

Position Switches

Series 8060/2



- > Ex e plastic enclosure
- > Operating temperature range -60 to +60 °C
- > Dimensions and characteristic values according to EN 50047
- > Degree of protection IP66 / IP67
- > Extensive assortment of actuators, which can be offset by 4 x 90°.
- > Safety position switch of Category 1 with different actuators
- > Replaceable contact elements with:
 - Snap-action contact
 - Slow-action contact
 - Overlapping slow-action contact
 - Positive-opening contacts
 - Flameproof enclosure



18566T00

E4

Position the position switches, control and monitor the moving parts on machines and systems. Because they meet the requirements of the EN 50 047 and IEC 60947-5-1 product standards, they can also be used as a position switch with a safety function. Position switches of the 8060/2 series are permitted to be used in hazardous areas of zones 1, 2, 21 and 22.

In conjunction with a safety door guard and the corresponding circuitry, the PL position switches reach "e" in accordance with EN ISO 13849-1, or up to SIL 3 in accordance with EN 62061. They are identified with the $\ominus$ character for positive opening operation.

There are snap- and slow-action versions with different forms of contacts as well as with a variety of different actuating elements.

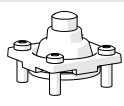
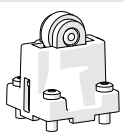
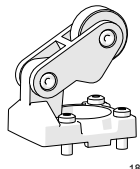
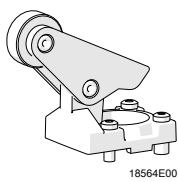
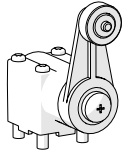
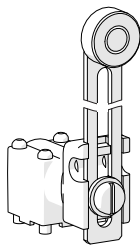
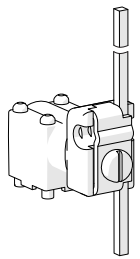
	ATEX / IECEx					
Zone	0	1	2	20	21	22
For use in		x	x		x	x

WebCode 8060B

Position Switches

Series 8060/2

Selection Table

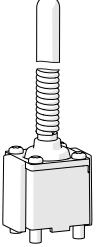
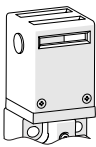
Version	Actuator	Normally open contacts	Order number	Weight kg
 18563E00	Plunger Plunger with sealing collar	1 NC + 1 NO	8060/2-1-W-60	0.096
		1 NC + 1 NO snap-action contact with spring	8060/2-2-W-60	
		2 NC	8060/2-3-W-60	
		1 NC + 1 NO slow-action contact, overlapping	8060/2-5-W-60	
 18614E00	Roller Roller made of moulded material	1 NC + 1 NO	8060/2-1-R-60	0.100
		1 NC + 1 NO snap-action contact with spring	8060/2-2-R-60	
		2 NC	8060/2-3-R-60	
		1 NC + 1 NO slow-action contact, overlapping	8060/2-5-R-60	
 18565E00	Roller lever Roller made of moulded material	1 NC + 1 NO	8060/2-1-WH-60	0.101
		1 NC + 1 NO snap-action contact with spring	8060/2-2-WH-60	
		2 NC	8060/2-3-WH-60	
		1 NC + 1 NO slow-action contact, overlapping	8060/2-5-WH-60	
 18564E00	Parallel roller lever Roller made of moulded material	1 NC + 1 NO	8060/2-1-WPH-60	0.102
		1 NC + 1 NO snap-action contact with spring	8060/2-2-WPH-60	
		2 NC	8060/2-3-WPH-60	
		1 NC + 1 NO slow-action contact, overlapping	8060/2-5-WPH-60	
 18562E00	Rocking lever Roller made of moulded material	1 NC + 1 NO	8060/2-1-D-60	0.115
		1 NC + 1 NO snap-action contact with spring	8060/2-2-D-60	
		2 NC	8060/2-3-D-60	
		1 NC + 1 NO slow-action contact, overlapping	8060/2-5-D-60	
 18561E00	Adjustable rocking lever Roller made of moulded material Roller rod made of stainless steel	1 NC + 1 NO	8060/2-1-DS-60	0.130
		1 NC + 1 NO snap-action contact with spring	8060/2-2-DS-60	
		2 NC	8060/2-3-DS-60	
		1 NC + 1 NO slow-action contact, overlapping	8060/2-5-DS-60	
 18560E00	Rod lever Rod made of moulded material No positive opening operation, not suitable for safety circuits!	1 NC + 1 NO	8060/2-1-DD-60	0.133
		1 NC + 1 NO snap-action contact with spring	8060/2-2-DD-60	
		2 NC	8060/2-3-DD-60	
		1 NC + 1 NO slow-action contact, overlapping	8060/2-5-DD-60	

Position Switches

Series 8060/2

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Selection Table

Version	Actuator	Normally open contacts	Order number	Weight kg
 18661E00	Spring rod Spring made of stainless steel Only for use with snap-action contact! No positive opening operation, not suitable for safety circuits!	1 NC + 1 NO snap-action contact with spring	8060/2-2-TK-60	0.122
 18691E00	Safety switch, separate actuator	Separate actuator made of metal (please order separately)	1 NC + 1 NO 2 NC	0.127 0.127

