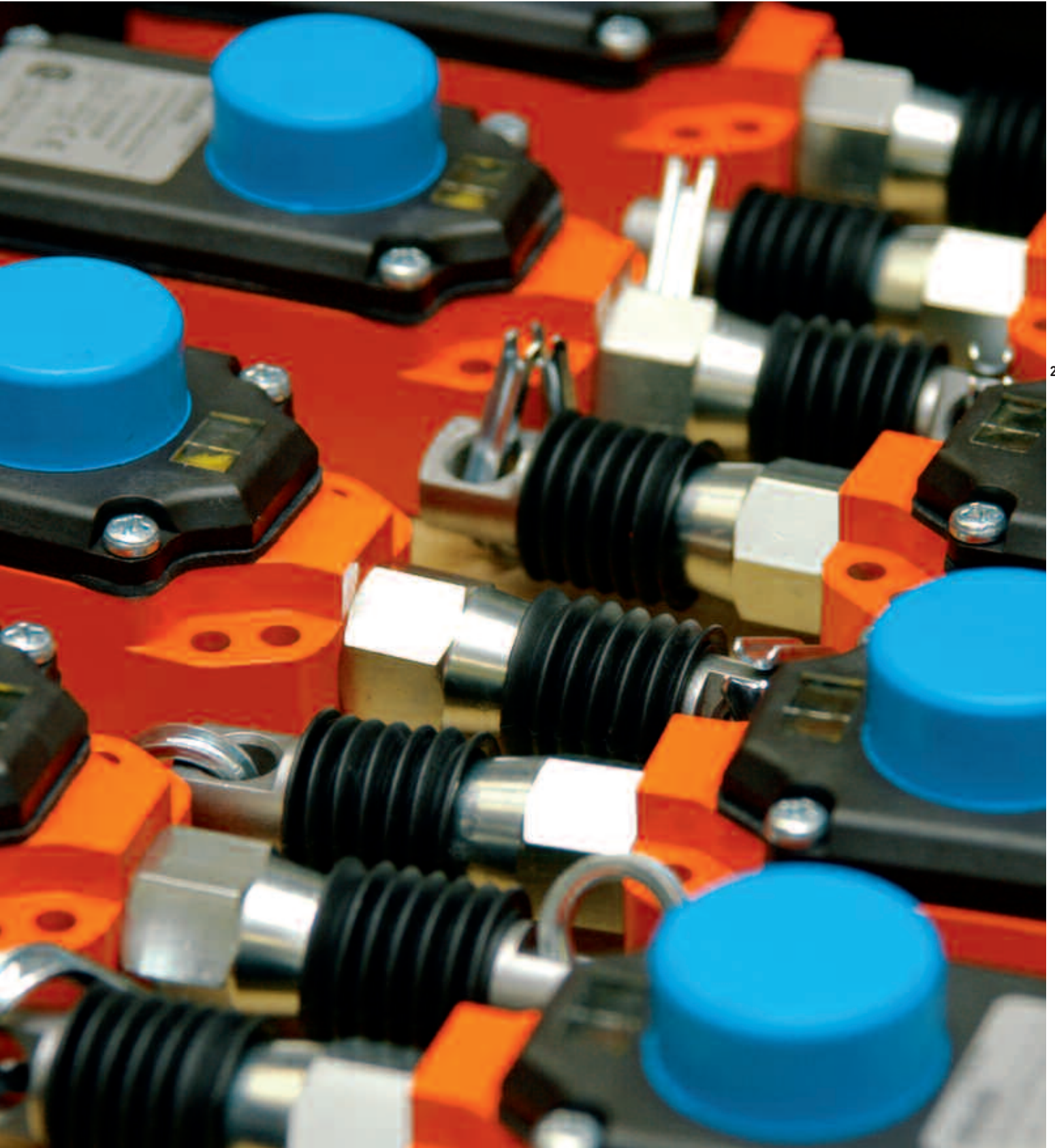
1189338

✓ in stock



PRODUCTION PROCESS ASSEMBLY

EMERGENCY PULL-WIRE SWITCH AFTER FINAL QUALITY CHECK



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

## // Series Ex ZS 73

### Features/Options

- Ex zone 1 and 21
- Metal enclosure
- 2 contacts
- Wire length up to 130 m
- 2 various spring force variants (actuating forces)
- Available without unlocking mechanism (per DIN EN 60947-5-1)
- Release by push button
- Wire pull and breakage detection
- Special version only for dust Ex zone 22

## // EX ZS 73

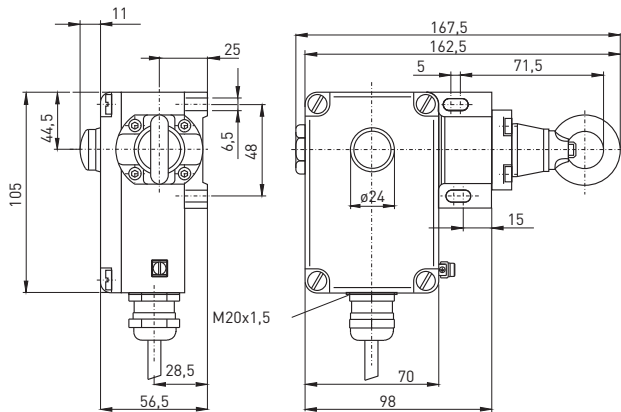
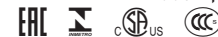


### Technical data

<b>Standards</b>	EN 60947-5-1, -5; EN 60079-0, EN 60079-1, EN 60079-31; EN ISO 13850; EN ISO 13849-1
<b>Enclosure</b>	aluminium die-cast, enamel finish; ZS 73 NIRO: aluminium die-cast, hard-coated and enamel finish
<b>Cover</b>	glass-fibre reinforced, shock-proof thermoplastic, (PA 66)
<b>Switch insert</b>	Ex 14
<b>Protection class</b>	IP 65 to IEC/EN 60529
<b>Contact material</b>	silver
<b>Switching system</b>	slow action, positive break NC contacts ⊕
<b>Switching elements</b>	1 NC/1 NO or 2 NC contacts, type Zb
<b>Connection</b>	cable H05VV-F, length 3 m
<b>Cable section</b>	4 x 0.75mm <sup>2</sup> (incl. conductor ferrules)
<b>B<sub>10d</sub> (10 % load)</b>	200 000
<b>T<sub>M</sub></b>	max. 20 years
<b>U<sub>imp</sub></b>	4 kV
<b>U<sub>i</sub></b>	250 V
<b>I<sub>the</sub></b>	T6: 6 A, T5: 3 A
<b>Utilisation category</b>	AC-15, DC-13
<b>I<sub>e</sub>/U<sub>e</sub></b>	6 A/250 VAC, 0.25 A/230 VDC
<b>Max. fuse rating</b>	6 A gG/gN-fuse
<b>Ambient temperature</b>	T6: -20 °C ... +65 °C; T5: -20 °C ... +90 °C
<b>Mechanical life</b>	> 100 000 operations
<b>Max. wire length</b>	130 m
<b>Features</b>	wire pull and breakage detection
<b>Impact energy</b>	max. 7 J
<b>Ex marking</b>	⊕ II 2G Ex d IIC T6/T5 Gb, II 2D Ex tb IIIC T80°C/T95°C Db IECEx Ex d IIC T6/T5 Gb, Ex tb IIIC T80°C/T95°C Db

### Approvals

PTB 11 ATEX 1003 X, IECEx PTB 07.0034 X

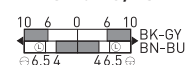


### Contact variants: switch travel/contacts

#### Slow action

1 NC/1 NO contact

Ex ZS 73 10/1S



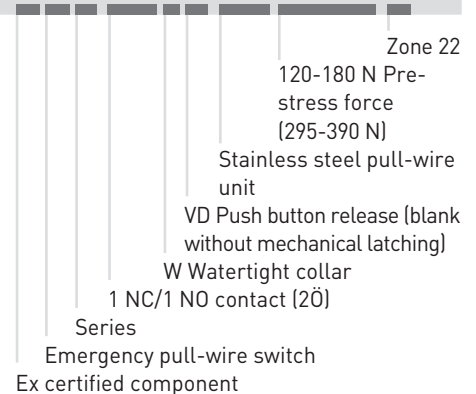
2 NC contacts

Ex ZS 73 20



### Type code

Ex ZS 73 10/1S WVD-NIRO/120-180 N-3D



At 5 m distance intermediate wire supports are required. One wire thimble is provided. Details related to pre-stress and actuating forces see table on page 261.

✓ in stock

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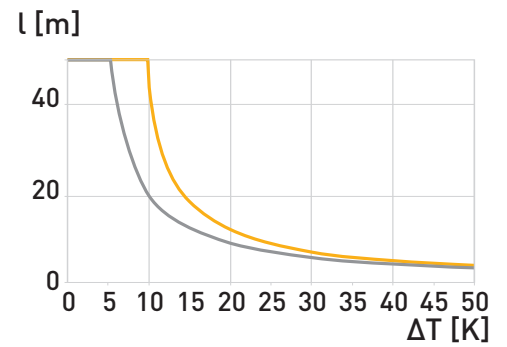
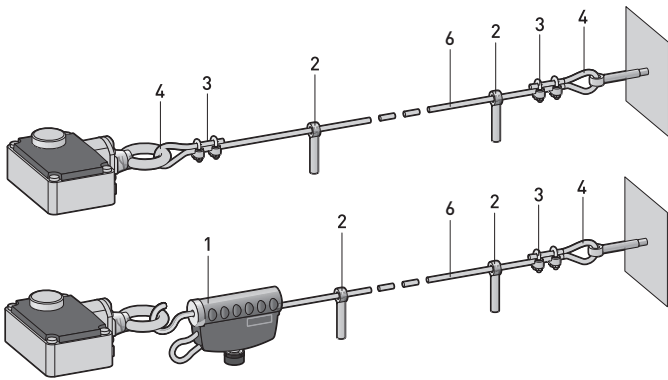
# Ex emergency pull-wire switches, one-side actuation

## // Series Ex ZS 73, mounting

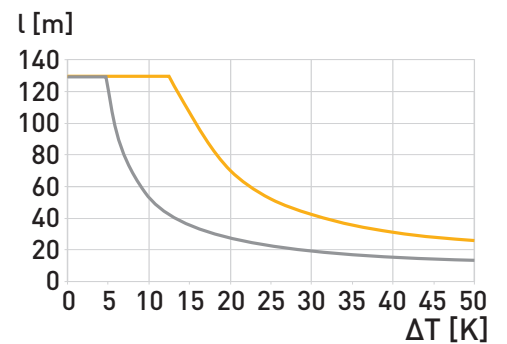
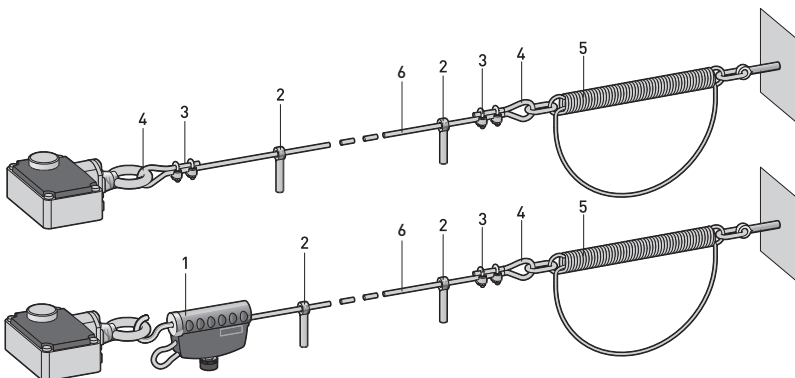
### Legend

1 Cable thimble 3B	1186621
2 Eye bolt M8 x 70 with nut	1170601
3 Wire clamp	1033247
4 Wire thimble 3B	1033245
5 Tension spring ZS 73/75-200N	
for spring force variant 120-180N	1187931
Tension spring ZS 73/75-400N	
for spring force variant 295-390N	1187934
6 Pull-wire per metre	1032984

### // Mounting without tension spring



### // Mounting with tension spring



Temperature difference/ Wire length

### Legend

- 120-180 N standard version
- 295-390 N for long pull-wire lengths and strong vibrations

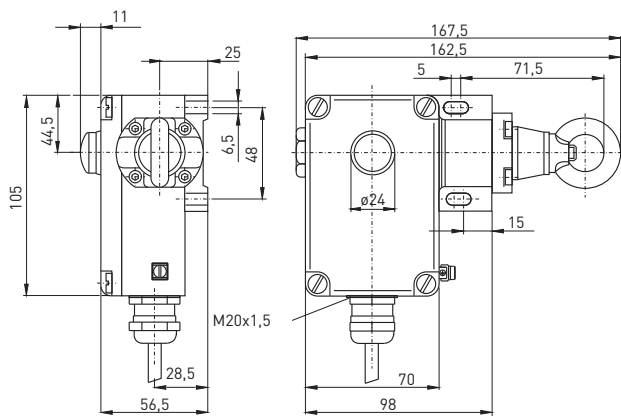
# Ex emergency pull-wire switches, one-side actuation

## // Series Ex ZS 73, variants

### Features/Options

- Indicator lamps for zone 22 for 24VDC are indicated at the end of this chapter
- Indicator lamp position in the left side cable entry, other positions possible on request
- With 2 cable entries available on request for zone 22
- Ex emergency pull-wire switches are also available without mechanical latching
- Version for equipment category 3D, dust Ex zone 22 is equipped with a wiring compartment

## // Push-button release VD



### Push-button release

- Ex ZS 73 1Ö/1S VD/120-180 N-3m
- Ex ZS 73 1Ö/1S VD/295-390 N-3m

### Material Number

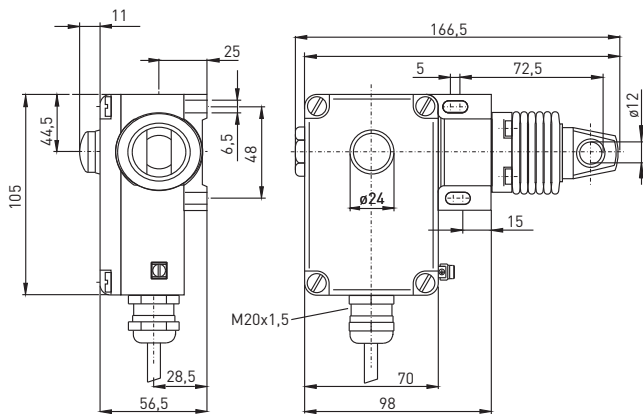
- 1177689
- 1048127

- Ex ZS 73 2Ö VD/120-180 N-3m
- Ex ZS 73 2Ö VD/295-390 N-3m

- 1182418
- 1182417

268

## // Watertight collar W



### Features/Options

- Watertight collar for protection against penetration of dirt

### Watertight collar/Push-button release

- Ex ZS 73 1Ö/1S WVD/120-180 N-3m
- Ex ZS 73 1Ö/1S WVD/295-390 N-3m

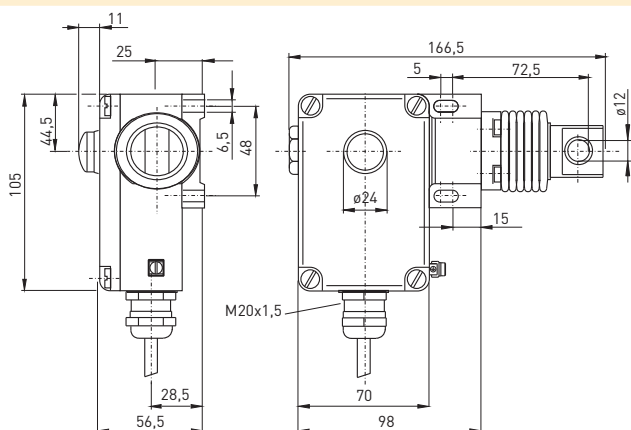
### Material Number

- 1183019
- 1048158

- Ex ZS 73 2Ö WVD/120-180 N-3m
- Ex ZS 73 2Ö WVD/295-390 N-3m

- 1180514
- 1182048

## // Stainless Steel ZS 73 NIRO



### Features/Options

- Ex ZS 73 NIRO: pull-wire unit and screws made of stainless steel 1.4305, hard-coated enclosure with enamel finish

### Stainless Steel/Push-button release

- Ex ZS 73 1Ö/1S WVD/120-180 N Niro-3m
- Ex ZS 73 1Ö/1S WVD/295-390 N Niro-3m

### Material Number

- on request
- on request

- Ex ZS 73 2Ö WVD/295-390 N Niro-3m

- on request

✓ in stock

PRODUCTION PROCESS ASSEMBLY  
ASSEMBLY OF EMERGENCY PULL-WIRE SWITCHES



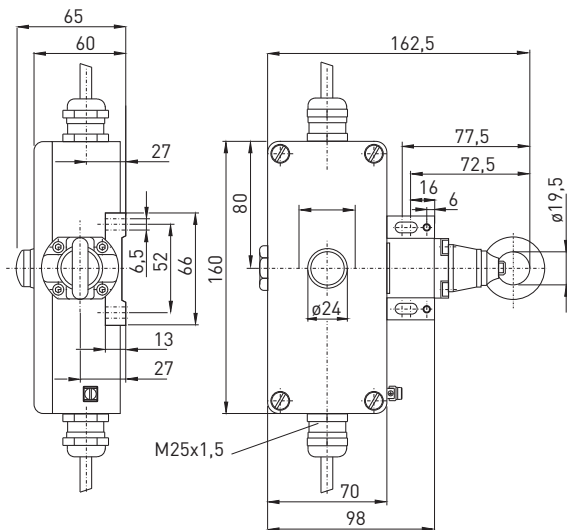
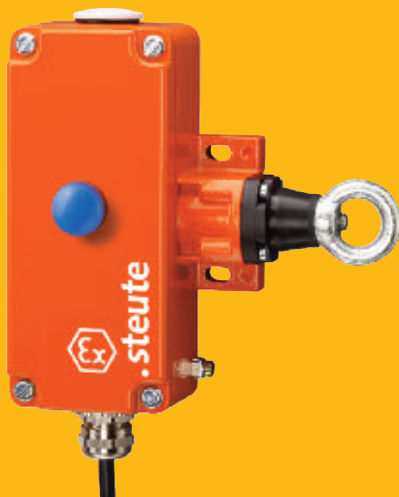
# Ex emergency pull-wire switches, one-side actuation

## // Series Ex ZS 75

### Features/Options

- Ex zone 1 and 21
- Metal enclosure
- 2 or 4 contacts
- Wire length up to 130 m
- 2 various spring force variants (actuating forces)
- Release by push button
- Available without unlocking mechanism (per DIN EN 60947-5-1)
- Wire pull and breakage detection
- Special version only for dust Ex zone 22

## // EX ZS 75



## Technical data

<b>Standards</b>	EN 60947-5-1, -5; EN 60079-0, EN 60079-1, EN 60079-31; EN ISO 13850; EN ISO 13849-1
<b>Enclosure</b>	aluminium die-cast, enamel finish
<b>Cover</b>	aluminium die-cast, enamel finish
<b>Switch insert</b>	Ex 14
<b>Protection class</b>	P 65 to IEC/EN 60529
<b>Contact material</b>	silver
<b>Switching system</b>	slow action, positive break NC contacts ⊕
<b>Switching elements</b>	1 NC/1 NO contact, 2 NC/2 NO contacts or 4 NC contacts, type Zb
<b>Connection</b>	cable H05VV-F, length 3 m
<b>Cable section</b>	4 x 0.75mm <sup>2</sup> (incl. conductor ferrules) per switch insert
<b>B<sub>10d</sub> (10 % load)</b>	200 000
<b>T<sub>M</sub></b>	max. 20 years
<b>U<sub>imp</sub></b>	4 kV
<b>U<sub>i</sub></b>	250 V
<b>I<sub>the</sub></b>	T6: 6 A, T5: 3 A
<b>Utilisation category</b>	AC-15, DC-13
<b>I<sub>e</sub>/U<sub>e</sub></b>	6 A/250 VAC, 0.25 A/230 VDC
<b>Max. fuse rating</b>	6 A gG/gN-fuse
<b>Ambient temperature</b>	T6: -20 °C ... +65 °C; T5: -20 °C ... +90 °C
<b>Mechanical life</b>	> 100 000 operations
<b>Max. wire length</b>	130 m
<b>Features</b>	wire pull and breakage detection
<b>Impact energy</b>	max. 7 J
<b>Ex marking</b>	⊕ II 2G Ex d IIC T6/T5 Gb, II 2D Ex tb IIIC T80°C/T95°C Db IECEx Ex d IIC T6/T5 Gb, Ex tb IIIC T80°C/T95°C Db
<b>Approvals</b>	PTB 11 ATEX 1003 X, IECEx PTB 07.0034 X



### Contact variants: switch travel/contacts

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

✓ in stock

### Type code

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

At 5 m distance intermediate wire supports are required. One wire thimble is provided. Details related to pre-stress and actuating forces see table on page 261.

