

# Safety Rope Pull Switches

## SRM, SR



### General information on safety rope pull switches

The series SR and SRM safety rope pull switching devices developed and manufactured by BERNSTEIN AG are designed and approved in accordance with the standards IEC 947-5-5, DIN EN 60947-5-5 and ISO 13850, i.e. on actuation or in the event of cable breakage, the emergency stop switching device locks automatically and can only be reset to its initial setting by means of the resetting device on the switch.

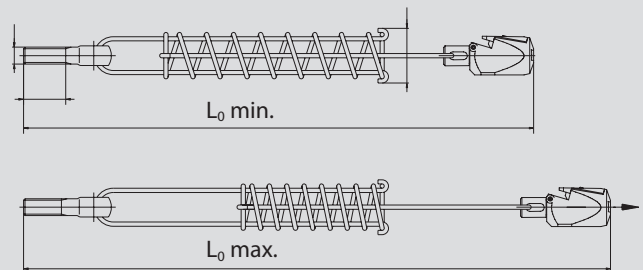
In order for the overall system to conform to the standards EN 60947-5-5 and EN 13850 governing the emergency stop function of rope pull switches it is necessary to integrate a spring in the system. The reasoning behind this requirement is that a person who triggers the emergency stop functions does not need to consider the activation direction. With the spring it is possible to pull the cable in the direction of the rope pull switch, thus activating the emergency stop function.

Safety rope pull switches may only be used in control power circuits. Safety rope pull switches are used on accessible sides of conveyor systems or machines. In contrast to Emergency Stop switching devices (e.g. mushroom pushbuttons) installed at intervals, with which the emergency stop signal can only be generated at the device itself, with the safety rope pull switch it is possible to generate the signal at any point in a section. Depending on the type of switching device, a span of up to 75 m can be achieved with a pull cable connected to the pulling element.

The maximum possible span length of a pull cable switch is always dependent on the temperature fluctuations to which the system is exposed. It is possible that the pull cable switch may trip due to the fact that, owing to its temperature coefficient, the length of the steel cable can change in response to changes in temperature. Ultimately, this change in length is dependent on the length of the cable, the difference in the temperature change and the type of springs used in the pull cable switch. Overview 1 shows which cable lengths are possible as a function of change in temperature.

### Pull cable counterspring

With overstretch safeguard based on compression spring principle



Application		
Type	SR...100/SR...175/SRM...175	SR...300/SRM...300
Spring Art. No.	3911042153	3911042154
$L_0 \text{ min.}$	383	483
$L_0 \text{ max.}$	487	653

### Advantages of SRM / SR safety rope pull switches:

- The SR (plastic enclosure) and SRM (metal enclosure) safety rope pull switches are available with the Quickfix quick-connect system, which renders unnecessary cable eye stiffeners, cable grips and turnbuckles that are otherwise required for mounting the cable. Added to this, the time required to install the cable is drastically reduced. Versions with a conventional eye are, of course, also available.
  - All variants of the SRM and especially of the SR are equipped with an integrated emergency stop impact button that can be actuated by pressing in hazardous situations. In the same way as pulling the pull cable, the safety contacts are opened and the switch is locked.
  - The type SRM...E-... safety rope pull switches are optionally available with a remote indicator for monitoring the cable tension. This option has an integrated sensor unit that monitors situations in which the cable tension may overshoot or undershoot the permissible value, or triggering of the safety rope pull switch is imminent.
- This electronic output signals in good time that maintenance / adjustment is required otherwise the machine will shut down. This output can also be used for event signalling purposes or optionally available indicator lamps can be connected. This connection configuration conforms to "preventative maintenance" requirements.
- During installation / adjustment of the cable span, the correct tension of the cable can be checked through the integrated inspection window. To ensure optimum cable tension as part of the adjustment procedure, the tips of the indicator arrows should be aligned with the marking.
  - A second inspection window integrated in the SRM version makes it possible to check the status of the locking function and of the contacts. Yellow in the inspection window indicates that the safety rope pull switch is locked. Green in the inspection window indicates that the rope pull switch is ready for operation and the cable assembly is monitored.