Note The actuators are included, but not installed

Explosion Protection

Global (IECEx)

Gas and dust	IECEx BVS 16.0066 Ex db eb IIC T6 Gb Ex tb IIIC T80°C Db
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Europe (ATEX)

Gas and dust	BVS 16 ATEX E 100 ⊕ II 2 G Ex db eb IIC T6 Gb ⊕ II 2 D Ex tb IIIC T80°C Db
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Certifications and certificates

Certificates	IECEx, ATEX
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Technical Data

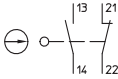
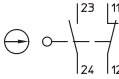
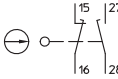
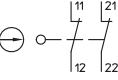
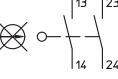
Electrical data

Rated operational voltage U _e			8060/2-1 8060/2-2 8060/2-5	8060/2-3 8060/2-4	
	Alternating voltage for equal potential: Alternating voltage for unequal potential: Direct voltage:		max. 500 V max. 250 V 125 V	max. 400 V max. 250 V 125 V	
Rated operational current I _e	max. 4A: -60 °C ≤ Ta ≤ +55 °C, max. 2A: -60 °C ≤ Ta ≤ +60 °C				
Switching capacity	AC-12		AC-15		DC-12
	8060/2-1 8060/2-2 8060/2-5	8060/2-3 8060/2-4	8060/2-1 8060/2-2 8060/2-5	8060/2-3 8060/2-4	8060/2-.
	max. 250 V max. 500 V **) max. 4 A max. 5000 VA	max. 250 V max. 400 V **) max. 4 A max. 4000 VA	max. 250 V max. 500 V **) max. 4 A max. 1000 VA	max. 250 V max. 400 V **) max. 4 A max. 1000 VA	max. 125 V max. 4 A max. 400 W
	**) only with the same potential				
Rated insulation voltage	500 V				
Rated impulse withstand voltage	4 kV				
Short circuit protection	6 A time lag				

E4

Position Switches

Series 8060/2

Technical Data	
Ambient conditions	
Operating temperature range	-60 to +55 °C (4 A) -60 to +60 °C (2 A)
Mechanical data	
Maximum switching frequency	max. 1800 operating cycles/h
Degree of protection	IP66 -60 °C, IP67 -20 °C (DIN EN 60529)
Mechanical shock resistance	Snap-action contact: 2 g Slow-action contact: 20 g
Material	
Enclosure	Glass-fibre-reinforced, impact-proof thermoplast, self-extinguishing UL 94-V0
Cover	Glass-fibre-reinforced, impact-proof thermoset, self-extinguishing UL 94-V0
Seal	Silicone
Mounting / Installation	
Cable entries	8161/7-M20..LT: with seals containing silicone on the enclosure bottom: 1 x M20 x 1.5
Connection	with cable entry 8161: 4 x 1.5 mm ²
Terminals	0.75 to 1.5 mm ² solid, finely stranded with or without a core end sleeve
Tightening torque	Screw terminals: 0.4 Nm max. Cover screws: 0.4 to 0.45 Nm Cable entries: See installation note (enclosed unattached)
Contact	
Version	Slow-action contact  08667E00 8060/2-1 Snap-action contact  08668E00 8060/2-2 Slow-action contact, overlapping  08675E00 8060/2-5  08669E00 8060/2-3  08670E00 8060/2-4 Caution: The positive opening operation ⊕ function depends on the actuator
Contact arrangement	2-pole, galvanically separated with double break
Contact opening	≥ 1.5 mm (isolating distance ≥ 3 mm)
Material	
Contacts	Silver-nickel
Enclosure contact	Polyamide, glass fibre reinforced
Service life	
Mechanical	max. 10 ⁶ operating cycles
electrical	max. 10 ⁶ operating cycles

Position Switches Series 8060/2



Technical data
Operation, operating speed, switching path or switching angle

Actuator type	Actuation	Schematic	Nominal switching path or switching angle	Minimum force/torque
Type 8060/2	V = Max. operating speed	⊖ = Positive opening operation	= Closed contact = Open contact Zw = Positive opening distance	
Plunger 8060/2-.-W-60	For lateral actuation: V = 0.5 m/s Operation in stroke direction: V = 1.0 m/s		In stroke direction 8060/2-1: 18611E00 8060/2-2: 18612E00 8060/2-3: 18613E00 8060/2-4: 07707E01 8060/2-5: 18615E00	14 N