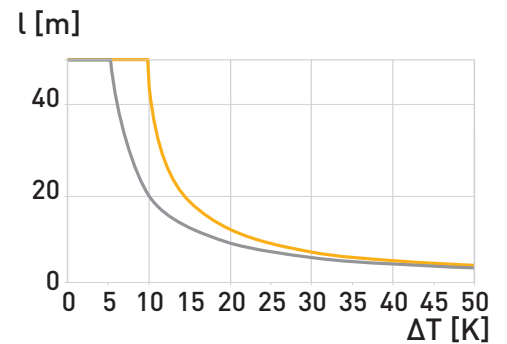
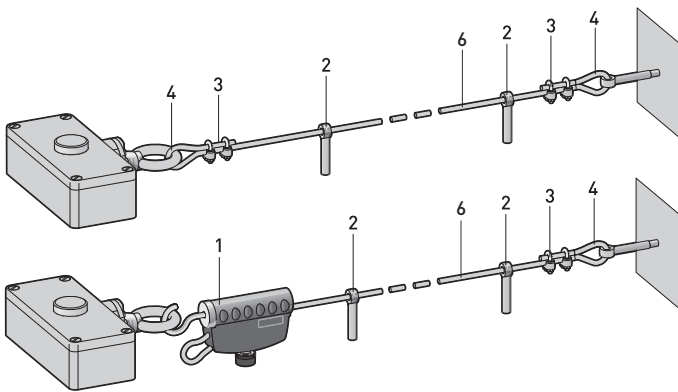
# Ex emergency pull-wire switches, one-side actuation

## // Series Ex ZS 75, mounting

### Legend

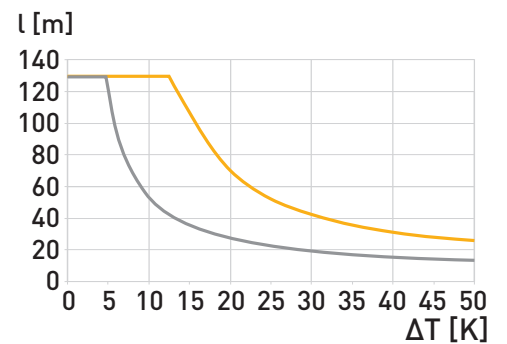
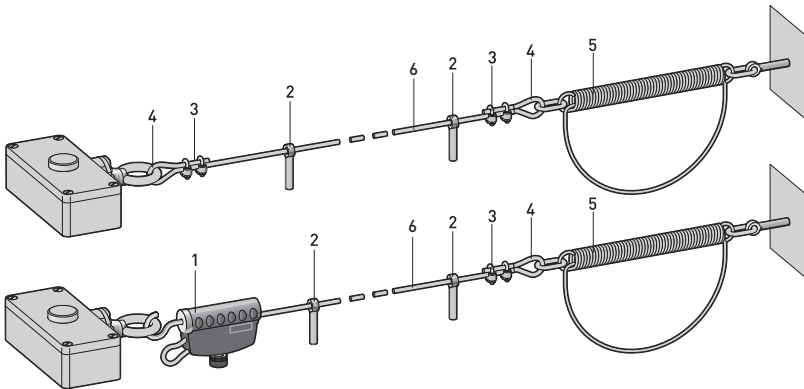
1 Cable tensioner system TS 65	1186621
2 Eye bolt M8 x 70 with nut	1170601
3 Wire clamp	1033247
4 Wire thimble 3B	1033245
5 Tension spring ZS 73/75-200N for spring force variant 120-180N	1187931
Tension spring ZS 73/75-400N for spring force variant 295-390N	1187934
6 Pull-wire per metre	1032984

### // Mounting without tension spring



271

### // Mounting with tension spring



Temperature difference/ Wire length

### Legend

- 120-180 N standard version
- 295-390 N for long pull-wire lengths and strong vibrations

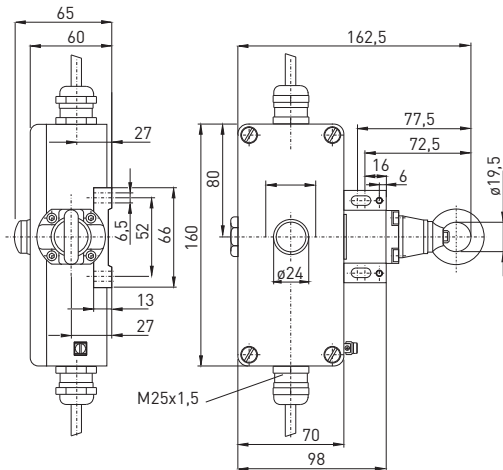
# Ex emergency pull-wire switches, one-side actuation

## // Series Ex ZS 75, variants

### Features/Options

- Indicator lamps for zone 22 for 24VDC are indicated at the end of this chapter
- Indicator lamp position on the left side, other positions possible on request
- Ex emergency pull-wire switches are also available without mechanical latching
- Version for equipment category 3D, dust Ex zone 22 is equipped with a wiring compartment

## // Push-button release VD



### Push-button release

Ex ZS 75 1Ö/1S VD/120-180 N-3m

Ex ZS 75 1Ö/1S VD/295-390 N-3m

Ex ZS 75 2Ö/2S VD/120-180 N-3m

Ex ZS 75 2Ö/2S VD/295-390 N-3m

Ex ZS 75 4Ö VD/120-180 N-3m

Ex ZS 75 4Ö VD/295-390 N-3m

### Material Number

on request

1048304

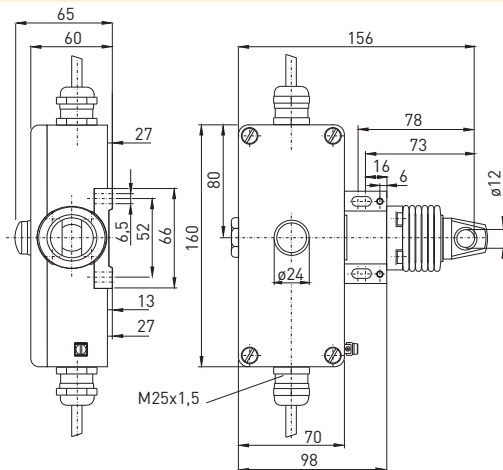
1053548

1048357

1189862

on request

## // Watertight collar W



### Features/Options

- Watertight collar for protection against penetration of dirt

### Watertight collar/Push-button release

Ex ZS 75 1Ö/1S WVD/120-180 N-3m

Ex ZS 75 1Ö/1S WVD/295-390 N-3m

Ex ZS 75 2Ö/2S WVD/120-180 N-3m

Ex ZS 75 2Ö/2S WVD/295-390 N-3m

Ex ZS 75 4Ö WVD/120-180 N-3m

Ex ZS 75 4Ö WVD/295-390 N-3m

### Material Number

1185780

1048318

1048393

1048370

on request

1182047



PRODUCTION PROCESS ASSEMBLY

MOUNTING OF THE SWITCH INSERTS AT EMERGENCY PULL-WIRE SWITCHES



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

## // Series Ex ZS 80


### Features/Options

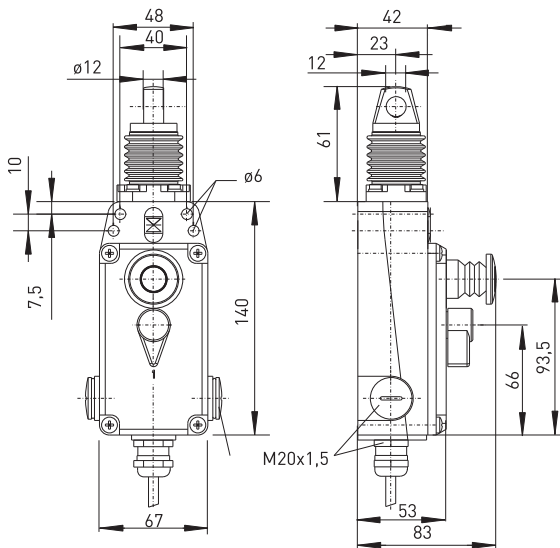
- Ex zone 1 and 21
- Metal enclosure
- 2 contacts
- Position indicator and integrated emergency-stop push button
- Wire length up to 100 m
- Pretensioning force 100 N
- Lever for release and position indication
- Watertight collar
- Wire pull and breakage detection
- Special version only for dust Ex zone 22

## // EX ZS 80





## Technical data

<b>Standards</b>	EN 60947-5-1, -5; EN 60079-0, EN 60079-1, EN 60079-31; EN ISO 13850; EN ISO 13849-1
<b>Enclosure</b>	aluminium die-cast, enamel finish
<b>Cover</b>	glass-fibre reinforced, shock-proof thermoplastic, (PA 66)
<b>Switch insert</b>	Ex 14
<b>Protection class</b>	IP 67 to IEC/EN 60529
<b>Contact material</b>	silver
<b>Switching system</b>	slow action, positive break NC contacts ⊕
<b>Switching elements</b>	1 NC/1 NO or 2 NC contacts, type Zb
<b>Connection</b>	cable H05VV-F, length 3 m
<b>Cable section</b>	4 x 0.75mm <sup>2</sup> (incl. conductor ferrules)
<b>B<sub>10d</sub> (10 % load)</b>	200 000
<b>T<sub>M</sub></b>	max. 20 years
<b>U<sub>imp</sub></b>	4 kV
<b>U<sub>i</sub></b>	250 V
<b>I<sub>the</sub></b>	T6: 6 A, T5: 3 A
<b>Utilisation category</b>	AC-15, DC-13
<b>I<sub>e</sub>/U<sub>e</sub></b>	6 A/250 VAC, 0.25 A/230 VDC
<b>Max. fuse rating</b>	6 A gG/gN-fuse
<b>Ambient temperature</b>	T6: -20 °C ... +65 °C; T5: -20 °C ... +90 °C
<b>Mechanical life</b>	> 100 000 operations
<b>Max. wire length</b>	100 m
<b>Features</b>	wire pull and breakage detection
<b>Impact energy</b>	max. 7 J
<b>Ex marking</b>	⊕ II 2G Ex d IIC T6/T5 Gb, II 2D Ex tb IIIC T80°C/T95°C Db IECEx Ex d IIC T6/T5 Gb, Ex tb IIIC T80°C/T95°C Db
<b>Approvals</b>	PTB 11 ATEX 1003 X, IECEx PTB 07.0034 X 



### Contact variants: switch travel/contacts

	Slow action	Material Number
1 NC/1 NO contact	<b>Ex ZS 80 10/1S WVD</b> 	1181373
2 NC contacts	<b>Ex ZS 80 20 WVD</b> 	1182490

### Type code

**Ex ZS 80 10/1S WVD-3D**

Ex ZS 80 10/1S WVD-3D  
 3D dust Ex zone 22  
 VD Lever release  
 W Watertight collar  
 1 NC/1 NO contact (10)  
 Series  
 Emergency pull-wire switch  
 Ex certified component

At 5 m distance intermediate wire supports are required. One wire thimble is provided. Details related to pre-stress and actuating forces see table on page 261.

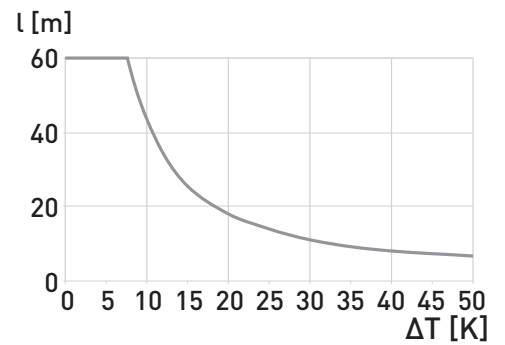
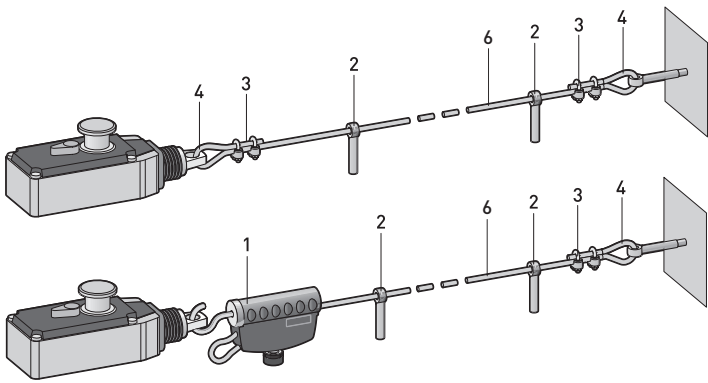
# Ex emergency pull-wire switches, one-side actuation

## // Series Ex ZS 80, mounting

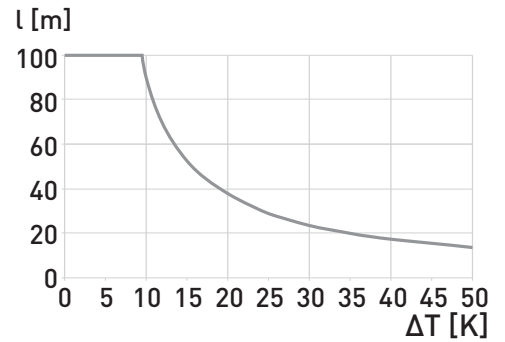
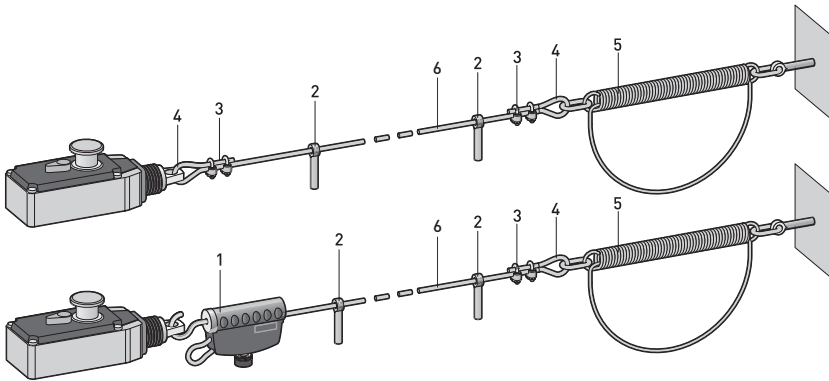
### Legend

1 Cable tensioner system TS 65	1186621
2 Eye bolt M8 x 70 with nut	1170601
3 Wire clamp	1033247
4 Wire thimble 3B	1033245
5 Tension spring ZS 80	1187933
6 Pull-wire per metre	1032984

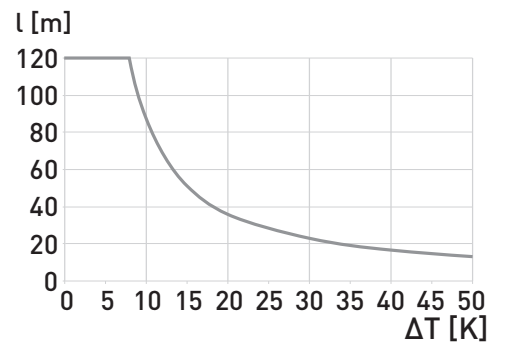
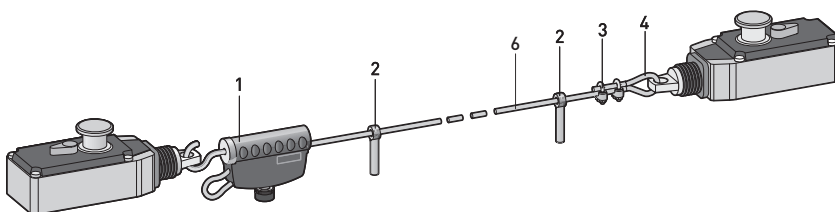
### // Mounting without tension spring



### // Mounting with tension spring



### // Mounting with 2 emergency pull-wire switches



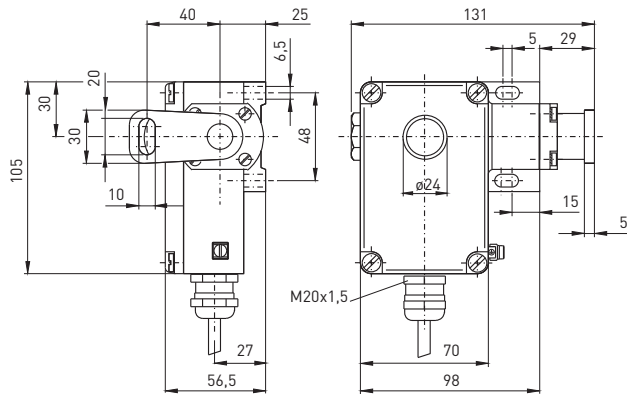
# Ex emergency pull-wire switches, two-side actuation

## // Series Ex ZS 73 S

### // EX ZS 73 S



276



#### Features/Options

- Ex zone 1 and 21
- Metal enclosure
- 2 contacts
- Wire length up to 2 x 100 m
- Release by push button
- Available without unlocking mechanism (per DIN EN 60947-5-1)
- Wire pull and breakage detection
- Special version only for dust Ex zone 22

#### Technical data

<b>Standards</b>	EN 60947-5-1, -5; EN 60079-0, EN 60079-1, EN 60079-31; EN ISO 13850; EN ISO 13849-1
<b>Enclosure</b>	aluminium die-cast, enamel finish; Ex ZS 73 NIRO: aluminium die-cast, hard-coated and enamel finish
<b>Cover</b>	glass-fibre reinforced, shock-proof thermoplastic, (PA 66)
<b>Switch insert</b>	Ex 14
<b>Protection class</b>	IP 65 to IEC/EN 60529
<b>Contact material</b>	silver
<b>Switching system</b>	slow action, positive break NC contacts ⊕
<b>Switching elements</b>	1 NC/1 NO or 2 NC contacts, type Zb
<b>Connection</b>	cable H05VV-F, length 3 m
<b>Cable section</b>	4 x 0.75mm <sup>2</sup> (incl. conductor ferrules)
<b>B<sub>10d</sub> (10 % load)</b>	200 000
<b>T<sub>M</sub></b>	max. 20 years
<b>U<sub>imp</sub></b>	4 kV
<b>U<sub>i</sub></b>	250 V
<b>I<sub>the</sub></b>	T6: 6 A, T5: 3 A
<b>Utilisation category</b>	AC-15, DC-13
<b>I<sub>e</sub>/U<sub>e</sub></b>	6 A/250 VAC, 0.25 A/230 VDC
<b>Max. fuse rating</b>	6 A gG/gN-fuse
<b>Ambient temperature</b>	T6: -20 °C ... +65 °C; T5: -20 °C ... +90 °C
<b>Mechanical life</b>	> 100 000 operations
<b>Max. wire length</b>	2 x 100 m
<b>Features</b>	wire pull and breakage detection
<b>Impact energy</b>	max. 7 J
<b>Ex marking</b>	⊕ II 2G Ex d IIC T6/T5 Gb, II 2D Ex tb IIIC T80°C/T95°C Db IECEx Ex d IIC T6/T5 Gb, Ex tb IIIC T80°C/T95°C Db

#### Approvals

PTB 11 ATEX 1003 X, IECEX PTB 07.0034 X



#### Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<p><b>Ex ZS 73 S 1Ö/1S</b></p>
2 NC contacts	<p><b>Ex ZS 73 S 2Ö</b></p>

#### Type code

Ex ZS 73 S 1Ö/1S VD-NIRO-3D

Ex ZS 73 S 1Ö/1S VD-NIRO-3D  
 Dust Ex zone 22  
 Stainless steel pull-wire unit  
 VD Push button release (blank without mechanical latching)  
 1 NC/1 NO contact (2Ö)  
 S Two-side actuation  
 Series  
 Emergency pull-wire switch  
 Ex certified component

At 4 m distance intermediate wire supports are required. Details related to pre-stress and actuating forces are indicated at the end of this chapter. Two tension springs type ZS 73/75 S must be installed. See chapter accessories on page 280.

✓ in stock

.steute

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

## // Series Ex ZS 73 S, mounting, variants

### Legend

- 1 Cable tensioner system TS 65
- 2 Eye bolt M8 x 70 with nut
- 3 Wire clamp
- 4 Wire thimble 3B
- 5 Tension spring ZS 73/75 S
- 6 Pull-wire per metre

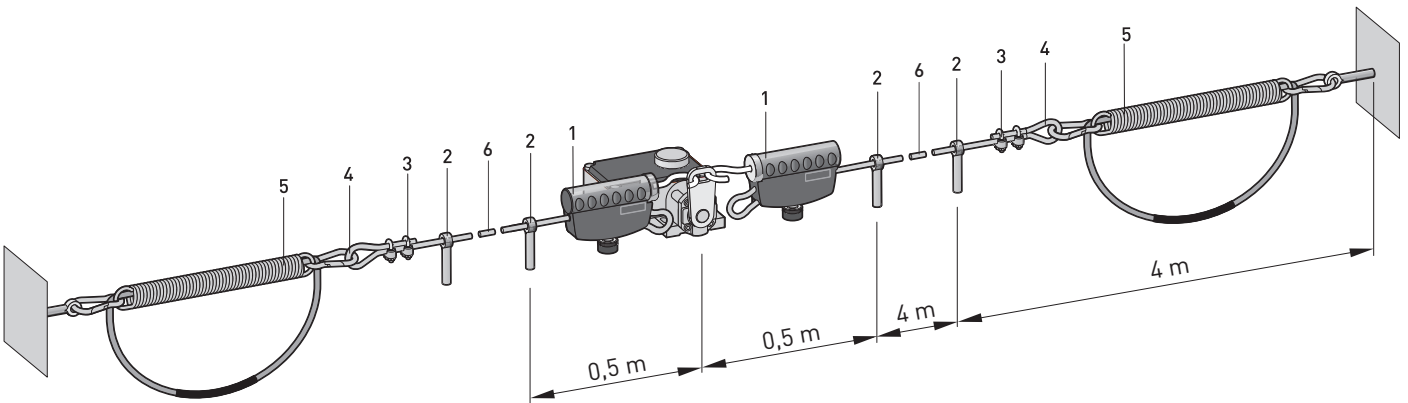
### Features/Options

- Indicator lamps for zone 22 for 24VDC are indicated at the end of this chapter
- Indicator lamp position in the left side cable entry, other positions possible on request
- With 2 cable entries available on request for zone 22
- Version for equipment category 3D, dust Ex zone 22 is equipped with a wiring compartment

### Note

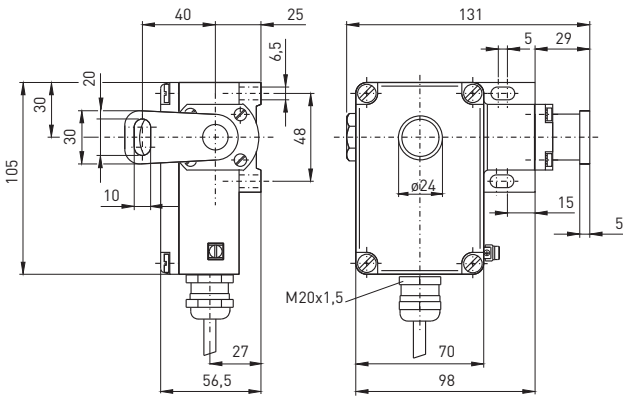
- Always mount emergency pull-wire switch in middle position.