### Overview 1

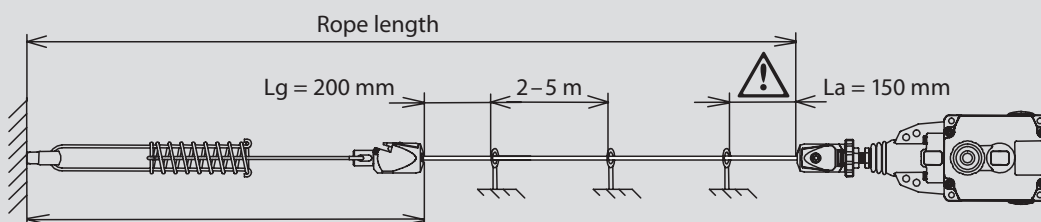
	Span L max. in metres [m]																																																																										
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	55	60	65	70	75																																			
Max. temperature variation in Kelvin (K)	+/- 80 K ; +/- 110 K																																																																										
	+/- 70 K ; +/- 100 K																																																																										
	+/- 60 K ; +/- 90 K																																																																										
	+/- 50 K ; +/- 70 K																																																																										
	+/- 40 K ; +/- 50 K																																																																										
	+/- 30 K ; +/- 40 K																																																																										
	+/- 20 K ; +/- 26 K																																																																										
	+/- 10 K ; +/- 14 K																																																																										
+/- 7 K ; +/- 9 K																																																																											
SR...100	Max. span 25 metres																																																																										
SR...175/SRM...175	Max. span 37.5 metres																																																																										
SR...300/SRM...300	Max. span 75 metres																																																																										

The parameter 100, 175 and 300 in the product designation indicates the force of the springs used in the rope pull switch. It should be noted that a greater actuating force is required for higher spring forces.

The indications of the temperature ranges refer to a system for emergency stop applications with return spring.

With a system without return spring, emergency stop applications are not permitted. In this case, the above mentioned Kelvin values have to be halved.

### Installation example

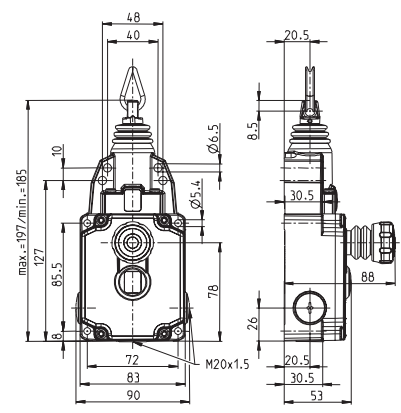
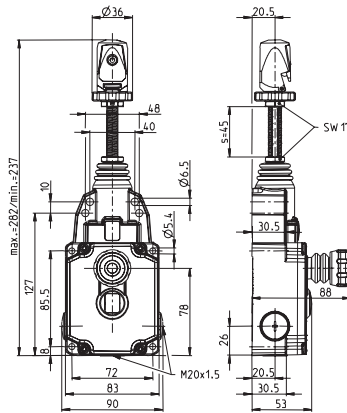


# Safety Rope Pull Switches

Max. span length

75 metres (Dimensioned drawing 1)

37,5 metres (Dimensioned drawing 2)



2 NC / 2 NO

3 NC / 1 NO

2 NC / 2 NO

3 NC / 1 NO

Quickfix  
(Dimensioned drawing 1)

6012929087  
SRM-U1Z/U1Z-QF-300

6012999096  
SRM-A2Z/U1Z-QF-300

6012929085  
SRM-U1Z/U1Z-QF-175

6012999094  
SRM-A2Z/U1Z-QF-175

Eye  
(Dimensioned drawing 2)

6012921091  
SRM-U1Z/U1Z-LU-300

6012991100  
SRM-A2Z/U1Z-LU-300

6012921089  
SRM-U1Z/U1Z-LU-175

6012991098  
SRM-A2Z/U1Z-LU-175

Quickfix  
with remote monitoring  
(Dimensioned drawing 1)