## // Mounting with tension spring



277

## // Push-button release VD



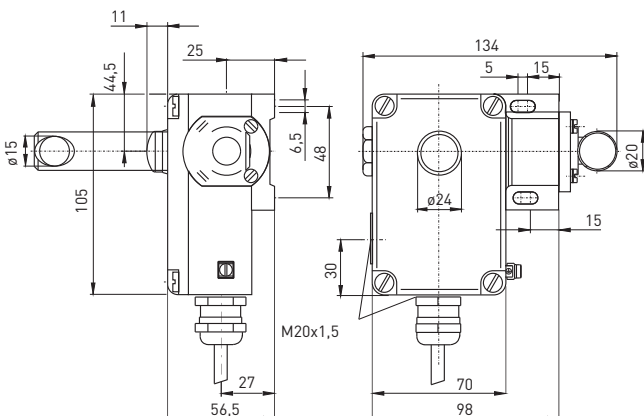
Push-button release  
Ex ZS 73 S 10/15 VD-3m

Material Number  
1178045

Ex ZS 73 S 20 VD-3m

1180510

## // Stainless Steel ZS 73 S NIRO



### Features/Options

- ZS 73 NIRO: pull-wire lever and screws made of stainless steel 1.4305, hard-coated enclosure with enamel finish

Stainless Steel/Push-button release  
Ex ZS 73 S 10/15 VD Niro-3m

Material Number  
on request

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

## // Series Ex ZS 75 S

### Features/Options

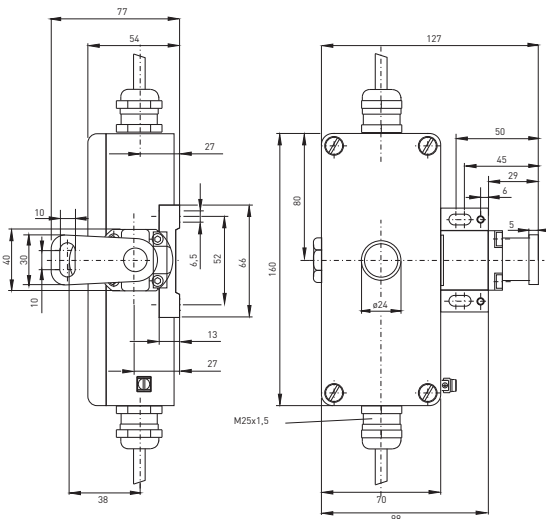
- Ex zone 1 and 21
- Metal enclosure
- 2 or 4 contacts
- Wire length up to 2 x 100 m
- Release by push button
- Available without unlocking mechanism (per DIN EN 60947-5-1)
- Wire pull and breakage detection
- Special version only for dust Ex zone 22

### // EX ZS 75 S



### Technical data

<b>Standards</b>	EN 60947-5-1, -5; EN 60079-0, EN 60079-1, EN 60079-31; EN ISO 13850; EN ISO 13849-1
<b>Enclosure</b>	aluminium die-cast, enamel finish
<b>Cover</b>	aluminium die-cast, enamel finish
<b>Switch insert</b>	Ex 14
<b>Protection class</b>	Ex ZS 75 S VD: IP 65 to IEC/EN 60529
<b>Contact material</b>	silver
<b>Switching system</b>	slow action, positive break NC contacts ⊖
<b>Switching elements</b>	1 NC/1 NO contact, 2 NC/2 NO contacts or 4 NC contacts, type Zb
<b>Connection</b>	cable H05VV-F, length 3 m
<b>Cable section</b>	4 x 0.75mm <sup>2</sup> (incl. conductor ferrules)
<b>B<sub>10d</sub> (10 % load)</b>	200 000
<b>T<sub>M</sub></b>	max. 20 years
<b>U<sub>imp</sub></b>	4 kV
<b>U<sub>i</sub></b>	250 V
<b>I<sub>the</sub></b>	T6: 6 A, T5: 3 A
<b>Utilisation category</b>	AC-15, DC-13
<b>I<sub>e</sub>/U<sub>e</sub></b>	6 A/250 VAC, 0.25 A/230 VDC
<b>Max. fuse rating</b>	6 A gG/gN-fuse
<b>Ambient temperature</b>	T6: -20 °C ... +65 °C; T5: -20 °C ... +90 °C
<b>Mechanical life</b>	> 100 000 operations
<b>Max. wire length</b>	2 x 100 m
<b>Features</b>	wire pull and breakage detection
<b>Impact energy</b>	max. 7 J
<b>Ex marking</b>	⊕ II 2G Ex d IIC T6/T5 Gb, II 2D Ex tb IIIC T80°C/T95°C Db IECEx Ex d IIC T6/T5 Gb, Ex tb IIIC T80°C/T95°C Db
<b>Approvals</b>	PTB 11 ATEX 1003 X, IECEx PTB 07.0034 X 



### Contact variants: switch travel/contacts

	Slow action
1 NC/1 NO contact	<b>Ex ZS 75 S 1Ö/1S</b> 
2 NC/2 NO contact	<b>Ex ZS 75 S 2Ö/2S</b> 
4 NC contacts	<b>Ex ZS 75 S 4Ö</b> 

✓ in stock

### Type code

**Ex ZS 75 S 2Ö/2S VD-3D**

Ex ZS 75 S 2Ö/2S VD-3D  
 Dust Ex zone 22  
 VD Push button release  
 (blank without mechanical latching)  
 2 NC/2 NO contacts (1Ö/1S, 4Ö)  
 S Two-side actuation  
 Series  
 Emergency pull-wire switch  
 Ex certified component

At 4 m distance intermediate wire supports are required. Details related to pre-stress and actuating forces are indicated at the end of this chapter. Two tension springs type ZS 73/75 S must be installed. See chapter accessories on page 280.

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

## // Series Ex ZS 75 S, mounting, variants

### Legend

- 1 Cable tensioner system TS 65
- 2 Eye bolt M8 x 70 with nut
- 3 Wire clamp
- 4 Wire thimble 3B
- 5 Tension spring ZS 73/75 S
- 6 Pull-wire per metre

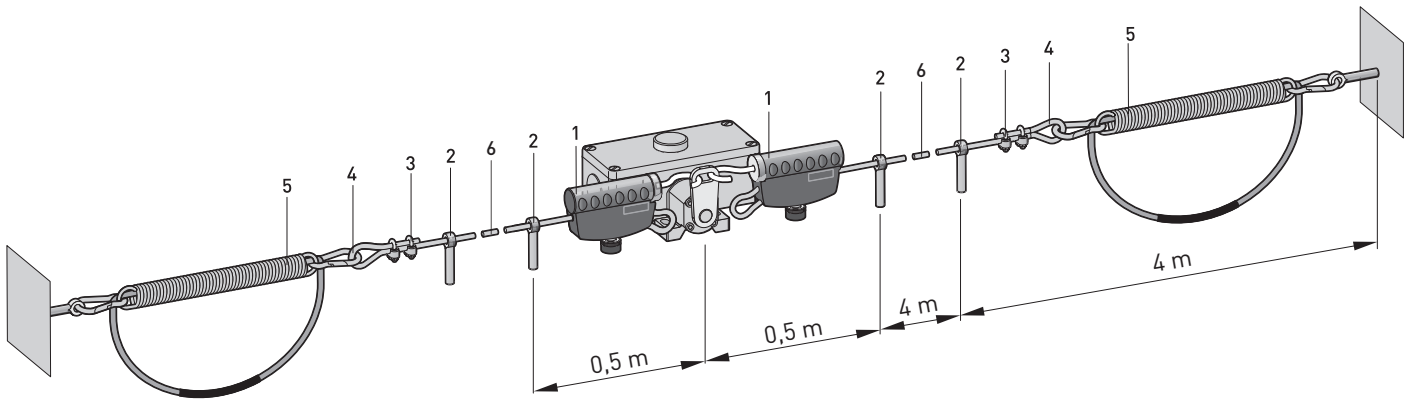
### Features/Options

- 1186621 - Indicator lamps for zone 22 for 24VDC
- 1170601 are indicated at the end of this chapter
- 1033247 - Indicator lamp position on the left side, other positions possible
- 1033245 on request
- 1187935 - Version for equipment category 3D, dust Ex zone 22
- 1032984 is equipped with a wiring compartment

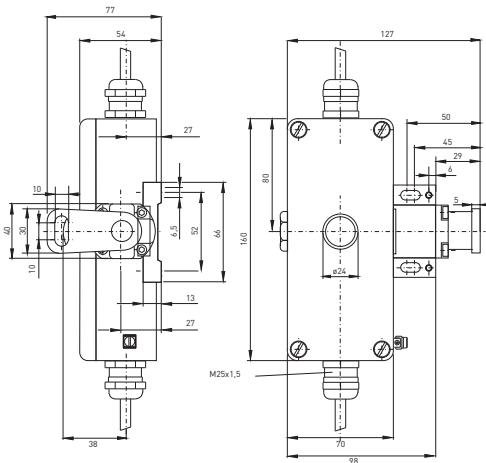
### Note

- Always mount emergency pull-wire switch in middle position.

## // Mounting with tension spring



## // Push-button release VD



### Push-button release

Ex ZS 75 S 10/1S VD-3m

### Material Number

1051584

Ex ZS 75 S 20/2S VD-3m

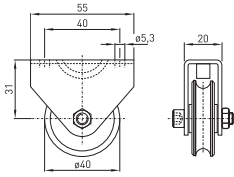




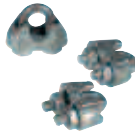



1173241

Ex ZS 75 S 40 VD-3m

on request

# Ex emergency pull-wire switches

## // Accessories

// Accessories	// Order number	
<p><b>Pulley</b></p> <ul style="list-style-type: none"> <li>- To guide the pull-wire where the path is not a straight line</li> <li>- For pull-wire with red PVC sheath <math>\varnothing</math> 5 mm (steel core <math>\varnothing</math> 3 mm)</li> <li>- Ordering unit: 1 piece</li> </ul>		<p>Pulley</p> <p>1041765</p>
<p><b>Pull-wire</b></p> <ul style="list-style-type: none"> <li>- Steel core <math>\varnothing</math> 3 mm with red PVC sheath</li> <li>- Total diameter 5 mm</li> <li>- Ordering unit: per metre</li> <li>- Available with stainless steel core</li> </ul>		<p>Pull-wire <math>\varnothing</math> 5 mm per metre</p> <p>Pull-wire stainless steel <math>\varnothing</math> 5 mm per metre</p> <p>1032984</p> <p>1033297</p>
<p><b>Complete Pull-wire set</b></p> <ul style="list-style-type: none"> <li>- 5 m pull-wire <math>\varnothing</math> 3 mm with 2 mm PVC sheath, 2 wire clamps DIN 741, 1 wire thimble DIN 6899, 1 eye bolt DIN 444 and 1 Duplex wire clamp</li> </ul>		<p>Complete pull-wire set, 5 m</p> <p>Complete pull-wire set, 10 m</p> <p>Complete pull-wire set, 15 m</p> <p>Complete pull-wire set, 20 m</p> <p>Complete pull-wire set, 25 m</p> <p>Complete pull-wire set, 50 m</p> <p>1041628</p> <p>1041633</p> <p>1041634</p> <p>1041645</p> <p>1041635</p> <p>1041642</p>
<p><b>Pull-wire for emergency pull-wire sw.</b></p> <ul style="list-style-type: none"> <li>- Pull-wire yellow (polypropylene)</li> <li>- 1, 2, 3 or 4 m long</li> <li>- With rubber ball and mounting clamp</li> </ul>		<p>Pull-wire with ball emergency pull-wire sw. 1 m</p> <p>Pull-wire with ball emergency pull-wire sw. 2 m</p> <p>Pull-wire with ball emergency pull-wire sw. 3 m</p> <p>Pull-wire with ball emergency pull-wire sw. 4 m</p> <p>1041764</p> <p>1167653</p> <p>1167654</p> <p>1160281</p>
<p><b>Pull-wire for pull-wire switches</b></p> <ul style="list-style-type: none"> <li>- Pull-wire yellow (polypropylene)</li> <li>- 1, 2, 3 or 4 m long</li> <li>- With rubber ball and Duplex wire clamp</li> <li>- Ordering unit: 1 piece</li> </ul>		<p>Pull-wire with ball pull-wire switches 1 m</p> <p>Pull-wire with ball pull-wire switches 2 m</p> <p>Pull-wire with ball pull-wire switches 3 m</p> <p>Pull-wire with ball pull-wire switches 4 m</p> <p>1177973</p> <p>1177974</p> <p>1177975</p> <p>1177976</p>
<p><b>Wire clamp</b></p> <ul style="list-style-type: none"> <li>- For pull-wire with steel core <math>\varnothing</math> 3 mm</li> <li>- Ordering unit: 1 piece</li> <li>- Wire clamp made of stainless steel available</li> </ul>		<p>Wire clamp 3 mm</p> <p>Wire clamp 3 mm stainless steel</p> <p>1033247</p> <p>1033299</p>
<p><b>Duplex wire clamp</b></p> <ul style="list-style-type: none"> <li>- For pull-wire with steel core <math>\varnothing</math> 3 mm</li> <li>- Ordering unit: 1 piece</li> </ul>		<p>Duplex wire clamp</p> <p>1033248</p>
<p><b>Egg-shaped wire clamp</b></p> <ul style="list-style-type: none"> <li>- For pull-wire with steel core <math>\varnothing</math> 3 mm</li> <li>- Ordering unit: 1 piece</li> </ul>		<p>Egg-shaped wire clamp 3 mm</p> <p>1181896</p>
<p><b>Wire thimble 3B</b></p> <ul style="list-style-type: none"> <li>- Per DIN 6899</li> <li>- For pull-wire with steel core <math>\varnothing</math> 3 mm</li> <li>- Wire clamp made of stainless steel available</li> </ul>		<p>Wire thimble 3 mm</p> <p>Wire thimble 3 mmNiro</p> <p>1033245</p> <p>1172707</p>

✓ in stock



## // Accessories

## // Order number

### Eye bolt incl. nut

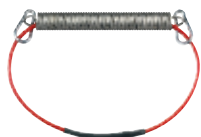
- Per DIN 444
- Available made of stainless steel
- Ordering unit: 1 piece



Eye bolt M8x70 with nut	1170601
Eye bolt M8 x 70 stainless steel	1189687
Eye bolt BM10 x 40 with nut	1032610

### Compensation spring/travel limitation

- Adaption of length expansions caused by changes in temperature
- Stainless steel 1.4310
- Ordering unit: 1 piece



Compensation spring ZS 71-100N	1187921
Compensation spring ZS 73/75-200N	1187931
Compensation spring ZS 73/75-400N	1187934
Compensation spring ZS 73/75 S	1187935
Compensation spring ZS 80	1187933

### Tensioner M6

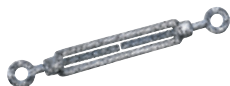
- For precise adjustment of pull-wire pre-stress
- Per DIN 1480
- Adjustable von 145 mm bis 225 mm



Tensioner M6	1033254
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### Tensioner M8

- For precise adjustment of pull-wire pre-stress
- Made of stainless steel, adjustable from 160 mm to 255 mm



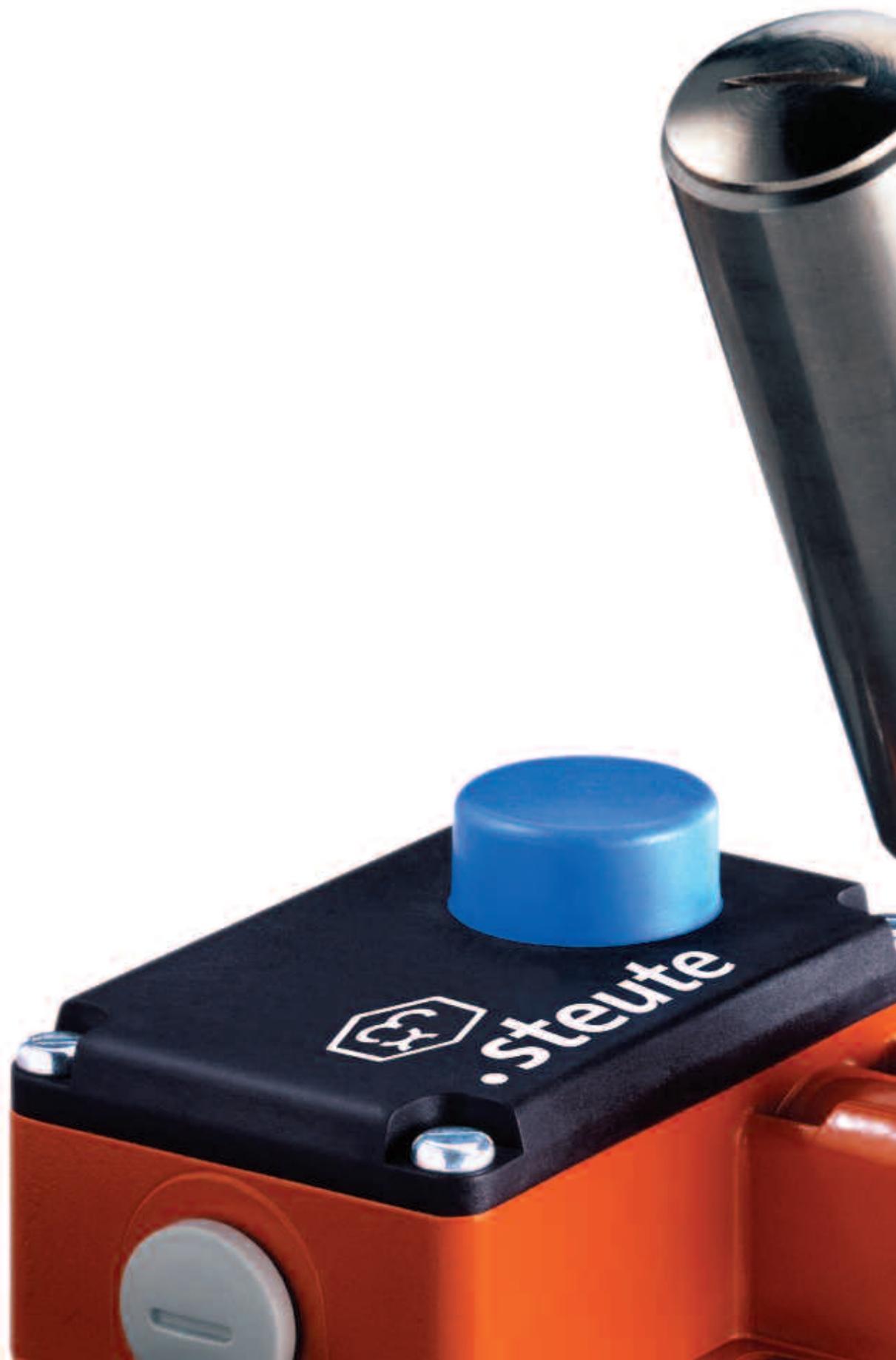
Tensioner M8 Niro	1033300
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### Cable tensioner system TS 65

- For pull-wire with steel core
- Ø 4 - 6 mm incl. sheath
- Adjustment range max. 65 mm
- Diameter of eyebolt min. 8 mm



Cable tensioner system TS 65	1186621
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## Ex belt-alignment switches

// Series Ex 98 SR

from page 286

// Series Ex 355 4VSR

from page 287

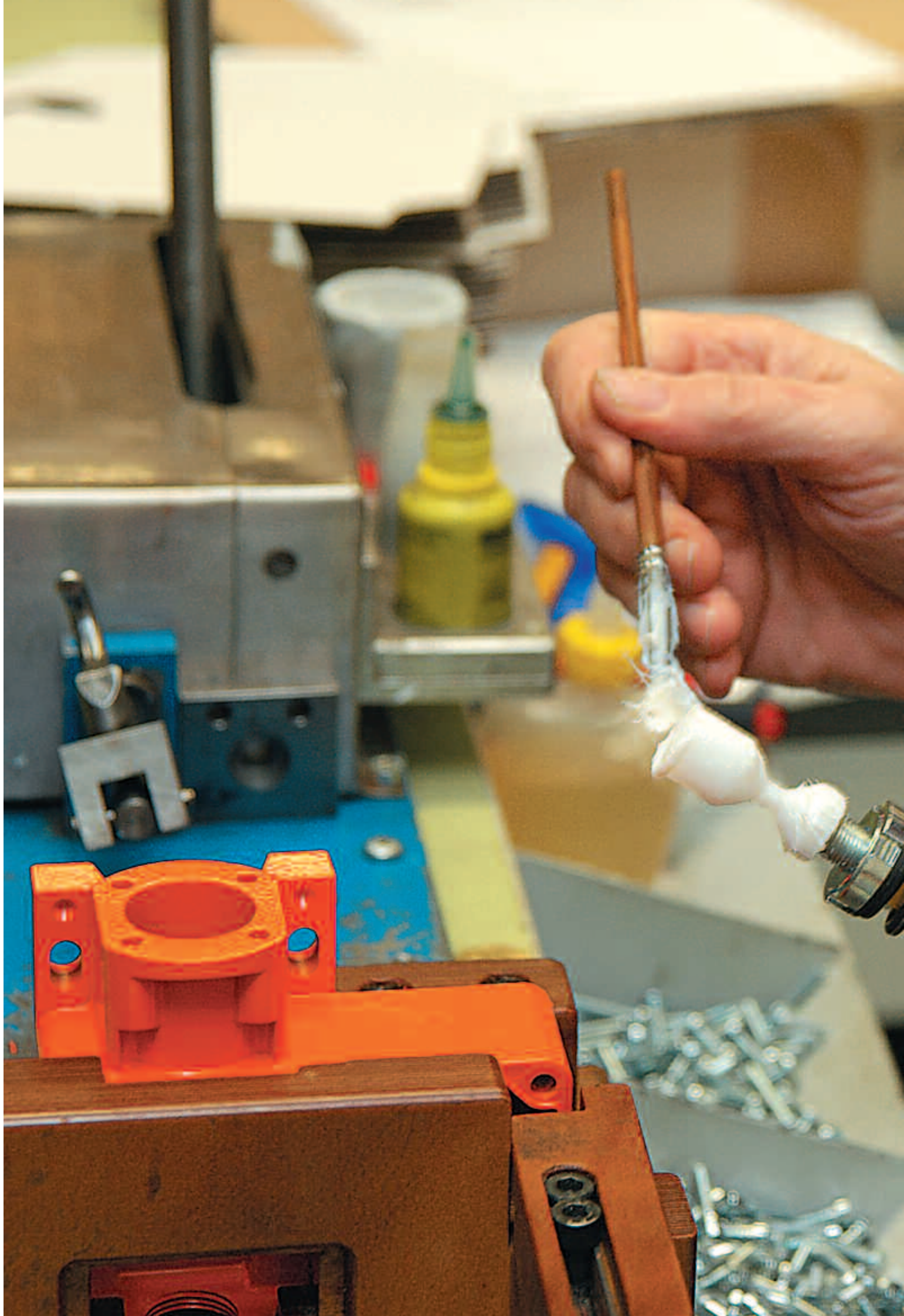
// Series Ex ZS 73 SR

from page 288

// Series Ex ZS 75 SR

from page 289

Ex ZS 73 SR



# Ex belt-alignment switches

## Range of application

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

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

## Design and operating principle

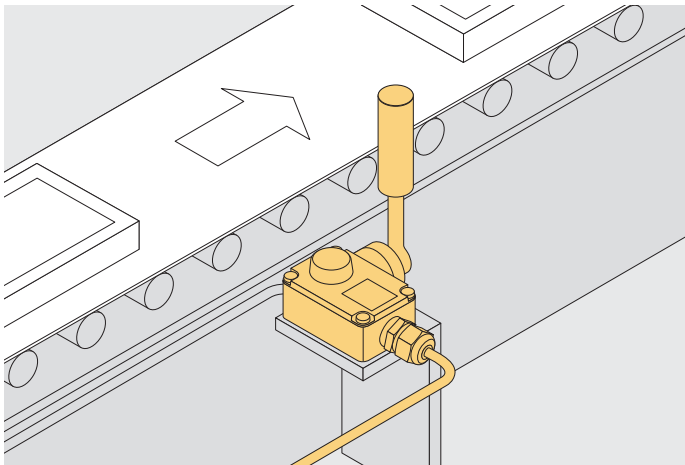
Ex belt-alignment switches are actuated when the conveyor belt becomes misaligned. Depending on the plant arrangements, this signal can either be used to switch the equipment off or to provide automatic correction of the belt alignment. Thus they should be installed at both sides of the conveyor belt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

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

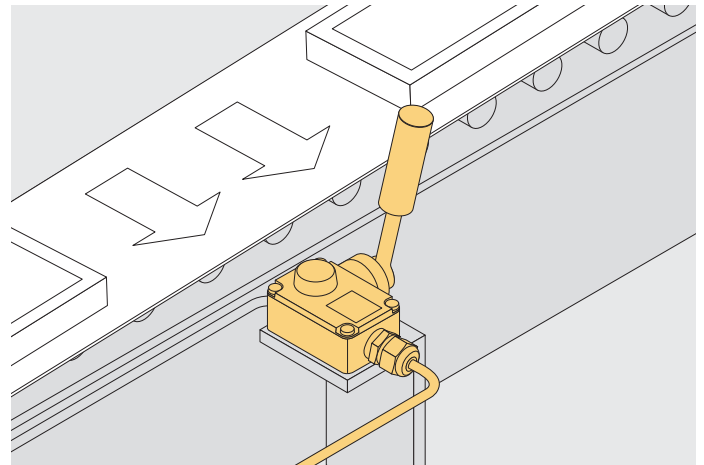
All belt-alignment switches bear the CE mark according to the Low Voltage Directive 2014/30/EU and to ATEX 2014/34/EU. The Ex belt-alignment switches per equipment category 3D bear the CE mark without the number of the notified body and have received a CE declaration of manufacturer conformity.

## Application

### Monitoring a conveyor belt



### Belt-alignment switch in actuated state



# Ex belt-alignment switches

## // Series Ex 98 SR

### Features/Options

- Ex zone 1 and 21
- Cold-resistant down to -40 °C
- Metal enclosure
- 2 contacts
- Mounting details to EN 50 041
- Adjustable-length rod lever with nylon roller
- For light- and medium-heavy applications
- Special version only for gas Ex zone 2 and dust Ex zone 22 available

## // EX 98 SR

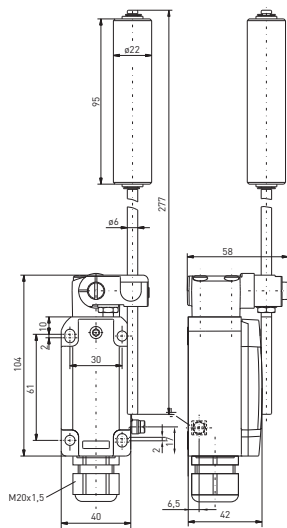


## Technical data

<b>Standards</b>	EN 60947-5-1; EN 60079-0, EN 60079-1, EN 60079-7, EN 60079-31; EN ISO 13849-1
<b>Enclosure</b>	Corrosion-resistant aluminium, powder-coated, similar to RAL 7016
<b>Cover</b>	Stainless steel 1.4401, powder-coated, similar to RAL 1003
<b>Degree of protection</b>	IP 66 to IEC/EN 60529
<b>Contact material</b>	silver
<b>Switching system</b>	slow action, positive break NC contact ⊕
<b>Switching elements</b>	1 NC/1 NO contact or 2 NC contacts, type Zb
<b>Connection</b>	screw connection terminals
<b>Cable section</b>	max. 1.5 mm <sup>2</sup> (incl. conductor ferrules)
<b>Cable entry</b>	1 x M20 x 1.5 for cable diameter 5 ... 9 mm
<b>B<sub>10d</sub> (10 % load)</b>	2 million
<b>T<sub>M</sub></b>	max. 20 years
<b>U<sub>imp</sub></b>	4 kV
<b>U<sub>i</sub></b>	250 V
<b>I<sub>e</sub>/U<sub>e</sub></b>	max. 4.4 A T6 / max. 6.6 A T5 / max. 250 VAC; 125 VDC
<b>Utilisation category</b>	AC-15, DC-13
<b>Max. fuse rating</b>	6 A gG/gN fuse
<b>Ambient temperature</b>	T6: - 40° C ... + 70° C (max. 4,4 A), T5: - 40° C ... + 70° C (max. 6,6 A)
<b>Mechanical life</b>	> 1 million operations
<b>Switching frequency</b>	1800/h
<b>Repeat accuracy</b>	± 0.1 mm
<b>Impact energy</b>	max. 7 J
<b>Ex marking</b>	⊕ II 2G Ex de IIC T6/T5 Gb, II 2D Ex tb IIIC IECEx Ex de IIC T6/T5 Gb, Ex tb IIIC T80 °C/T95 °C Db

### Approvals

DMT 01 ATEX E 178, IECEx BVS 07.0014



### Contact variants: switch travel/contacts

	Slow action	Material number
1 NC/1 NO contact	<b>Ex ES 98 SR-11 -40°C</b> 	1420735
1 NC/1 NO contact with overlapping	<b>Ex ES 98 SR-11U -40°C</b> 	1420740
2 NC contacts	<b>Ex ES 98 SR-02 -40°C</b> 	1420738

### Type code

**Ex ES 98 SR-11-3D**

Equipment Categ. 3D, dust Ex zone 22  
 1 NC/1 NO contact (-02, -11U)  
 SR Belt-alignment lever  
 Series  
 Slow action (EM snap action)  
 Ex certified component

✓ in stock



# Ex belt-alignment switches

## // Series Ex ZS 73 SR

### Features/Options

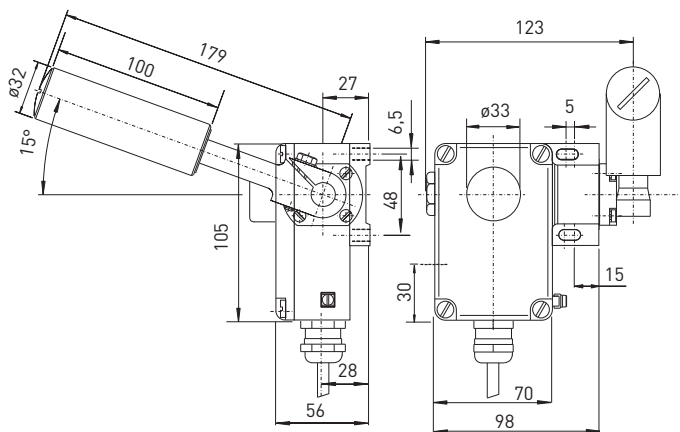
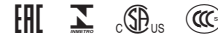
- Ex zone 1 and 21
- Metal enclosure
- 2 contacts
- Cable
- With latching and release by push button
- Belt-alignment roller made of stainless steel 1.4104
- Special version only for dust Ex zone 22 available

// EX ZS 73 SR



### Technical data

<b>Standards</b>	EN 60947-5-1, -5; EN 60079-0, EN 60079-1, EN 60079-31; EN ISO 13849-1
<b>Enclosure</b>	aluminium die-cast, enamel finish; ZS 73 NIRO: aluminium die-cast, hard-coated and enamelled
<b>Cover</b>	glass-fibre reinforced, shock-proof thermoplastic, ultramid
<b>Switch insert</b>	Ex 14
<b>Degree of protection</b>	IP 65 to IEC/EN 60529
<b>Contact material</b>	silver
<b>Switching system</b>	slow action, positive break NC contacts ⊕
<b>Switching elements</b>	1 NC/1 NO contact or 2 NC contacts, type Zb
<b>Connection</b>	cable H05VV-F, length 3 m
<b>Cable section</b>	4 x 0.75mm <sup>2</sup> (incl. conductor ferrules)
<b>B<sub>10d</sub> (10 % load)</b>	Ex ZS 73 SR: 2 million Ex ZS 73 SR VD: 200 000
<b>T<sub>M</sub></b>	max. 20 years
<b>U<sub>imp</sub></b>	4 kV
<b>U<sub>i</sub></b>	250 V
<b>I<sub>the</sub></b>	T6: 6 A; T5: 3 A
<b>I<sub>e</sub>/U<sub>e</sub></b>	6 A/250 VAC, 0.25 A/230 VDC
<b>Utilisation category</b>	AC-15, DC-13
<b>Max. fuse rating</b>	6 A gG/gN-fuse
<b>Ambient temperature</b>	T6: -20 °C ... +65 °C; T5: -20 °C ... +90 °C
<b>Mechanical life</b>	Ex ZS 73 SR: > 1 million operations; Ex ZS 73 SR VD: > 100 000 operations;
<b>Impact energy</b>	max. 7 J
<b>Ex marking</b>	⊕ II 2G Ex d IIC T6/T5 Gb, II 2D Ex tb IIIC T80 °C/T95 °C Db IECEx Ex d IIC T6/T5 Gb, Ex tb IIIC T80 °C/T95 °C Db
<b>Approvals</b>	PTB 11 ATEX 1003 X, IECEx PTB 07.0034 X



### Contact variants: switch travel/contacts

	Slow action	Material number
1 NC/1 NO contact	<b>Ex ZS 73 SR 1Ö/1S VD</b> 	<b>1179466</b>
2 NC contacts	<b>Ex ZS 73 SR 2Ö VD</b> 	<b>on request</b>

### Type code

<b>Ex ZS 73 SR 1Ö/1S VD-3D</b>	Equipment Categ. 3D, Ex Zone 22 VD Push button release (blank without mechanical latching)
	1 NC/1 NO contact (2Ö)
	SR Belt-alignment lever
	Series
	Ex certified component

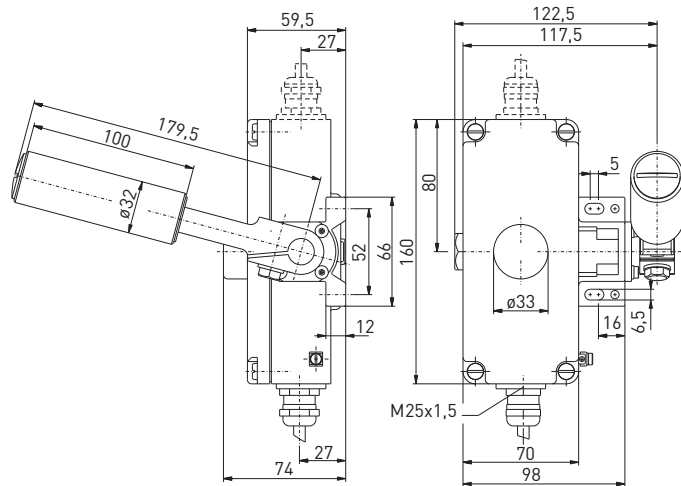
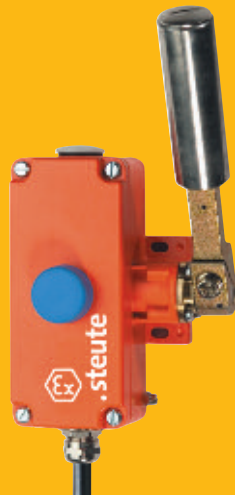
✓ in stock



# Ex belt-alignment switches

## // Series Ex ZS 75 SR

### // EX ZS 75 SR



#### Features/Options

- Ex zone 1 and 21
- Metal enclosure
- 2 or 4 contacts
- Cable
- With latching and release by push button
- Belt-alignment roller made of stainless steel 1.4104
- Special version only for Ex zone 22 available

#### Technical data

<b>Standards</b>	EN 60947-5-1, -5; EN 60079-0, EN 60079-1, EN 60079-31; EN ISO 13849-1
<b>Enclosure</b>	aluminium die-cast, enamel finish
<b>Cover</b>	aluminium die-cast, enamel finish
<b>Switch insert</b>	Ex 14
<b>Degree of protection</b>	IP 65 to IEC/EN 60529
<b>Contact material</b>	silver
<b>Switching system</b>	slow action, positive break NC contacts ⊖
<b>Switching elements</b>	1 NC/1 NO contact, 2 NC/2 NO contacts or 4 NC contacts, type Zb
<b>Connection</b>	cable H05VV-F, length 3 m
<b>Cable section</b>	4 x 0.75mm <sup>2</sup> (incl. conductor ferrules) per switch insert
<b>B<sub>10d</sub> (10 % load)</b>	Ex ZS 75 SR: 2 million Ex ZS 75 SR VD: 200 000
<b>T<sub>M</sub></b>	max. 20 years
<b>U<sub>imp</sub></b>	4 kV
<b>U<sub>i</sub></b>	250 V
<b>I<sub>the</sub></b>	T6: 6 A; T5: 3 A
<b>I<sub>e</sub>/U<sub>e</sub></b>	6 A/250 VAC, 0.25 A/230 VDC
<b>Utilisation category</b>	AC-15, DC-13
<b>Max. fuse rating</b>	6 A gG/gN-fuse
<b>Ambient temperature</b>	T6: -20 °C ... +65 °C; T5: -20 °C ... +90 °C
<b>Mechanical life</b>	Ex ZS 75 SR: > 1 million operations; Ex ZS 75 SR VD: > 100 000 operations;
<b>Impact energy</b>	max. 7 J
<b>Ex marking</b>	⊕ II 2G Ex d IIC T6/T5 Gb, II 2D Ex tb IIIC T80 °C/T95 °C Db IECEX Ex d IIC T6/T5 Gb, Ex tb IIIC T80 °C/T95 °C Db
<b>Approvals</b>	PTB 11 ATEX 1003 X, IECEX PTB 07.0034 X



#### Contact variants: switch travel/contacts

	Slow action	Material number
1 NC/1 NO contact	<b>Ex ZS 75 SR 10/1S VD</b> 	1051503
2 NC/2 NO contact	<b>Ex ZS 75 SR 20/2S VD</b> 	1166692
4 NC contacts	<b>Ex ZS 75 SR 40 VD</b> 	1305996

#### Type code

#### Ex ZS 75 SR 20/2S VD-3D

Equipment Categ. 3D,  
Ex Zone 22  
VD Push button release  
(blank without mechanical  
latching)  
2 NC/2 NO contact (10/1S, 40)  
SR Belt-alignment lever  
Series  
Ex certified component



## Ex pull-wire switches

// Series Ex 95 WH/90°

from page 295

// Series Ex/ExM 61 Z

from page 296

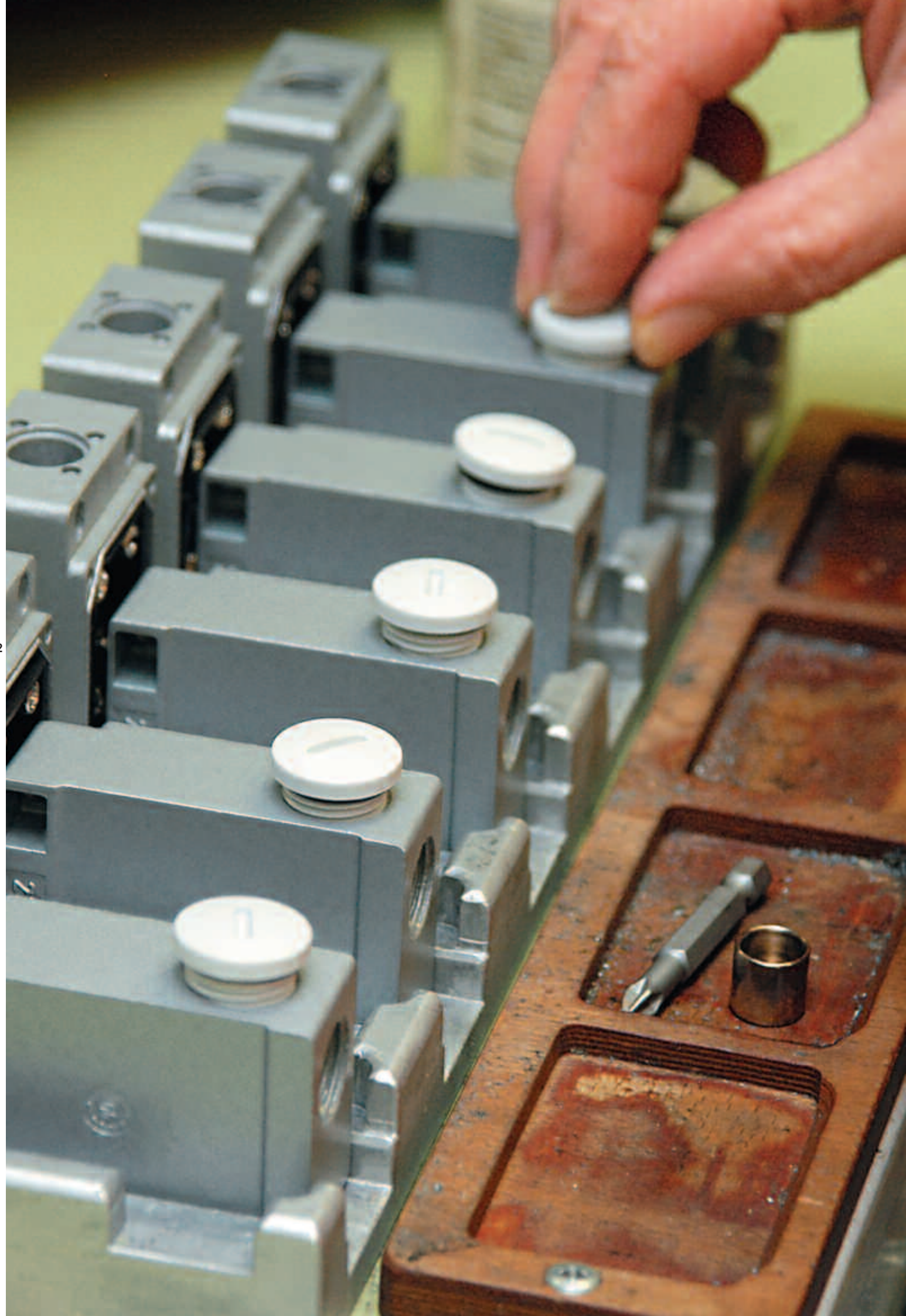
// Series Ex ZS 71 Z

from page 297

// Accessories

from page 299





# Ex pull-wire switches

## Range of application

Ex pull-wire switches are suitable as transducers for starting machines or to open and close electrically-powered doors, gates and barriers.