6012929088  
SRM-U1Z/U1Z-QF-300-E

6012999097  
SRM-A2Z/U1Z-QF-300-E

6012929086  
SRM-U1Z/U1Z-QF-175-E

6012999095  
SRM-A2Z/U1Z-QF-175-E

Eye  
with remote monitoring  
(Dimensioned drawing 2)

6012921092  
SRM-U1Z/U1Z-LU-300-E

6012991101  
SRM-A2Z/U1Z-LU-300-E

6012921090  
SRM-U1Z/U1Z-LU-175-E

6012991099  
SRM-A2Z/U1Z-LU-175-E

Approvals



### Technical data

Electrical data		
Rated insulation voltage	$U_i$ max.	250 V AC
Rated operating voltage	$U_e$ max.	240 V
Conventional thermal current	$I_{the}$	10 A
Utilisation category	$U_e / I_e$	AC-15, $U_e / I_e$ 240 V / 3 A; 120 V/6 A DC-13 $U_e / I_e$ 250 V/0.27 A; 125 V/0.55 A
Short-circuit protection		6 A gL/gG
Protection class		I
Mechanical data		
Enclosure	Aluminium pressure die-casting	
Ambient temperature	-30°C to + 80°C	
Mechanical service life	$1 \times 10^5$	
Switching frequency max.	$\leq 20$ / min.	
Mounting	4 x M6 or 4 x M5	
B10d	0.2 mill.	
Type of connection	Screw connections	
Conductor cross sections	Single-wire 0.5 – 1.5 mm <sup>2</sup>	
Cable entry	3 x M20 x 1.5	
Protection class	IP67 conforming to IEC/EN 60529	
Standards		
VDE 0660 T100, DIN EN 60947-1, IEC 60947-1 VDE 0660 T200, DIN EN 60947-5-1, IEC 60947-5-1 VDE 0660 T210, DIN EN 60947-5-5, IEC 60947-5-5 ISO 13850		

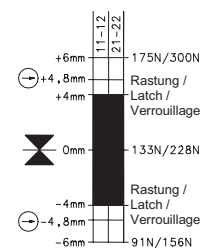
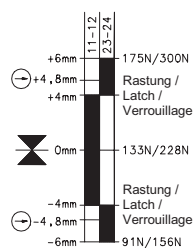
<b>Contact type</b>	<b>1 NC / 1 NO (Zb)</b>	<b>2 NC (Zb)</b>
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<b>Action contacts</b>	<b>U1Z</b>	<b>A2Z</b>
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### Switching diagram

On  
 OFF



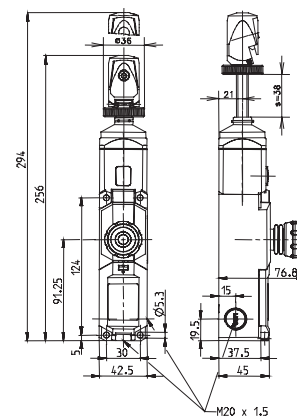
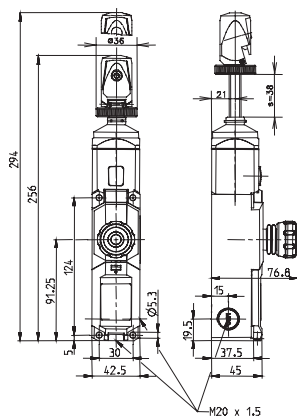
The pulling force data depend on the type of switch used. (SRM...175/SRM...300)  
 Tolerances: Switching point + / - 0.5 mm, actuating force + / - 15 %

# Safety Rope Pull Switches

Max. span length

75 metres (Dimensioned drawing 1)

37.5 metres (Dimensioned drawing 2)



2 NC / 2 NO

4 NC

2 NC/2 NO

4 NC

Quickfix  
(Dimensioned drawing 1)

6011629072  
SR-U2Z-0-QF-300-L0-0-0

6011691082  
SR-A4Z-0-QF-300-L0-0-0

6011629071  
SR-U2Z-0-QF-175-L0-0-0

6011691081  
SR-A4Z-0-QF-175-L0-0-0

Quickfix N.A.  
(Dimensioned drawing 2)