## Design and operating principle

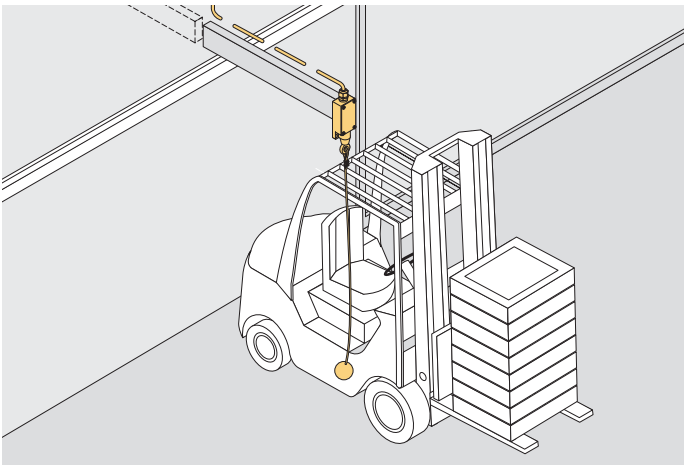
Ex pull-wire switches are actuated manually by pulling. The pull-wire switches generate a switching impulse on actuation.

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

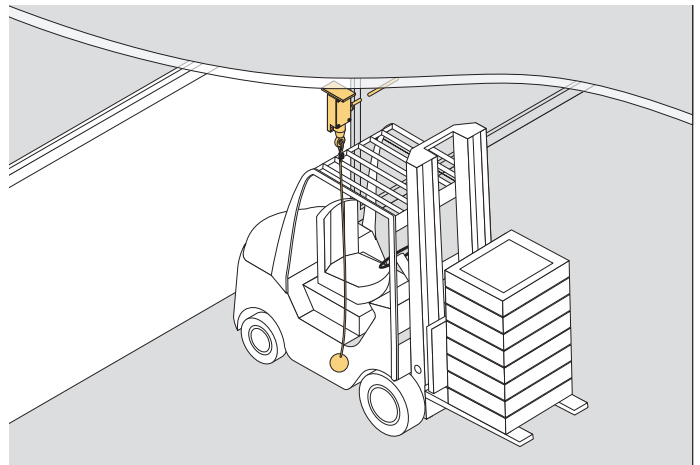
All Ex pull-wire switches presented in this chapter bear the CE mark according to the Low Voltage Directive 2014/30/EU and to ATEX 2014/34/EU. The Ex pull-wire switches per equipment category 3D bear the CE mark without the number of the notified body and have received a CE declaration of manufacturer conformity.

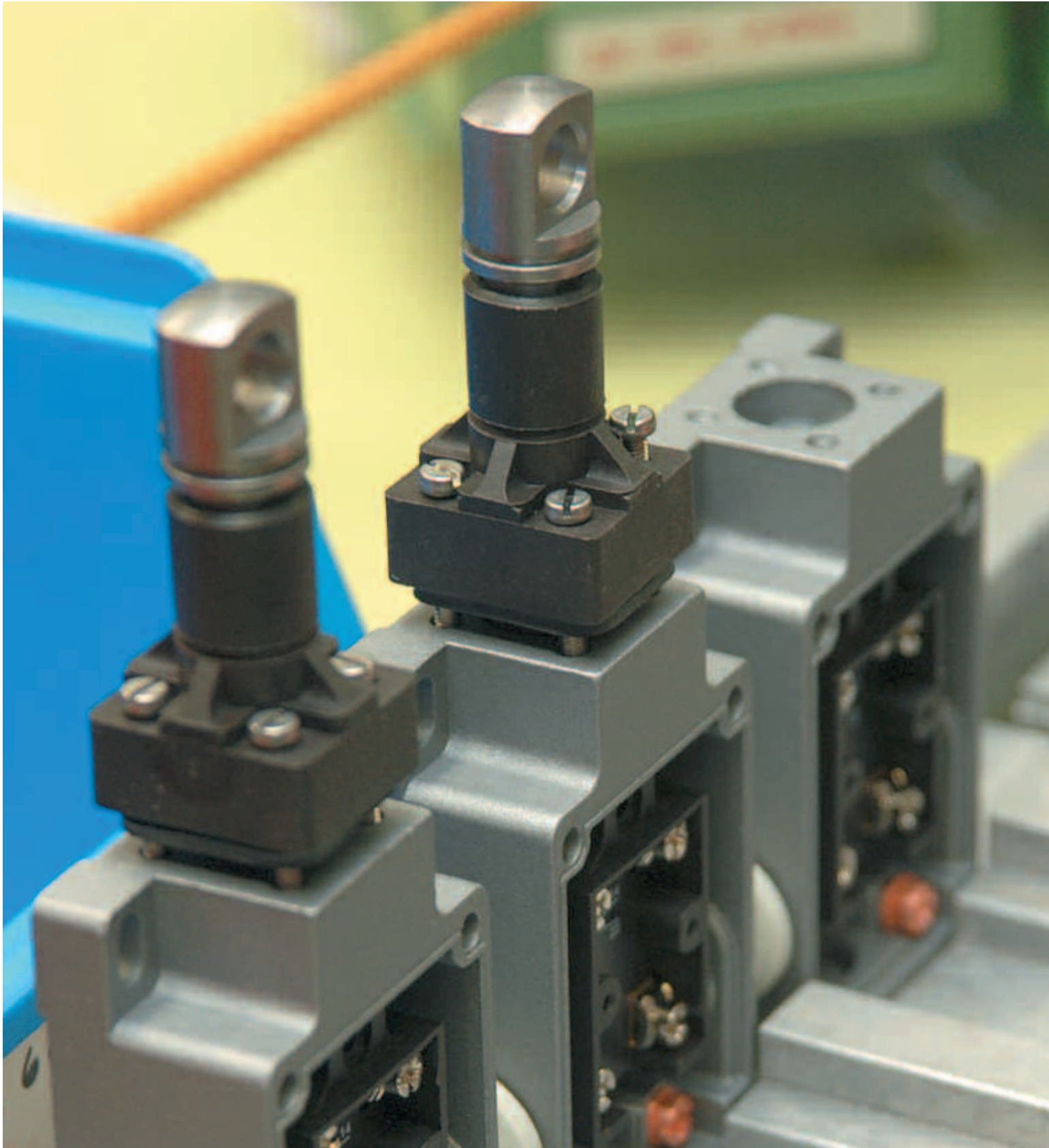
## Application

### Wall mounting as door opener



### Ceiling mounting






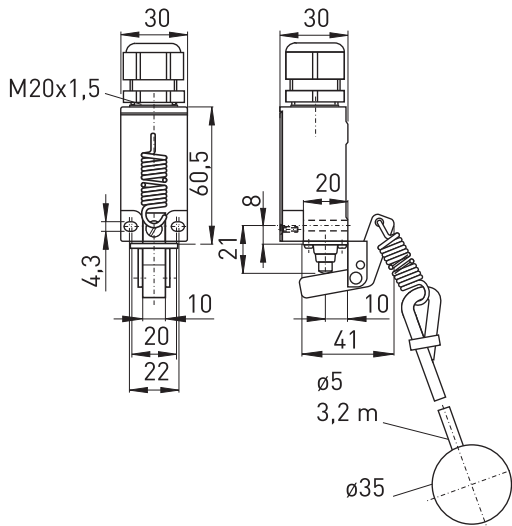
# Ex pull-wire switches

## // Series Ex 95 WH/90°

### Features/Options

- Ex zone 1 and 21
- Thermoplastic enclosure
- Wall or ceiling mounting
- Slow action: 2 contacts
- With gold-plated contacts available on request
- Mounting details to EN 50 047
- Horizontal mounting slots
- Double insulated 
- Special version only for dust Ex zone 22 available

// EX 95 WH/90°



### Technical data

<b>Standards</b>	EN 60947-5-1; EN 60079-0, EN 60079-1, EN 60079-7, EN 60079-31; EN ISO 13849-1
<b>Enclosure</b>	glass-fibre reinforced, shock-proof thermoplastic, self-extinguishing UL 94-V0
<b>Switch insert</b>	Ex 95
<b>Degree of protection</b>	IP 67 to IEC/EN 60529
<b>Contact material</b>	silver
<b>Switching system</b>	slow action, positive break NC contact $\ominus$
<b>Switching elements</b>	1 NC/1 NO contact, type Zb
<b>Connection</b>	screw connection terminals
<b>Cable section</b>	max. 1.5 mm <sup>2</sup> (incl. conductor ferrules)
<b>Cable entry</b>	M 20 x 1.5
<b>B<sub>10d</sub> (10 % load)</b>	2 million
<b>T<sub>M</sub></b>	max. 20 years
<b>U<sub>imp</sub></b>	4 kV
<b>U<sub>i</sub></b>	250 V
<b>I<sub>the</sub></b>	6 A
<b>I<sub>e</sub>/U<sub>e</sub></b>	6 A/250 VAC; 0.25 A/230 VDC
<b>Utilisation category</b>	AC-15; DC-13
<b>Max. fuse rating</b>	6 A gG/gN-fuse
<b>Mechanical life</b>	> 1 million operations
<b>Switching frequency</b>	1800/h
<b>Ambient temperature</b>	- 20 °C ... + 60 °C
<b>Actuating force</b>	20 N
<b>Features</b>	pull-wire function
<b>Impact energy</b>	max. 7 J
<b>Ex marking</b>	$\ominus$ II 2G Ex de IIC T5 Gb, II 2D Ex tb IIIC T80°C Db IP67 IECEX Ex de IIC T5 Gb, Ex tb IIIC T80°C Db

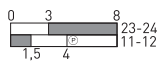
### Approvals

DMT 01 ATEX E 118, IECEx BVS 14.0018X



### Contact variants: switch travel/contacts

	Slow action	Material number
1 NC/1 NO contact	Ex 95 WH/90° 10/1S	1184693



### Type code

Ex 95 WH/90° 10/1S-3D

Equipment Categ. 3D,  
dust Ex zone 22  
1 NC/1 NO contact  
WH/90° Actuator with pull-wire  
Series  
Ex certified component

# Ex pull-wire switches

## // Series Ex/ExM 61 Z

### Features/Options

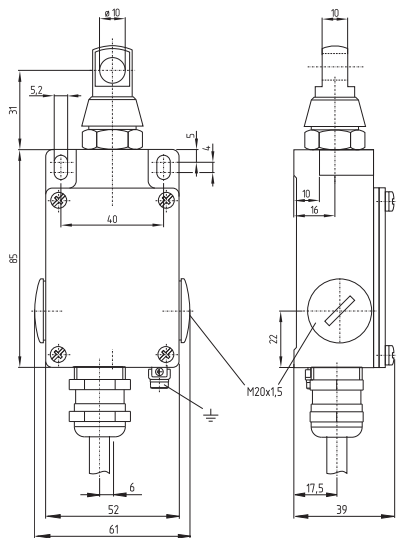
- Ex zone 1 and 21
- Metal enclosure
- Wall mounting
- Slow or snap action: 2 contacts
- Various spring force variants (actuating forces)
- Pull-wire function

// EX/EXM 61 Z



### Technical data

<b>Standards</b>	EN 60947-5-1; EN 60079-0, EN 60079-1, EN 60079-31; EN ISO 13849-1
<b>Enclosure</b>	aluminium die-cast, powder-coated
<b>Cover</b>	steel, powder-coated
<b>Switch insert</b>	Ex 14, ExM 14
<b>Degree of protection</b>	IP 65 to IEC/EN 60529
<b>Contact material</b>	silver
<b>Switching system</b>	slow or snap action
<b>Switching elements</b>	ExM 61: change-over contact with single break, type C, Ex 61: 1 NC/1 NO contact, type Zb
<b>Connection</b>	cable H05VV-F, length 3 m
<b>Cable section</b>	4 x 0.75mm <sup>2</sup> (incl. conductor ferrules)
<b>B<sub>10d</sub> (10 % load)</b>	Ex 61 Z: 2 million
<b>T<sub>M</sub></b>	max. 20 years
<b>U<sub>imp</sub></b>	4 kV
<b>U<sub>i</sub></b>	250 V
<b>I<sub>the</sub></b>	T6: 6 A; T5: 3 A
<b>I<sub>e</sub>/U<sub>e</sub></b>	Ex 61: 6 A/250 VAC; 0.25 A/230 VDC; ExM 61: 5 A/250 VAC, 0.16 A/230 VDC
<b>Utilisation category</b>	AC-15, DC-13
<b>Max. fuse rating</b>	6 A gG/gN-fuse
<b>Ambient temperature</b>	Ex 61: T6: -20 °C ... +65 °C, T5: -20 °C ... +75 °C, +90 °C with max. 3 A; ExM 61: -20 °C ... +60 °C
<b>Mechanical life</b>	> 1 million operations
<b>Impact energy</b>	max. 7 J
<b>Ex marking</b>	⊕ II 2G Ex d IIC T6/T5 Gb, II 2D Ex tb IIIC T80°C/T95°C Db IECEx Ex d IIC T6/T5 Gb, Ex tb IIIC T80°C/T95°C Db
<b>Approvals</b>	Ex 61: PTB 03 ATEX 1070 X*, IECEx PTB 06.0098X*; ExM 61: PTB 03 ATEX 1069 X*
	Ex 61: ExM 61:  *referring to the switch insert



### Contact variants: switch travel/contacts

	Snap action	Slow action
1 NC/1 NO contact	<b>ExM 61 Z 10/1S</b> 	<b>Ex 61 Z 10/1S</b> 

### Type code

**Ex M 61 WZ 10/1S**

1 NC/1 NO contact  
 Z Actuator towing eye  
 W Watertight collar  
 Snap action  
 Series  
 Ex certified component: Ex Slow action (ExM Snap action)



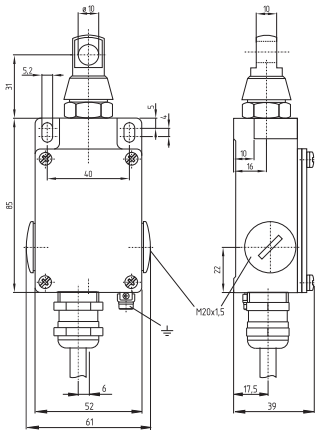
# Ex pull-wire switches

## // Series Ex/ExM 61 Z, variants

### Features/Options

- Watertight collar W to protect against the entry of foreign bodies

### // Pull-wire switch



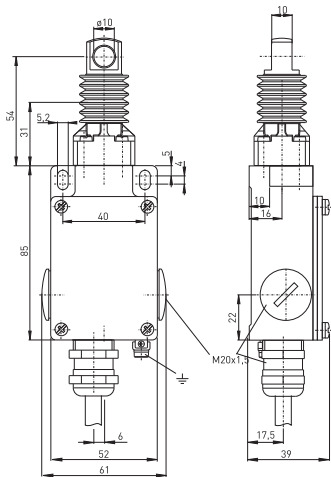
Slow action  
Ex 61 Z 10/1S-3m

Material Number  
1047827

Snap action  
ExM 61 Z-3m

Material Number  
1047996

### // Watertight collar W



Slow action  
Ex 61 WZ 10/1S-3m

Material Number  
1047842

Snap action  
ExM 61 WZ-3m

Material Number  
1158694

# Ex pull-wire switches

## // Series Ex ZS 71 Z

### Features/Options

- Ex zone 1 and 21
- Metal enclosure
- Wall mounting
- Slow action: 2 contacts
- Pull-wire function
- Ex indicator lamp for zone 22 available, see accessories
- Special version only for dust Ex zone 22

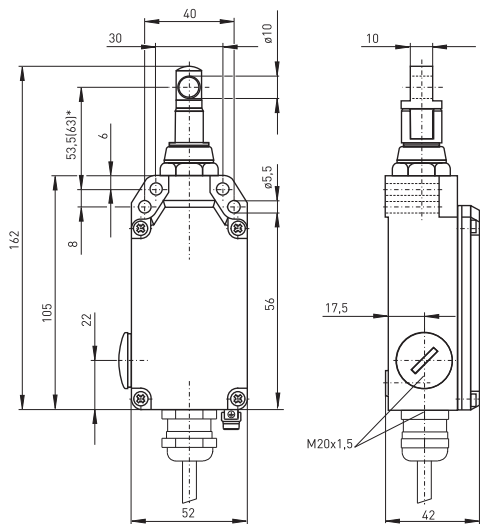
### Technical data

<b>Standards</b>	EN 60947-5-1; EN 60079-0, EN 60079-1, EN 60079-31; EN ISO 13849-1
<b>Enclosure</b>	aluminium die-cast, powder-coated
<b>Cover</b>	thermoplastic, ultramid
<b>Switch insert</b>	Ex 14
<b>Degree of protection</b>	IP 65 to IEC/EN 60529
<b>Contact material</b>	silver
<b>Switching system</b>	slow action, positive break NC contacts ⊖
<b>Switching elements</b>	1 NC/1 NO contact, type Zb
<b>Connection</b>	cable H05VV-F, length 3 m
<b>Cable section</b>	4 x 0.75mm <sup>2</sup> (incl. conductor ferrules)
<b>B<sub>10d</sub> (10 % load)</b>	2 million
<b>T<sub>M</sub></b>	max. 20 years
<b>U<sub>imp</sub></b>	4 kV
<b>U<sub>i</sub></b>	250 V
<b>I<sub>the</sub></b>	T6: 6 A; T5: 3 A
<b>I<sub>e</sub>/U<sub>e</sub></b>	6 A/250 VAC, 0.25 A/230 VDC
<b>Utilisation category</b>	AC-15, DC-13
<b>Max. fuse rating</b>	6 A gG/gN-fuse
<b>Ambient temperature</b>	T6: -20 °C ... +65 °C, T5: -20 °C ... +75 °C, +90 °C with max. 3 A
<b>Mechanical life</b>	> 1 million operations
<b>Features</b>	pull-wire function
<b>Impact energy</b>	max. 7 J
<b>Ex marking</b>	⊕ II 2G Ex d IIC T6/T5 Gb, II 2D Ex tb IIIC T80 °C/T95 °C Db IECEx Ex d IIC T6/T5 Gb, Ex tb IIIC T80 °C/T90 °C Db
<b>Approvals</b>	PTB 11 ATEX 1003 X, IECEx PTB 07.0034 X

Approvals



// EX ZS 71 Z



### Contact variants: switch travel/contacts

	Slow action	Material number
1 NC/1 NO contact	Ex ZS 71 Z 10/15	1184717

### Type code

Ex ZS 71 W Z 10/15-3D

Equipment Categ. 3D,  
dust Ex zone 22

1 NC/1 NO contact

Z Actuator towing eye

W Watertight collar

Series

ZS Pull-wire switch

Ex certified component

## Ex pull-wire switches

### // Accessories

#### // Accessories

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



#### // Material number

- |  |         |
|--|---------|
| Pull-wire with ball pull-wire switches 1 m | 1177973 |
| Pull-wire with ball pull-wire switches 2 m | 1177974 |
| Pull-wire with ball pull-wire switches 3 m | 1177975 |
| Pull-wire with ball pull-wire switches 4 m | 1177976 |



steute  
EX RC M20-1ST  
220 23 1.01  
851405

## Ex magnetic sensors

### Cylindrical design

// Series Ex RC 12

from page 304

// Series Ex RC 13,5

from page 306

// Series Ex RC M14

from page 308

// Series Ex RC 15

from page 310

// Series Ex RC M20

from page 312

// Series Ex RC M20 KST-60°C

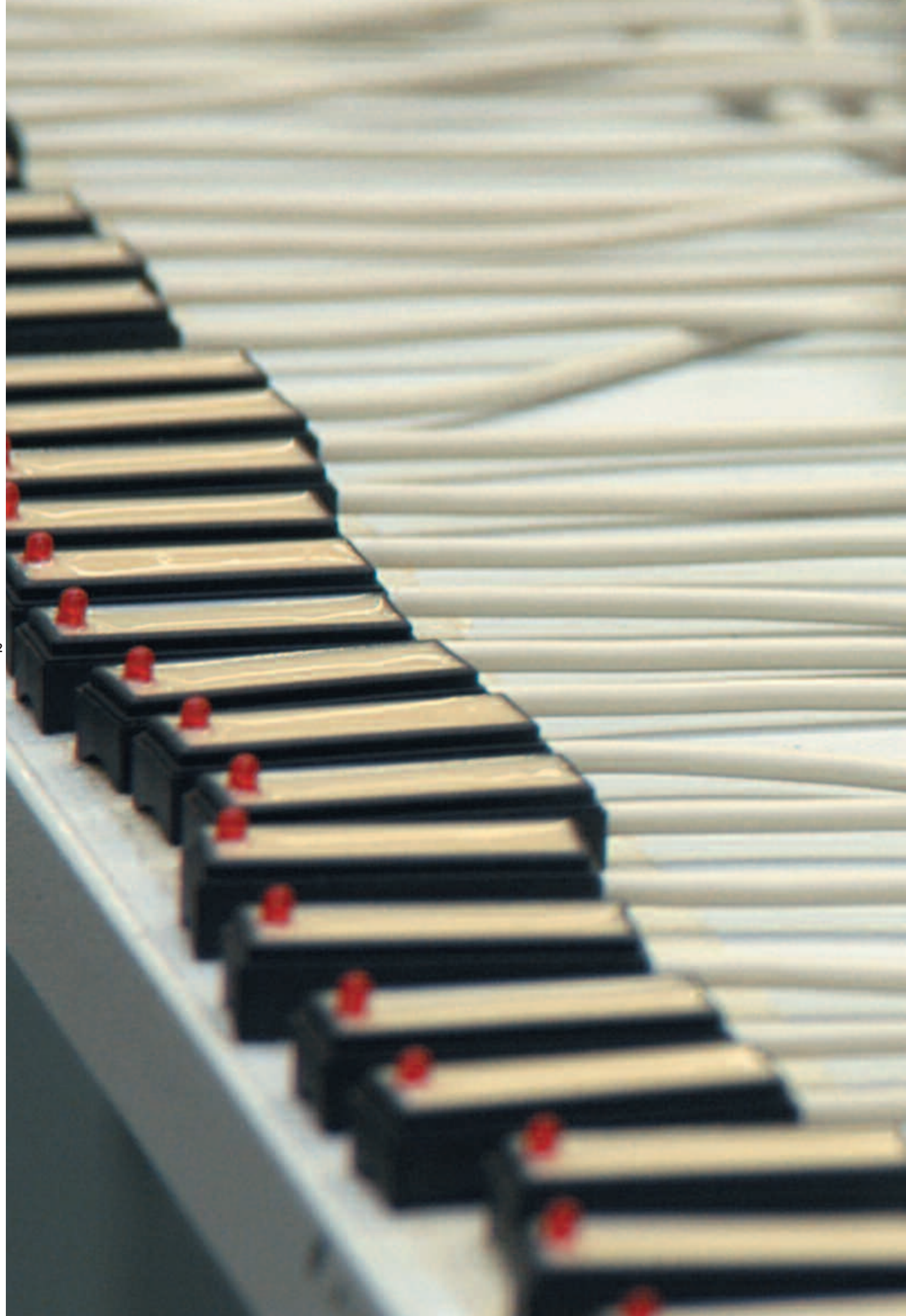
from page 315

### Rectangular design

// Series Ex RC 2580

from page 322





# Ex magnetic sensors

## Range of application

Ex magnetic sensors are preferable where extreme dirt occurs or strict hygienic requirements must be met. This is because they are easy to clean. The high degree of protection allows for outside applications.

Even in the presence of aggressive materials, e.g. in galvanisation technology, safe switching is ensured through encapsulation of the contacts. A further advantage is the possibility of concealed mounting behind non-magnetic materials. Workplace surfaces can be designed without dirt-catching edges, functional spacings or covers.

For applications where a precise approach of the magnet to the sensor is not possible and highly fluctuating actuating distances occur Ex magnetic sensors are also suitable.

## Design and operating principle

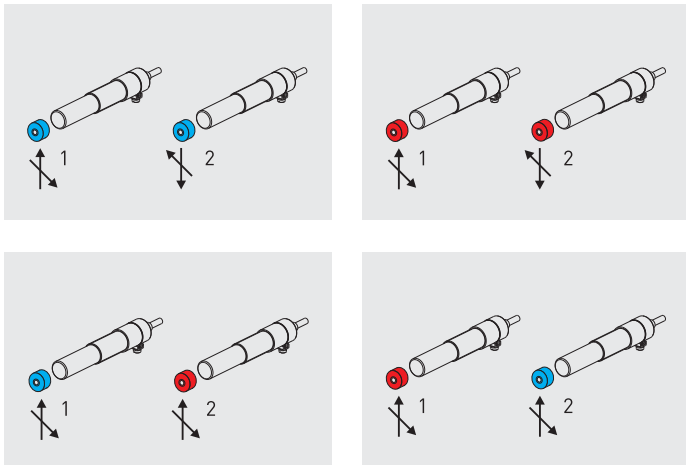
The Ex magnetic sensors are actuated by an M series permanent magnet, described at the end of this chapter, without any mechanical contact. The devices can be selected with NO, change-over or bistable contacts. All magnetic sensors described in this chapter are supplied with pre-wired cables.

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

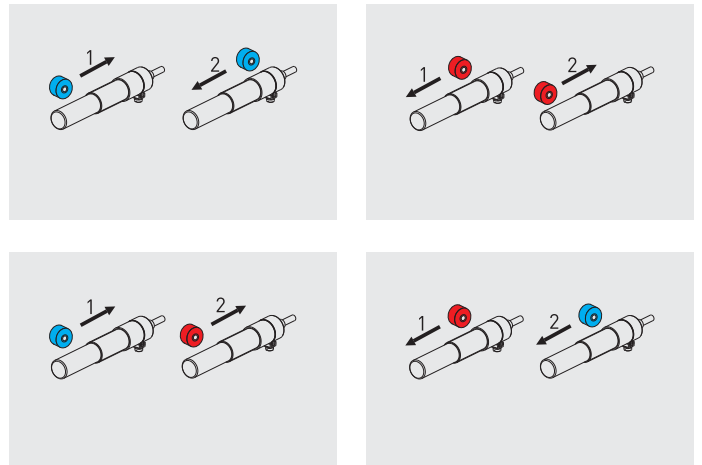
The magnetic sensors described in this chapter bear the CE mark according to the Low Voltage Directive 2014/30/EU and to ATEX 2014/34/EU. The Ex magnetic sensors per equipment category 3G/D bear the CE mark without the number of the notified body and have received a CE declaration of manufacturer conformity.

## Operating principle

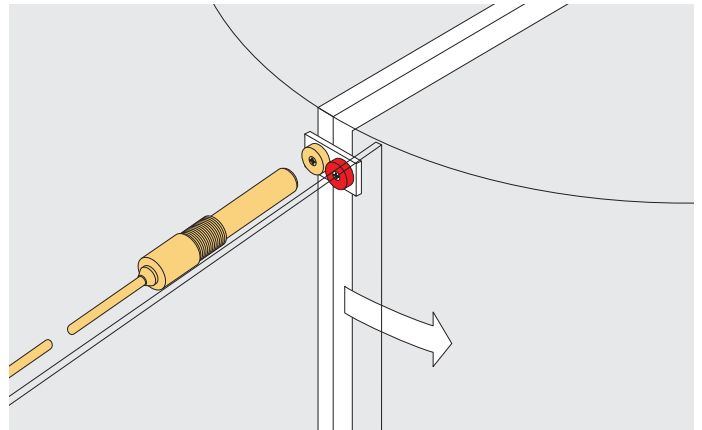
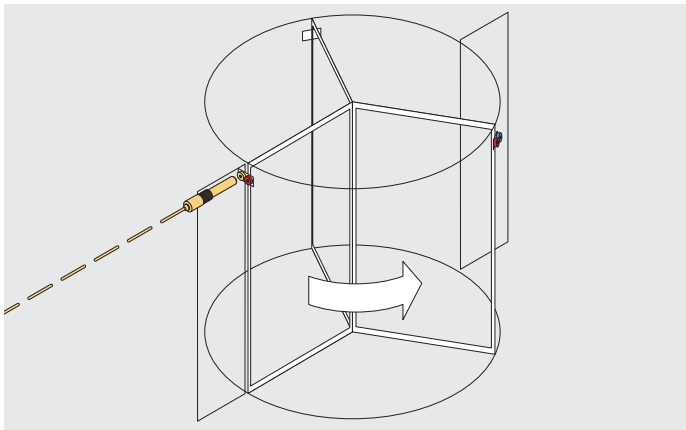
Magnetic sensors change-over contact, actuation from front



Magnetic sensors change-over contact, actuation from side



Magnetic sensors on a revolving door



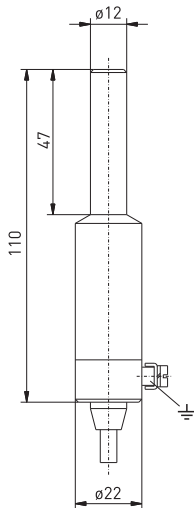
# Ex magnetic sensors, cylindrical design

## // Series Ex RC 12

### Features/Options

- Ex zone 1 and 21
- Brass enclosure, nickeled
- Long life
- 1 Reed contact
- Actuation from front
- Switching distance up to 25 mm depending on the actuating magnet
- With pre-wired cable
- Special version only for gas Ex zone 2 and dust Ex zone 22 available

## // EX RC 12



## Technical data

<b>Standards</b>	EN 60947-5-1; EN 60079-0; EN 60079-18
<b>Enclosure</b>	brass, nickeled
<b>Actuator</b>	series M permanent magnet
<b>Degree of protection</b>	IP 67 according to EN 60529
<b>Contact material</b>	Rhodium
<b>Switching system</b>	reed contacts
<b>Switching elements</b>	NC contact, NO contact or change-over contact
<b>Connection</b>	cable, H05VV-F or Laptherm 145, length 2, 5, or 10 m
<b>Cable cross-section</b>	1S, 1Ö: 3 x 0.75 mm <sup>2</sup> , 1W: 4 x 0.75 mm <sup>2</sup>
<b>Switching voltage</b>	250 VAC
<b>Switching current</b>	1,5 A
<b>Short-circuit current I<sub>k</sub></b>	1Ö, 1W: max. 2 A, 1S: max. 5 A
<b>Switching capacity</b>	1Ö, 1W: max. 50 W, 1S: max. 100 W
<b>Utilisation category</b>	AC-12, DC-12
<b>Bounce duration</b>	0.3 ... 0.6 ms
<b>Ambient temperature</b>	H05VV-F: -20 °C ... +70 °C, on request: -40 °C ... +70 °C
<b>Mechanical life</b>	> 1 million operations
<b>Electrical life</b>	10 <sup>6</sup> ... 10 <sup>7</sup> operations
<b>Vibration resistance</b>	1S: 50 ... 100 g, 1Ö, 1W: 10 ... 50 g
<b>Impact energy</b>	max. 4 J
<b>Ex marking</b>	⊕ II 2G Ex mb IIC T6 Gb, II 2D Ex mb IIIC T80°C Db IECEX Ex mb II T6, Ex mb IIIC T80 °C Db
<b>Approvals</b>	DMT 01 ATEX E 058 X, IECEX BVS 07.0007 X EAC on request: G1, Cs

### Contact variants: switch travel/contacts

	actuation from front	Material number
1 NC contact	<b>Ex RC 12 1Ö-2m</b> 	1189018
1 NO contact	<b>Ex RC 12 1S-2m</b> 	1189025
1 change-over	<b>Ex RC 12 1W-2m</b> 	1189028

### Type code

**Ex RC 12 1W-3G/D**

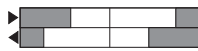

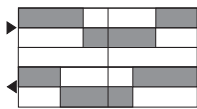
Equipment Categ. 3G/D,  
Ex Zone 2 and 22  
1 change-over (1Ö, 1S)  
Enclosure diameter 12 mm  
Magnetic sensor  
Ex certified component



Features/Options

- Version for low temperatures up to -40 °C with Lappterm 145 cable available

## Actuating distances

Actuating direction	from front	from front	from front
Switch travel			
Contacts	1 NC contact	1 NO contact	1 change-over contact
Actuating direction	N or S	N or S	N or S
Actuating magnet	Switching distance [mm] on off	Switching distance [mm] on off	Switching distance [mm] on off
M 50 U	4 7	- -	4 7
M 100	10 13	3 11	10 13
M 100 U	10 13	3 11	10 13
M 200	13 16	7 17	13 16
M 200 U	13 16	7 17	13 16
M 300	17 20	10 24	17 20
M 300 U	17 20	10 24	17 20
M 400 U	33 37	28 43	33 37
M 700	30 35	25 40	30 35

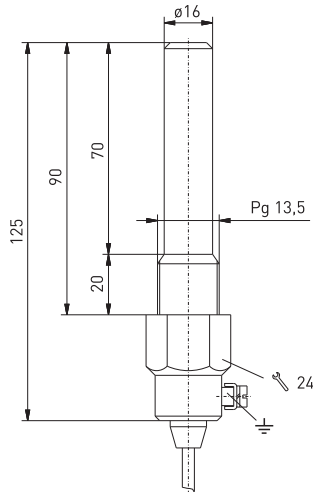
# Ex magnetic sensors, cylindrical design

## // Series Ex RC 13,5

### Features/Options

- Ex zone 1 and 21
- Brass enclosure, nickered
- Long life
- 1 Reed contact
- Actuation from front
- Switching distance up to 30 mm depending on the actuating magnet
- With pre-wired cable
- Special version only for gas Ex zone 2 and dust Ex zone 22 available

## // EX RC 13,5



## Technical data

<b>Standards</b>	EN 60947-5-1; EN 60079-0; EN 60079-18
<b>Enclosure</b>	brass, nickered
<b>Actuator</b>	series M permanent magnet
<b>Degree of protection</b>	IP 67 according to EN 60529
<b>Contact material</b>	Rhodium
<b>Switching system</b>	reed contacts
<b>Switching elements</b>	NC contact, NO contact or change-over contact
<b>Connection</b>	cable, H05VV-F or Laptherm 145, length 2, 5, or 10 m
<b>Cable cross-section</b>	1S, 1Ö: 3 x 0.75 mm <sup>2</sup> , 1W: 4 x 0.75 mm <sup>2</sup>
<b>Switching voltage</b>	250 VAC
<b>Switching current</b>	1.5 A
<b>Short-circuit current I<sub>k</sub></b>	1Ö, 1W: max. 2 A, 1S: max. 5 A
<b>Switching capacity</b>	1Ö, 1W: max. 50 W, 1S: max. 100 W
<b>Utilisation category</b>	AC-12, DC-12
<b>Bounce duration</b>	0.3 ... 0.6 ms
<b>Ambient temperature</b>	H05VV-F: -20 °C ... +70 °C, on request: -40 °C ... +70 °C
<b>Mechanical life</b>	> 1 million operations
<b>Electrical life</b>	10 <sup>4</sup> ... 10 <sup>7</sup> operations
<b>Vibration resistance</b>	1S: 50 ... 100 g, 1Ö, 1W: 10 ... 50 g
<b>Impact energy</b>	max. 7 J
<b>Ex marking</b>	⊕ II 2G Ex mb IIC T6 Gb, II 2D Ex mb IIIC T80°C Db IECEx Ex mb II T6, Ex mb IIIC T80 °C Db
<b>Approvals</b>	DMT 01 ATEX E 058 X, IECEx BVS 07.0007 X EAC on request: G1 Gs

### Contact variants: switch travel/contacts

	actuation from front	Material number
1 NC contact	Ex RC 13,5 1Ö 	1188986
1 NO contact	Ex RC 13,5 1S 	1031854
1 change-over	Ex RC 13,5 1W 	1189010

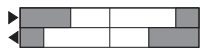

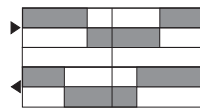
### Type code

<b>Ex RC 13,5 1W-3G/D</b>
Equipment Categ. 3G/D, Ex Zone 2 and 22
1 change-over (1S, 1Ö)
Enclosure diameter 16 mm, mounting thread Pg 13.5
Magnetic sensor
Ex certified component

Features/Options

- Version for low temperatures up to -40 °C with Lappterm 145 cable available

## Actuating distances

Actuating direction	from front	from front	from front
Switch travel			
Contacts	1 NC contact	1 NO contact	1 change-over contact
Actuating direction	N or S	N or S	N or S
Actuating magnet	Switching distance [mm] on off	Switching distance [mm] on off	Switching distance [mm] on off
M 50 U	4 7	- -	4 7
M 100	10 13	3 11	10 13
M 100 U	10 13	3 11	10 13
M 200	13 16	7 17	13 16
M 200 U	13 16	7 17	13 16
M 300	17 20	10 24	17 20
M 300 U	17 20	10 24	17 20
M 400 U	33 37	28 43	33 37
M 700	30 35	25 40	30 35

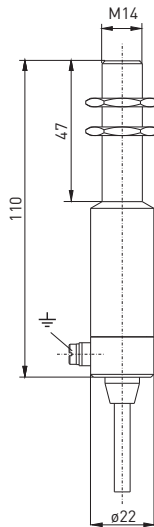
# Ex magnetic sensors, cylindrical design

## // Series Ex RC M14

### Features/Options

- Ex zone 1 and 21
- Brass enclosure, nickeled
- Including 2 mounting nuts
- Long life
- 1 Reed contact
- Actuation from front
- Switching distance up to 30 mm depending on the actuating magnet
- With pre-wired cable
- Special version only for gas Ex zone 2 and dust Ex zone 22 available

## // EX RC M14



### Technical data

<b>Standards</b>	EN 60947-5-1; EN 60079-0; EN 60079-18
<b>Enclosure</b>	brass, nickeled
<b>Actuator</b>	series M permanent magnet
<b>Degree of protection</b>	IP 67 according to EN 60529
<b>Contact material</b>	Rhodium
<b>Switching system</b>	reed contacts
<b>Switching elements</b>	NO contact or change-over contact
<b>Connection</b>	cable, H05VV-F or Laptherm 145, length 2, 5, or 10 m
<b>Cable cross-section</b>	1S: 3 x 0.75 mm <sup>2</sup> , 1W: 4 x 0.75 mm <sup>2</sup>
<b>Switching voltage</b>	250 VAC
<b>Switching current</b>	1.5 A
<b>Short-circuit current I<sub>k</sub></b>	1W: max. 2 A, 1S: max. 5 A
<b>Switching capacity</b>	1W: max. 50 W, 1S: max. 100 W
<b>Utilisation category</b>	AC-12, DC-12
<b>Bounce duration</b>	0.3 ... 0.6 ms
<b>Ambient temperature</b>	H05VV-F: -20 °C ... +70 °C, on request: -40 °C ... +70 °C
<b>Mechanical life</b>	> 1 million operations
<b>Electrical life</b>	10 <sup>6</sup> ... 10 <sup>7</sup> operations
<b>Vibration resistance</b>	1S: 50 ... 100 g, 1Ö, 1W: 10 ... 50 g
<b>Impact energy</b>	max. 4 J
<b>Ex marking</b>	⊕ II 2G Ex mb IIC T6 Gb, II 2D Ex mb IIIC T80°C Db IECEx Ex mb II T6, Ex mb IIIC T80 °C Db
<b>Approvals</b>	DMT 01 ATEX E 058 X, IECEx BVS 07.0007 X EAC on request: GUL, CEs

### Contact variants: switch travel/contacts

	actuation from front	Material number
1 NO contact	Ex RC M14 1S 	1189220
1 change-over	Ex RC M14 1W 	1189237

### Type code


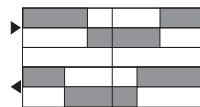
Ex RC M14 1W-3G/D

Equipment Categ. 3G/D,  
Ex Zone 2 and 22  
1 change-over (1S, 1Ö)  
Enclosure diameter M14 x 1  
Magnetic sensor  
Ex certified component

Features/Options

- Version for low temperatures up to -40 °C with Lappterm 145 cable available

## Actuating distances

Actuating direction	from front	from front	
Switch travel			
Contacts	1 NO contact	1 change-over contact	
Actuating direction	N or S	N or S	
Actuating magnet	Switching distance [mm] on    off	Switching distance [mm] on    off	
M 50 U	-    -	4    7	
M 100	3    11	10    13	
M 100 U	3    11	10    13	
M 200	7    17	13    16	
M 200 U	7    17	13    16	
M 300	10    24	17    20	
M 300 U	10    24	17    20	
M 400 U	28    43	33    37	
M 700	25    40	30    35	

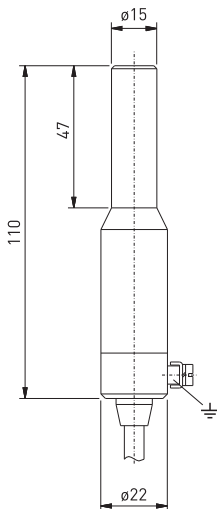
# Ex magnetic sensors, cylindrical design

## // Series Ex RC 15

### Features/Options

- Ex zone 1 and 21
- Brass enclosure, nickerled
- Long life
- 1 Reed contact
- Actuation from front
- Switching distance up to 30 mm depending on the actuating magnet
- With pre-wired cable
- Special version only for gas Ex zone 2 and dust Ex zone 22 available

## // EX RC 15



## Technical data

Standards	EN 60947-5-1; EN 60079-0; EN 60079-18
Enclosure	brass, nickerled
Actuator	series M permanent magnet
Degree of protection	IP 67 according to EN 60529
Contact material	Rhodium
Switching system	reed contacts
Switching elements	NC contact, NO contact or change-over contact
Connection	cable, H05VV-F or Laptherm 145, length 2, 5, or 10 m
Cable cross-section	1S, 1Ö: 3 x 0.75 mm <sup>2</sup> , 1W: 4 x 0.75 mm <sup>2</sup>
Switching voltage	250 VAC
Switching current	1.5 A
Short-circuit current I <sub>k</sub>	1Ö, 1W: max. 2 A, 1S: max. 5 A
Switching capacity	1Ö, 1W: max. 50 W, 1S: max. 100 W
Utilisation category	AC-12, DC-12
Bounce duration	0.3 ... 0.6 ms
Ambient temperature	H05VV-F: -20 °C ... +70 °C, on request: -40 °C ... +70 °C
Mechanical life	> 1 million operations
Electrical life	10 <sup>6</sup> ... 10 <sup>7</sup> operations
Vibration resistance	1S: 50 ... 100 g, 1W: 10 ... 50 g
Impact energy	max. 7 J
Ex marking	⊕ II 2G Ex mb IIC T6 Gb, II 2D Ex mb IIIC T80°C Db IECEx Ex mb II T6, Ex mb IIIC T80 °C Db
Approvals	DMT 01 ATEX E 058 X, IECEx BVS 07.0007 X EAC on request: G1, Cs

### Contact variants: switch travel/contacts

	actuation from front	Material number
1 NC contact	Ex RC 15 1Ö 	1189011
1 NO contact	Ex RC 15 1S 	1167686
1 change-over	Ex RC 15 1W 	1054076