6011629069  
SR-U2Z-NA-QF-300-L0-0-0

6011691079  
SR-A4Z-NA-QF-300-L0-0-0

6011629068  
SR-U2Z-NA-QF-175-L0-0-0

6011691078  
SR-A4Z-NA-QF-175-L0-0-0

Eye  
(Dimensioned drawing 3)

6011621066  
SR-U2Z-0-LU-300-L0-0-0

6011691076  
SR-A4Z-0-LU-300-L0-0-0

6011621065  
SR-U2Z-0-LU-175-L0-0-0

6011691075  
SR-A4Z-0-LU-175-L0-0-0

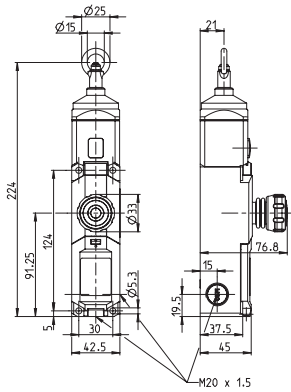
Approvals



## Technical data

Electrical data		
Rated insulation voltage	$U_i$ max.	250 V AC
Rated operating voltage	$U_e$ max.	240 V
Conventional thermal current	$I_{the}$	10 A
Utilisation category	$U_e / I_e$	AC-15, $U_e / I_e$ 240 V / 3 A
Short-circuit protection		6 A gL/gG
Protection class		II, Insulated
Mechanical data		
Enclosure		PA 6 GV (UL94-V0)
Ambient temperature		-25°C to +70°C
Mechanical service life		1 x 10 <sup>5</sup> switching cycles
Switching frequency max.		≤ 20 / min.
Mounting		4 x M5
B10d		1 x 10 <sup>5</sup> million
Type of connection		Cage clamp terminal
Conductor cross sections		≤ 1.5 – 2 mm <sup>2</sup>
Cable entry		3 x M20 x 1.5
Protection class		IP67 conforming to IEC/EN 60529
Standards		
VDE 0660 T100, DIN EN 60947-1, IEC 60947-1		
VDE 0660 T200, DIN EN 60947-5-1, IEC 60947-5-1		
VDE 0660 T210, DIN EN 60947-5-5, IEC 60947-5-5		
ISO 13850		

**25 metres (Dimensioned drawing 3)**



**2 NC / 2 NO      4 NC**

**6011629070      6011691080**  
 SR-U2Z-0-QF-100-L0-0-0      SR-A4Z-0-QF-100-L0-0-0

**6011629067      6011691077**  
 SR-U2Z-NA-QF-100-L0-0-0      SR-A4Z-NA-QF-100-L0-0-0

**6011621064      6011691074**  
 SR-U2Z-0-LU-100-L0-0-0      SR-A4Z-0-LU-100-L0-0-0



**Contact type**

**2 NC / 2 NO (Zb)**

**4 NC**

**Action contacts**

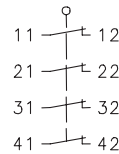
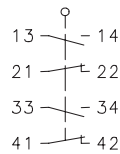
**U2Z**

**A4Z**

**Circuit symbol**

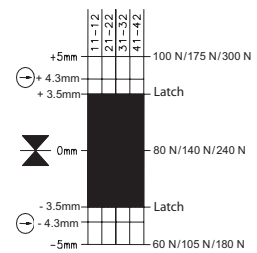
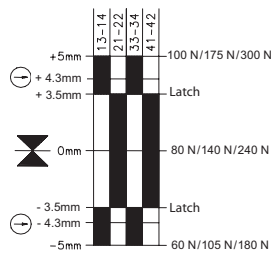
**Slow-action contacts**

**Slow-action contacts**



**Switching diagram**

On  
 Off



The pulling force data depend on the type of switch used. (SR...100/SR...175/SR...300)  
 Tolerances: Switching point +/- 0.5 mm, actuating force + 30 % (SR...100), actuating force +/- 15 % (SR...175/SR...300)