### Type code

Ex RC 15 1W-3G/D

Equipment Categ. 3G/D,  
Ex Zone 2 and 22  
1 change-over (1S, 1Ö)  
Enclosure diameter 15 mm  
Magnetic sensor  
Ex certified component

Features/Options

- Version for low temperatures up to -40 °C with Lappterm 145 cable available

## Actuating distances

Actuating direction	from front	from front	from front
Switch travel			
Contacts	1 NC contact	1 NO contact	1 change-over contact
Actuating direction	N or S	N or S	N or S
Actuating magnet	Switching distance [mm] on    off	Switching distance [mm] on    off	Switching distance [mm] on    off
M 50 U	4    7	-    -	4    7
M 100	10   13	3    11	10   13
M 100 U	10   13	3    11	10   13
M 200	13   16	7    17	13   16
M 200 U	13   16	7    17	13   16
M 300	17   20	10   24	17   20
M 300 U	17   20	10   24	17   20
M 400 U	33   37	28   43	33   37
M 700	30   35	25   40	30   35

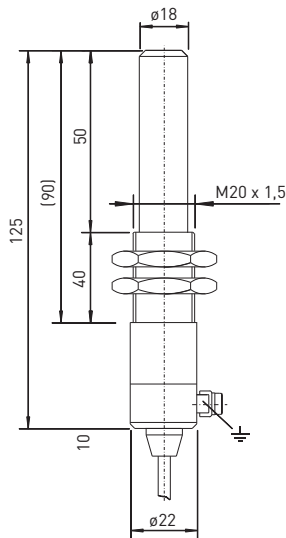
# Ex magnetic sensors, cylindrical design

## // Series Ex RC M20

### Features/Options

- Ex zone 1 and 21
- Brass enclosure, nicked, available in stainless steel
- Including 2 mounting nuts
- 1 Reed contact
- Actuation from front, from side only with bistable contact
- Switching distance up to 30 mm depending on the actuating magnet
- With pre-wired cable
- Special version only for gas Ex zone 2 and dust Ex zone 22 available

## // EX RC M20



### Technical data

<b>Standards</b>	EN 60947-5-1; EN 60079-0; EN 60079-18
<b>Enclosure</b>	brass, nicked
<b>Actuator</b>	series M permanent magnet
<b>Degree of protection</b>	IP 67 according to EN 60529
<b>Contact material</b>	Rhodium
<b>Switching system</b>	reed contacts
<b>Switching elements</b>	NO contact or change-over, bistable contact or bistable change-over contact
<b>Connection</b>	cable, H05VV-F or Laptherm 145, length 2, 5, or 10 m
<b>Cable cross-section</b>	1S, 1Sr: 3 x 0.75 mm <sup>2</sup> , 1W, 1Wr: 4 x 0.75 mm <sup>2</sup>
<b>Switching voltage</b>	250 VAC
<b>Switching current</b>	1.5 A
<b>Short-circuit current I<sub>k</sub></b>	1S, 1Sr: max. 5 A, 1W, 1Wr: max. 2 A
<b>Switching capacity</b>	1S, 1Sr: max. 100 W, 1W, 1Wr: max. 50 W
<b>Utilisation category</b>	AC-12, DC-12
<b>Bounce duration</b>	0.3 ... 0.6 ms
<b>Ambient temperature</b>	H05VV-F: -20 °C ... +70 °C, on request: -40 °C ... +70 °C
<b>Mechanical life</b>	> 1 million operations
<b>Electrical life</b>	10 <sup>6</sup> ... 10 <sup>7</sup> operations
<b>Vibration resistance</b>	1S: 50 ... 100 g, 1Ø, 1W: 10 ... 50 g
<b>Impact energy</b>	max. 7 J
<b>Ex marking</b>	⊕ II 2G Ex mb IIC T6 Gb, II 2D Ex mb IIIC T80°C Db IECEx Ex mb II T6, Ex mb IIIC T80 °C Db
<b>Approvals</b>	DMT 01 ATEX E 058 X, IECEx BVS 07.0007 X EAC on request:

312

### Contact variants: switch travel/contacts

	actuation from front	Material number
1 NO contact	Ex RC M20 1S 	1180793
1 bistable contact	Ex RC M20 1Sr 	1181657
1 change-over	Ex RC M20 1W 	1179176
1 change-over bistable	Ex RC M20 1Wr 	1179419

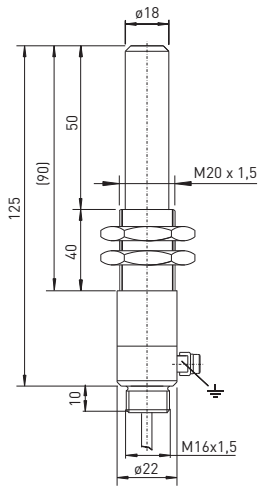
### Type code

<b>Ex RC M20 1W-B-3G/D</b>	Equipment Categ. 3G/D, Ex Zone 2 and 22 B Tapped bushing M16 x 1.5 1 change-over (1S, 1Sr, 1Wr) Enclosure diameter 18 mm, mounting thread M20 x 1.5 Magnetic sensor Ex certified component
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✓ in stock



## // Tapped bushing B



### Features/Options

- Variant with tapped bushing M16 x 1.5
- Version for low temperatures up to -40 °C with Lappterm 145 cable available

### Actuator

Ex RC M20-B

### Material number

on request

# Ex magnetic sensors, cylindrical design

## // Series Ex RC M20

### Actuating distances

Actuating direction	from front	from front	from front
Switch travel			
Contacts Actuating direction	1 change-over contact N or S	1 bistable contact N/S	1 change-over contact bistable N/S
Actuating magnet	Switching distance [mm] on off	Switching distance [mm] on off	Switching distance [mm] on off
M 50 U	4 7	12 6	- -
M 100	10 13	22 12	20 40
M 100 U	10 13	22 12	20 40
M 200	13 16	30 30	25 50
M 200 U	13 16	30 30	25 50
M 300	17 20	37 23	30 60
M 300 U	17 20	37 23	30 60
M 400 U	33 37	63 43	50 90
M 700	30 35	60 40	50 75
Actuating direction	from side	from side	
Switch travel			
Contacts Actuating direction	1 bistable contact N or S	1 change-over contact bistable N or S	
Actuating magnet	Switching distance [mm] on off	Switching distance [mm] on off	
M 50 U		- -	
M 100		15 20	
M 100 U		15 20	
M 200		20 25	
M 200 U		20 25	
M 300		25 30	
M 300 U		25 30	
M 400 U		30 35	
M 700		40 50	

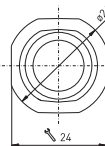
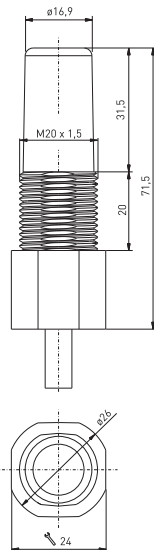
# Ex magnetic sensors, cylindrical design

## // Series Ex RC M20 KST-60°C

### Features/Options

- Ex zone 1 and 21
- Cold-resistant down to -60 °C
- Thermoplastic enclosure
- 1 Reed contact

## // EX RC M20 KST-60°C



### Technical data

<b>Standards</b>	EN 60947-5-1; EN 60079-0; EN 60079-18
<b>Enclosure</b>	glass-fibre reinforced, shock-proof thermoset material, self-extinguishing UL 94-V0
<b>Actuator</b>	series M permanent magnet
<b>Degree of protection</b>	IP 67 (EN 60079-0 + IEC/EN 60529), IP 66, 68, 69 (IEC/EN 60529), IP 69 K (ISO 20653)
<b>Contact material</b>	Rhodium
<b>Switching system</b>	reed contacts
<b>Switching elements</b>	change-over contact
<b>Connection</b>	cable, Silicone SIHF, length 2, 5, or 10 m
<b>Cable cross-section</b>	3 x 0.75 mm <sup>2</sup>
<b>Switching voltage</b>	250 VAC
<b>Switching current</b>	1 A
<b>Short-circuit current I<sub>k</sub></b>	max. 2 A
<b>Switching capacity</b>	max. 50 W
<b>Utilisation category</b>	AC-12, DC-12
<b>Bounce duration</b>	0.3 ... 0.6 ms
<b>Ambient temperature</b>	-60 °C ... +70 °C
<b>Mechanical life</b>	> 1 million operations
<b>Electrical life</b>	10 <sup>6</sup> ... 10 <sup>7</sup> operations
<b>Vibration resistance</b>	10 ... 50 g
<b>Impact energy</b>	max. 7 J
<b>Ex marking</b>	⊕ II 2G Ex mb IIC T6 Gb, II 2D Ex mb IIIC T80°C Db IECEX Ex mb II T6, Ex mb IIIC T80 °C Db
<b>Approvals</b>	DMT 01 ATEX E 058 X, IECEx BVS 07.0007 X EAC on request: G L K S

315

### Contact variants: switch travel/contacts

	actuation from front	Material number
1 change-over	Ex RC M20 1W 	1445629

### Type code

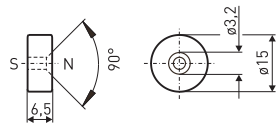
Ex RC M20 1W KST-60°C

Temperature-resistant down to -60 °C to  
Thermoplastic enclosure  
1 change-over  
Enclosure diameter 18 mm, mounting thread M20 x 1.5  
Magnetic sensor  
Ex certified component

# Ex magnetic sensors, cylindrical design

## // Actuating magnets

### // Actuator M 50 N U



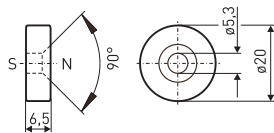
#### Features/Options

- Not encapsulated
- Barium ferrite
- Ambient temperature: -40 °C ... +80 °C

Actuator  
M 50 N U

Material number  
✓ 1033965

### // Actuator M 100 N U



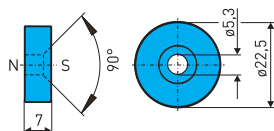
#### Features/Options

- Not encapsulated
- Barium ferrite
- Ambient temperature: -40 °C ... +80 °C

Actuator  
M 100 N U

Material number  
✓ 1033966

### // Actuator M 100 S



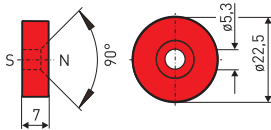
#### Features/Options

- Kunststoffgehäuse Polyamid 6.6, blau S
- Bariumferrit
- Umgebungstemperatur: -40 °C ... +80 °C

Actuator  
M 100 N

Material number  
✓ 1042609

## // Actuator M 100 N



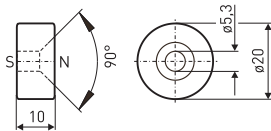
### Features/Options

- Kunststoffgehäuse Polyamid 6.6, rot N
- Bariumferrit
- Umgebungstemperatur: -40 °C ... +80 °C

Actuator  
M 100 S

Material number  
✓ 1042615

## // Actuator M 200 N U



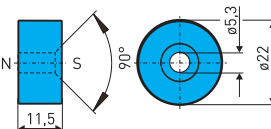
### Features/Options

- Not encapsulated
- Barium ferrite
- Ambient temperature: -40 °C ... +80 °C

Actuator  
M 200 N U

Material number  
✓ 1033967

## // Actuator M 200 S



### Features/Options

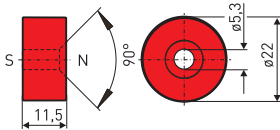
- Kunststoffgehäuse Polyamid 6.6, blau S oder rot N
- Bariumferrit
- Umgebungstemperatur: -40 °C ... +80 °C

Actuator  
M 200 S

Material number  
✓ 1042616

Ex magnetic sensors, cylindrical design  
 // Actuating magnets

// Actuator M 200 N



Features/Options

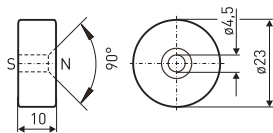
- Thermoplastic enclosure polyamide 6.6, red N
- Barium ferrite
- Ambient temperature: -40 °C ... +80 °C

Actuator  
 M 200 N

Material number  
 ✓ 1042610

318

// Actuator M 300 N U



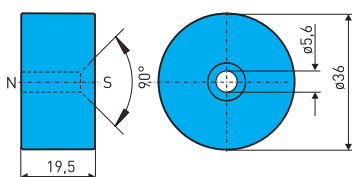
Features/Options

- Not encapsulated
- M 300 U: North pole with colour marking (red dot)
- Barium ferrite
- Ambient temperature: -40 °C ... +80 °C

Actuator  
 M 300 N U

Material number  
 ✓ 1033968

// Actuator M 300 S



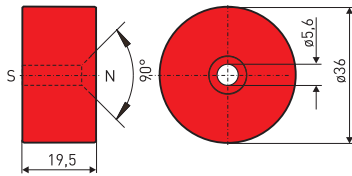
Features/Options

- Thermoplastic enclosure polyamide 6.6, blue S
- Barium ferrite
- Ambient temperature: -40 °C ... +80 °C

Actuator  
 M 300 S

Material number  
 ✓ 1042618

## // Actuator M 300 N



### Features/Options

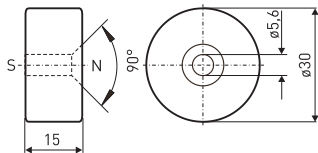
- Thermoplastic enclosure polyamide 6.6, red N
- Barium ferrite
- Ambient temperature: -40 °C ... +80 °C

Actuator  
M 300 N

Material number  
✓ 1042617

319

## // Actuator M 400 N U



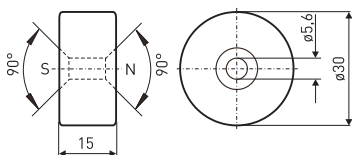
### Features/Options

- Not encapsulated
- Barium ferrite
- Ambient temperature: -40 °C ... +80 °C

Actuator  
M 400 N U

Material number  
✓ 1033970

## // Actuator M 400 U B



### Features/Options

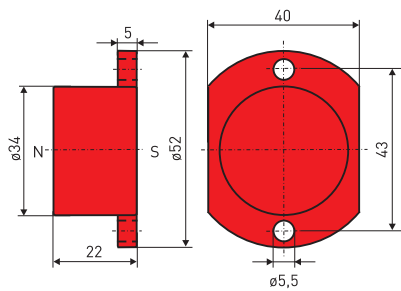
- Not encapsulated
- Barium ferrite
- Ambient temperature: -40 °C ... +80 °C

Actuator  
M 400 U B

Material number  
✓ 1033982

Ex magnetic sensors, cylindrical design  
 // Actuating magnets

// Actuator M 700 N



Features/Options

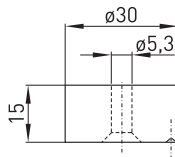
- Thermoplastic enclosure polyamide 6.6, red N
- Barium ferrite
- Ambient temperature: -40 °C ... +80 °C

Actuator  
 M 700 N

Material number  
 ✓ 1042612

320

// Actuator Neodymium magnet M 30 Niro



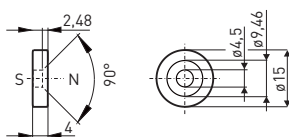
Features/Options

- encapsulated
- Neodym magnet
- Stainless steel enclosure 1.4571
- Ambient temperature: -60 °C ... +80 °C

Actuator  
 M 30 Niro

Material number  
 ✓ 1189024

// Actuator Neodymium disc magnet 15 x 4 mm



Features/Options

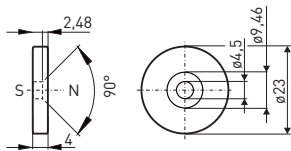
- Not encapsulated
- Material: NdFeB, nickel-coated (Ni-Cu-Ni)
- Magnetisation N35
- Ambient temperature: -60 °C ... +80 °C

Actuator  
 Disc magnet 15 x 4 mm

Material number  
 ✓ 1452248



## // Actuator Neodymium disc magnet 23 x 4 mm



### Features/Options

- Not encapsulated
- Material: NdFeB, nickel-coated (Ni-Cu-Ni)
- Magnetisation N35
- Ambient temperature: -60 °C ... +80 °C

### Actuator

Disc magnet 23 x 4 mm

Material number

✓ 1452242

# Ex magnetic sensors, rectangular design

## // Series Ex RC 2580

### Features/Options

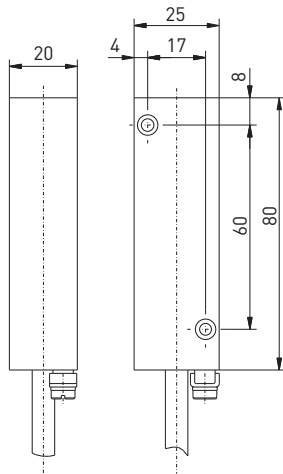
- Ex zone 1 and 21
- Stainless steel enclosure
- 1 Reed contact
- application down to -40 °C possible
- Actuation from side
- Switching distance up to 30 mm
- With pre-wired cable
- Special version only for gas Ex zone 2 and dust Ex zone 22 available

### // EX RC 2580



### Technical data

Standards	EN 60947-5-1; EN 60079-0; EN 60079-18
Enclosure	stainless steel 1.4571
Actuator	Ex M 2580, stainless steel 1.4571
Degree of protection	IP 67 according to EN 60529
Contact material	Rhodium
Switching system	reed contacts
Switching elements	change-over contact
Connection	cable H05VV-F, length 2, 5, or 10 m
Cable cross-section	3 x 0.75 mm <sup>2</sup>
Switching voltage	250 VAC
Switching current	1 A
Short-circuit current I <sub>k</sub>	max. 2 A
Switching capacity	max. 50 W
Utilisation category	AC-12, DC-12
Bounce duration	0.3 ... 0.6 ms
Ambient temperature	-40 °C ... +70 °C
Mechanical life	> 1 million operations
Electrical life	10 <sup>6</sup> ... 10 <sup>7</sup> operations
Vibration resistance	10 ... 50 g
Impact energy	max. 7 J
Ex marking	Ⓢ II 2G Ex mb IIC T6 Gb, II 2D Ex mb IIIC T80°C Db IECEx Ex mb II T6, Ex mb IIIC T80 °C Db
Approvals	DMT 01 ATEX E 058 X, IECEx BVS 07.0007 X on request:



### Contact variants: switch travel/contacts

	actuation from side	Material number
1 change-over	Ex RC 2580 1W 	1190125
1 change-over bistable	Ex RC 2580 1Wr-5m 	1298408

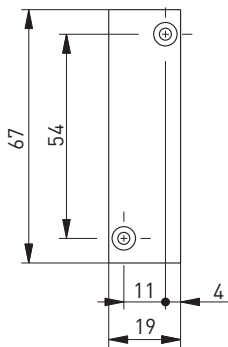
### Type code

Ex	RC 2580	1W-B-3G/D
		Equipment Categ. 3G/D, Ex Zone 2 and 22
		B Tapped bushing M16 x 1.5
		1 change-over contact
		Series
		Magnetic sensor
		Ex certified component

Features/Options

- Ex RC 2580-B, variant with tapped bushing M16 x 1.5

// Actuating magnet Ex M 2580



Note

Actuator Ex M 2580 must be ordered separately, not provided in delivery of sensor

Actuator Material Number

Ex M 2580

1189176



Festo  
**steuerte**  
15 M18 b  
032805



## Ex inductive sensors

// Series Ex IS M8

from page 328

// Series Ex IS M12

from page 329

// Series Ex IS M18

from page 330

// Series Ex IS M30

from page 331



# Ex inductive sensors

## Range of application

Ex inductive sensors are suitable for the positioning and controlling of machines and systems in many areas with explosive endangered industrial applications.

They are generally used as an alternative to mechanically operated limit switches in cases where unfavourable operating conditions, such as high or low actuating speeds, large switching frequencies, extreme dirt or dust production, high humidity, chemical atmospheres, highly fluctuating actuating distances, etc., occur. Even in the presence of aggressive materials, safe switching is ensured through encapsulation of the contacts.

## Design and mode of operation

The Ex inductive sensors are actuated non-contacting by metal.

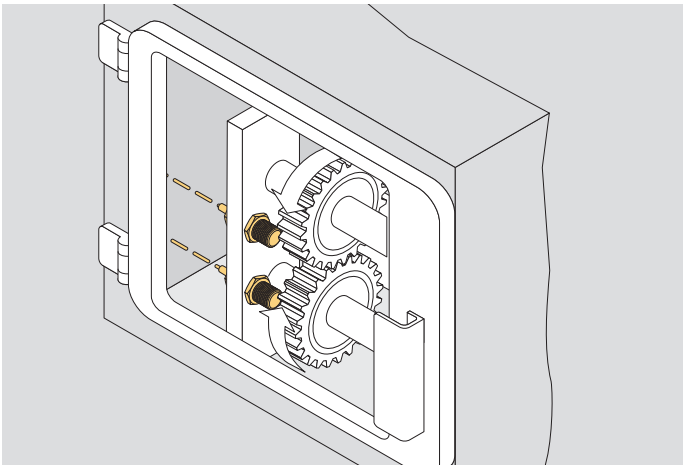
The degree of protection IP 68 even permits safe application under rough ambient conditions.

The series Ex IS is available in several sizes: M8, M12, M18 and M30.

All Ex inductive sensors shown in this chapter bear the CE mark according to the EMC Directive 2014/30/EU and according to ATEX 2014/34/EU. The Ex safety switches for hinged guards per equipment category 3D bear the CE mark without the number of the notified body and have received a CE declaration of manufacturer conformity.

## Anwendung

### Ex inductive sensors for standstill monitoring



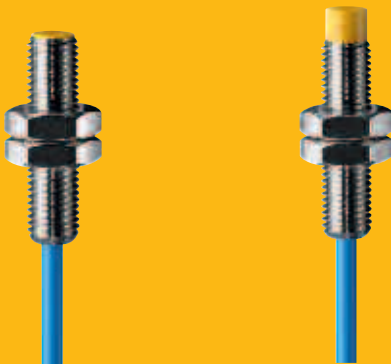
# Ex inductive sensors

## // Series Ex IS M8

### Features/Options

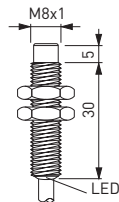
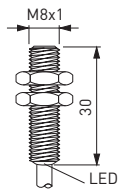
- Ex zone 0 and 20
- Stainless steel enclosure
- Flush or non-flush mounting
- Long life, no mechanical wear
- Suitable for the food processing industry
- Insensitive to soiling
- With LED
- Enclosure diameter M8 x 1
- With pre-wired cable

## // EX IS M8



## Technical data

<b>Standards</b>	EN 60079-0, EN 60079-11, EN 60079-26
<b>Enclosure</b>	Stainless steel A1, 1.4305
<b>Front cap</b>	POM
<b>Switching system</b>	Namur to EN 60947-5-6
<b>Connection</b>	cable PUR, 2 or 5 m length
<b>Cable cross-section</b>	2 x 0.25 mm <sup>2</sup>
<b>Degree of protection</b>	IP 68 to IEC/EN 60529
<b>Rated switching distance <math>s_n</math></b>	Ex IS M8b: 1 mm; Ex IS M8nb: 2 mm
<b>Correction factors</b>	Steel (Fe360) = 1; Stainless steel approx. 0.7; Brass approx. 0.5; Aluminium approx. 0.4; Copper approx. 0.4
<b>Rated operating voltage range <math>U_B</math></b>	8.2 VDC
<b>Current absorption</b>	in presence of metal $\leq 1$ mA; in absence of metal $\geq 3$ mA
<b>Switching frequency</b>	2000 Hz
<b>Repeatability</b>	$\leq 3$ %
<b>Protection circuit</b>	Inductive interference protection, protection against polarity reversal, short-circuit and overload proof
<b>Ambient temperature</b>	-25 °C ... +60 °C
<b>Ex marking</b>	⊕ II 1G Ex ia IIB/IIC T6 Ga, II 1D Ex ia IIIC T85°C Da IP66/IP67/IP68 IECEX Ex ia IIB/IIC T6 Ga Ex ia IIIC T85°C Da IP66/IP67/IP68
<b>Approvals</b>	IMQ 14 ATEX 001, IECEx IMQ 14.0001X <b>ERC</b>



### Contact variants: switch travel/contacts

	2-wire	Material number
flush	Ex IS M8B ... 1GD 2m	1202202 ✓
non-flush	Ex IS M8NB ... 1GD 2m	1202204 ✓

### Type code

**Ex IS M8 NB**

NB Non-flush, (B flush)  
Enclosure diameter M8  
Series  
Ex certified component



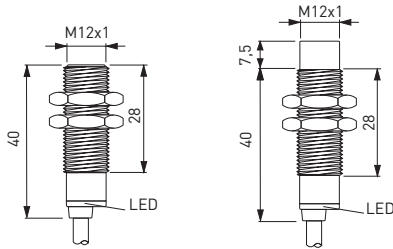
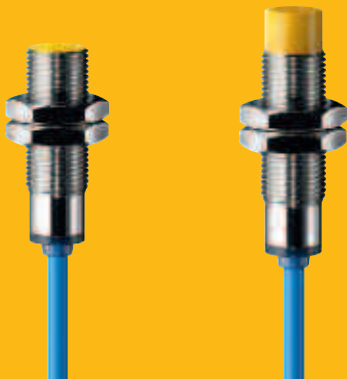
# Ex inductive sensors

## // Series Ex IS M12

### Features/Options

- Ex zone 0 and 20
- Stainless steel enclosure
- Flush or non-flush mounting
- Long life, no mechanical wear
- Suitable for the food processing industry
- Insensitive to soiling
- With LED
- Enclosure diameter M12 x 1
- With pre-wired cable

## // EX IS M12



## Technical data

Standards	EN 60079-0, EN 60079-11, EN 60079-26
Enclosure	Stainless steel A1, 1.4305
Front cap	POM
Switching system	Namur to EN 60947-5-6
Connection	cable PUR, 2 or 5 m length
Cable cross-section	2 x 0.25 mm <sup>2</sup>
Degree of protection	IP 68 to IEC/EN 60529
Rated switching distance $s_n$	Ex IS M12 b: 2 mm, Ex IS M12 nb: 4 mm
Correction factors	Steel (Fe360) = 1; Stainless steel approx. 0.7; Brass approx. 0.5; Aluminium approx. 0.4; Copper approx. 0.4
Rated operating voltage range $U_B$	8.2 VDC
Current absorption	in presence of metal $\leq 1$ mA; in absence of metal $\geq 3$ mA
Switching frequency	2000 Hz
Repeatability	$\leq 3$ %
Protection circuit	Inductive interference protection, protection against polarity reversal, short-circuit and overload proof
Ambient temperature	-25 °C ... +60 °C
Ex marking	⊕ II 1G Ex ia IIB/IIC T6 Ga, II 1D Ex ia IIIC T85°C Da IP66/IP67/IP68 IECEX Ex ia IIB/IIC T6 Ga Ex ia IIIC T85°C Da IP66/IP67/IP68
Approvals	IMQ 14 ATEX 001, IECEx IMQ 14.0001X <b>ERL</b>

329

### Contact variants: switch travel/contacts

	2-wire	Material number
flush	Ex IS M12B ... 1GD 2m	1202206 ✓
non-flush	Ex IS M12NB ... 1GD 2m	1202208 ✓

### Type code

**Ex IS M12 NB**

NB Non-flush, (B flush)  
Enclosure diameter M12  
Series  
Ex certified component

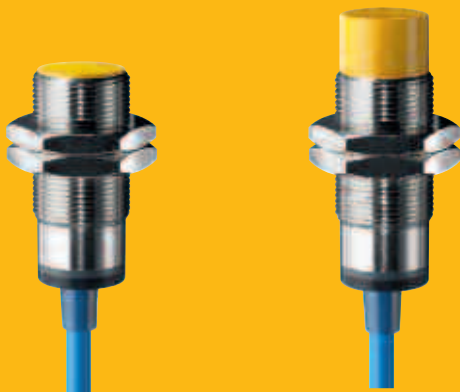
# Ex inductive sensors

## // Series Ex IS M18

### Features/Options

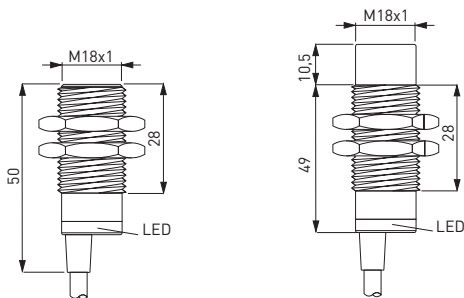
- Ex zone 0 and 20
- Stainless steel enclosure
- Flush or non-flush mounting
- Long life, no mechanical wear
- Suitable for the food processing industry
- Insensitive to soiling
- With LED
- Enclosure diameter M18 x 1
- With pre-wired cable

## // EX IS M18



### Technical data

<b>Standards</b>	EN 60079-0, EN 60079-11, EN 60079-26
<b>Enclosure</b>	Stainless steel A1, 1.4305
<b>Front cap</b>	POM
<b>Switching system</b>	Namur to EN 60947-5-6
<b>Connection</b>	cable PUR, 2 or 5 m length
<b>Cable cross-section</b>	2 x 0.25 mm <sup>2</sup>
<b>Degree of protection</b>	IP 68 to IEC/EN 60529
<b>Rated switching distance <math>s_n</math></b>	Ex IS M18 b: 5 mm, Ex IS M18 nb: 8 mm
<b>Correction factors</b>	Steel (Fe360) = 1; Stainless steel approx. 0.7; Brass approx. 0.5; Aluminium approx. 0.4; Copper approx. 0.4
<b>Rated operating voltage range <math>U_B</math></b>	8.2 VDC
<b>Current absorption</b>	in presence of metal $\leq 1$ mA; in absence of metal $\geq 3$ mA
<b>Switching frequency</b>	1000 Hz
<b>Repeatability</b>	$\leq 3$ %
<b>Protection circuit</b>	Inductive interference protection, protection against polarity reversal, short-circuit and overload proof
<b>Ambient temperature</b>	-25 °C ... +60 °C
<b>Ex marking</b>	⊕ II 1G Ex ia IIB/IIC T6 Ga, II 1D Ex ia IIIC T85°C Da IP66/IP67/IP68 IECEx Ex ia IIB/IIC T6 Ga Ex ia IIIC T85°C Da IP66/IP67/IP68
<b>Approvals</b>	IMQ 14 ATEX 001, IECEx IMQ 14.0001X <b>ERC</b>



### Contact variants: switch travel/contacts

	2-wire	Material number
flush	Ex IS M18B ... 1GD 2m	1202210 ✓
non-flush	Ex IS M18NB ... 1GD 2m	1202212 ✓

### Type code

**Ex IS M18 NB**  
 NB Non-flush, (B flush)  
 Enclosure diameter M18  
 Series  
 Ex certified component

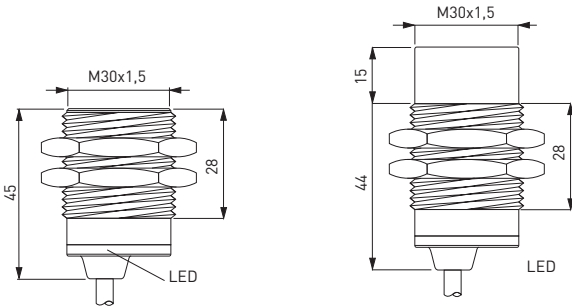
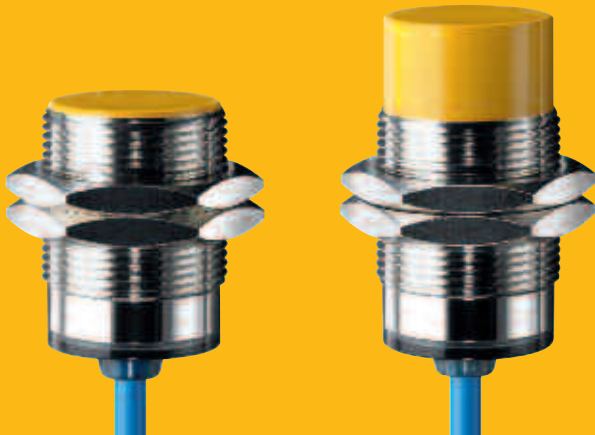
# Ex inductive sensors

## // Series Ex IS M30

### Features/Options

- Ex zone 0 and 20
- Stainless steel enclosure
- Flush or non-flush mounting
- Long life, no mechanical wear
- Suitable for the food processing industry
- Insensitive to soiling
- With LED
- Enclosure diameter M30 x 1.5
- With pre-wired cable

### // EX IS M30



### Technical data

Standards	EN 60079-0, EN 60079-11, EN 60079-26
Enclosure	Stainless steel A1, 1.4305
Front cap	POM
Switching system	Namur to EN 60947-5-6
Connection	cable PUR, 2 or 5 m length
Cable cross-section	2 x 0.25 mm <sup>2</sup>
Degree of protection	IP 68 to IEC/EN 60529
Rated switching distance $s_n$	Ex IS M30b: 10 mm; Ex IS M30nb: 15 mm
Correction factors	Steel (Fe360) = 1; Stainless steel approx. 0.7; Brass approx. 0.5; Aluminium approx. 0.4; Copper approx. 0.4
Rated operating voltage range $U_B$	8.2 VDC
Current absorption	in presence of metal $\leq 1$ mA; in absence of metal $\geq 3$ mA
Switching frequency	500 Hz
Repeatability	$\leq 3$ %
Protection circuit	Inductive interference protection, protection against polarity reversal, short-circuit and overload proof
Ambient temperature	-25 °C ... +60 °C
Ex marking	⊕ II 1G Ex ia IIB/IIC T6 Ga, II 1D Ex ia IIIC T85°C Da IP66/IP67/IP68 IECEX Ex ia IIB/IIC T6 Ga Ex ia IIIC T85°C Da IP66/IP67/IP68
Approvals	IMQ 14 ATEX 001, IECEx IMQ 14.0001X <b>ERL</b>

331

### Contact variants: switch travel/contacts

	2-wire	Material number
flush	Ex IS M30B ... 1GD 2m	1202214 ✓
non-flush	Ex IS M30NB ... 1GD 2m	1202216 ✓

### Type code

**Ex IS M30 NB**

NB Non-flush, (B flush)  
Enclosure diameter M30  
Series  
Ex certified component





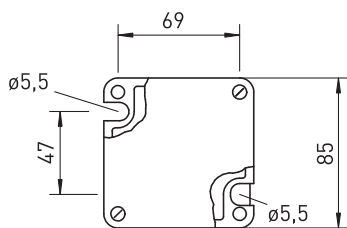
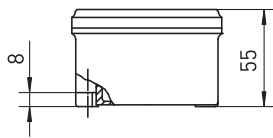
## Ex junction and terminal boxes

// Series Ex AD  
from page 334

# Ex junction and terminal boxes

## // Series Ex AD

### // EX AD 85



#### Features/options

- Ex zone 1 and 21
- Polyester resin enclosure
- Different variants as junction or terminal boxes available
- Method of protection either increased safety »e« or intrinsic safety »i« possible
- PU foam gaskets
- 3 different enclosure sizes available

#### Technical Data

<b>Standards</b>	EN 60079-0, EN 60079-7, EN 60079-11, EN 60079-18, EN 61241-0, EN 61241-1
<b>Enclosure</b>	glass fibre-reinforced polyester resin
<b>Protection class</b>	IP 66 to IEC/EN 60529
<b>Connection</b>	hood-type or terminal blocks
<b>Cable entry</b>	max. 8 cable entries
<b>Cable section</b>	Ex AD 85 MK: max. 4 mm <sup>2</sup> , Ex AD 115 MK: max. 6 mm <sup>2</sup> , Ex AD 145 MK: max. 10 mm <sup>2</sup> (incl. conductor ferrules), single-wire
<b>Cable entry</b>	M20 x 1.5, M25 x 1.5 or M32 x 1.5
<b>Temperature class</b>	T6, T5, T4
<b>U<sub>e</sub></b>	<b>Ex AD FK:</b> with fuse max. 250 or 550 V; <b>EX AD 85 FK:</b> max. 550 V without fuse <b>EX AD 115 FK, Ex AD 145 FK:</b> max. 750 V without fuse; <b>EX AD MK:</b> max. 1100 V without fuse, max. 550 V with fuse
<b>I<sub>e</sub>/U<sub>e</sub></b>	Ex AD 85: 25 A/550 VAC, Ex AD 115: 32 A/750 VAC, Ex AD 145: 44 A/750 VAC
<b>Ambient temperature</b>	Ex e: T6: -40 °C ... +40 °C, T5: -40 °C ... +55 °C, T4: -40 °C ... +60 °C; Ex i: -40 °C...+75 °C, -50 °C with special cable glands
<b>Impact energy</b>	max. 7 J
<b>Ex marking</b>	⊕ II 2G Ex em II T6, T5, T4; II 2D Ex tD A21 IP66 T80°C, T95°C, 130°C ⊕ II 2G Ex ia/ib IIA, IIB, IIC T6, T5 II 2D Ex tD A21 IP66 T80°C, T95°C, 130°C
<b>Approval</b>	PTB 10 ATEX 1019X

#### Type code

Ex AD 85 e MK4 3xM20

Cable gland size (M25, M32)  
 Number of cable glands, max. 6  
 Number of terminals, max. 8 hood-type terminals (FK spring-force terminals max. 15)  
 Method of protection (i)  
 Series (115, 145)  
 Junction/Terminal box  
 Ex certified component

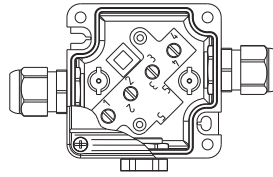
# Ex junction and terminal boxes

## // Series Ex AD, variants

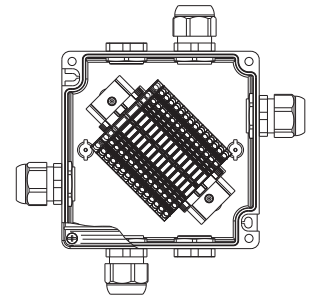
### Features/Options

- All variants are available as junction or terminal box
- Method of protection e or i
- Junction box equipped with hood-type terminals
- Terminal box Ex AD FK equipped with max. 16 spring-force terminal blocks plus 2 PE/PA terminals

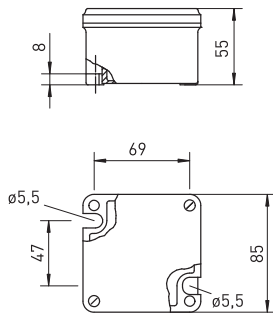
### Ex junction boxes



### Ex terminal boxes



## // Ex AD 85



### Features/Options

- Junction box Ex AD 85 MK equipped with 4 or 5 hood-type terminals and 3 or 4 x M20 x 1.5 cable entries
- Terminal box Ex AD 85 FK equipped with 5 spring-force terminal blocks 3 x M20 x 1.5 cable entries

#### Ex e version

- Ex AD 85 e MK4 3xM20
- Ex AD 85 e MK5 4xM20
- Ex AD 85 e FK5 3xM20

#### Material number

- ✓ 1186653
- ✓ 1186654
- ✓ 1186472

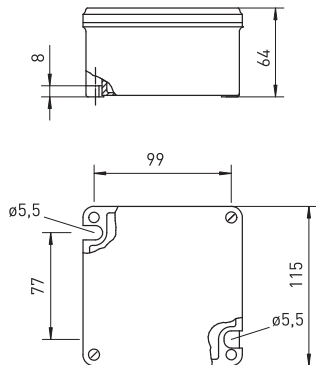
#### Ex i version

- Ex AD 85 i MK4 3xM20
- Ex AD 85 i MK4 4xM20
- Ex AD 85 i FK5 3xM20

#### Material number

- ✓ 1186655
- ✓ 1186656
- ✓ 1186473

## // Ex AD 115



### Features/Options

- Junction box Ex AD 115 MK equipped with 8 hood-type terminals and 6 x M20 x 1.5, 4 or 6 x M25 x 1.5 cable entries
- Terminal box Ex AD 115 FK equipped with 9 spring-force terminal blocks and 4 x M25 x 1.5 cable entries

#### Ex e version

- Ex AD 115 e MK8 6xM20
- Ex AD 115 e MK8 4xM25
- Ex AD 115 e MK8 6xM25
- Ex AD 115 e FK9 4xM25

#### Material number

- ✓ 1186658
- ✓ 1186657
- ✓ 1186659
- ✓ 1186474

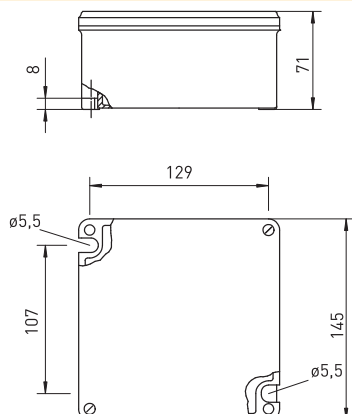
#### Ex i version

- Ex AD 115 i FK9 4xM25

#### Material number

- ✓ 1186475

## // Ex AD 145



### Features/Options

- Junction box Ex AD 145 MK equipped with 8 hood-type terminals and 8 x M25 x 1.5 or 6 x M32 x 1.5 cable entries
- Terminal box Ex AD 145 FK equipped with 15 spring-force terminal blocks and 6 x M25 x 1.5 cable entries

#### Ex e version

- Ex AD 145 e MK8 8xM25
- Ex AD 145 e MK8 6xM32
- Ex AD 145 e FK15 6xM25

#### Material number

- ✓ 1186661
- ✓ 1186660
- ✓ 1186476

#### Ex i version

- Ex AD 145 i FK15 6xM25

#### Material number

- 1186477






















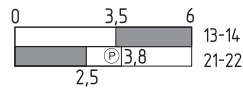






# LEGEND

	Explosion protected to ATEX
	A/F
	Double insulated
	Positive break NC contact
	Positive break travel/angle
	Latching point
	Wire breakage detection
	Wire pull detection
	Actuated
	Not actuated
	Type examination-tested
IECEX	Ex approval to IEC standards
	Ex approval for Brazil
	Approval for Russia
	Ex approval for South Korea
	Approval for USA and Canada
	Approval for China
	Directive-compliance, see Declaration of Conformity
$I_e$	Rated operating current
$I_{the}$	Thermal test current
$U_e$	Rated operating voltage
$U_i$	Rated insulation voltage
$U_{imp}$	Rated impulse withstand voltage

## Explanation of switch travel diagrams



 Contact opened  
 Contact closed

X1-X2 NC contact  
 X3-X4 NO contact  
 X5-X6 Contact overlapping

## Colour codes to DIN IEC 757

BK	black
BN	brown
BU	blue
GN	green
GY	grey
OG	orange
PK	pink
RD	red
TQ	turquoise
VI	violet
WH	white
YE	yellow

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**steute**  
Technologies GmbH & Co. KG  
Brückenstraße 91  
32584 Löhne, Deutschland/Germany  
Telefon/Phone + 49 57 31 745-0  
Telefax/Fax + 49 57 31 745-200  
info@steute.com  
www.steute.com

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