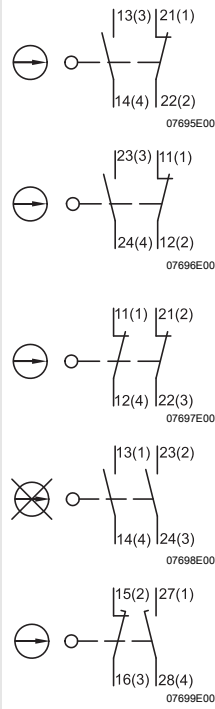
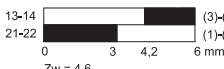
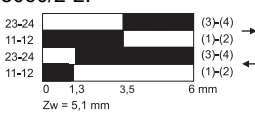
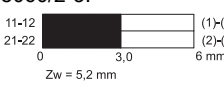
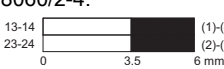
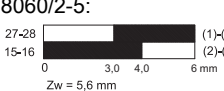
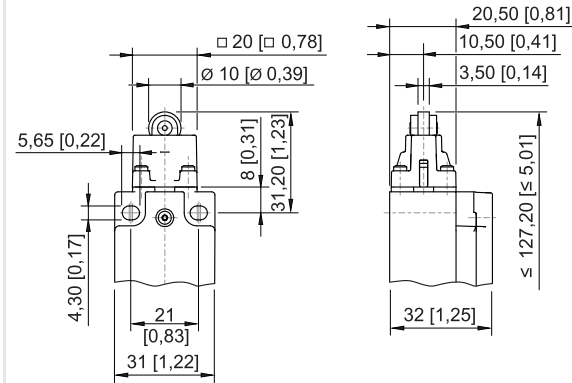
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Position Switches

Series 8060/2

Technical data

Operation, operating speed, switching path or switching angle

Actuator type	Actuation	Schematic	Nominal switching path or switching angle	Minimum force/torque
Type 8060/2	V = Max. operating speed	⊖ = Positive opening operation	■ = Closed contact □ = Open contact Zw = Positive opening distance	
Roller 8060/2--R-60	For lateral actuation: V = 1.0 m/s Operation in stroke direction: V = 1.0 m/s		In stroke direction 8060/2-1:  18611E00 8060/2-2:  18612E00 8060/2-3:  18613E00 8060/2-4:  07707E01 8060/2-5:  18615E00	14 N
				

18577E00

Position Switches Series 8060/2



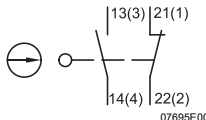
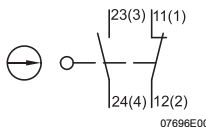
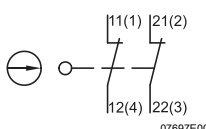
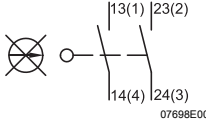
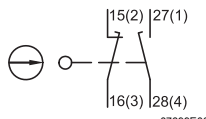
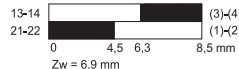
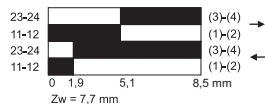
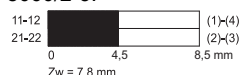
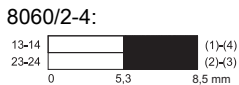
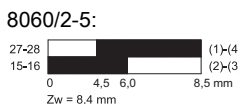
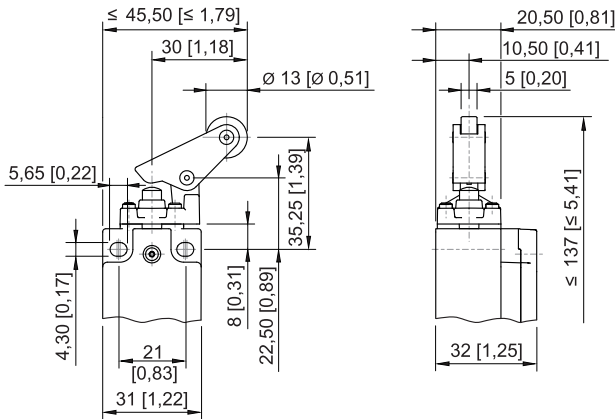
Technical data
Operation, operating speed, switching path or switching angle

Actuator type	Actuation	Schematic	Nominal switching path or switching angle	Minimum force/torque
Type 8060/2	V = Max. operating speed	⊕ = Positive opening operation	= Closed contact = Open contact Zw = Positive opening distance	
Roller lever 8060/2.-WH-60	V = 1.0 m/s		Displacement of the roller in the stroke direction of the plunger at the start of the plunger movement 8060/2-1: 8060/2-2: 8060/2-3: 8060/2-4: 8060/2-5:	12 N

E4

Position Switches Series 8060/2

Technical data
Operation, operating speed, switching path or switching angle

Actuator type	Actuation	Schematic	Nominal switching path or switching angle	Minimum force/torque
Type 8060/2	V = Max. operating speed	⊕ = Positive opening operation	■ = Closed contact □ = Open contact Zw = Positive opening distance	
Parallel roller lever 8060/2-.-WPH-60	V = 1.0 m/s	     Displacement of the roller vertically in the stroke direction of the plunger at the start of the plunger movement 8060/2-1:  18626E00 8060/2-2:  18627E00 8060/2-3:  18628E00 8060/2-4:  18629E00 8060/2-5:  18630E00 	12 N	

18576E00

Position Switches Series 8060/2



Technical data
 Operation, operating speed, switching path or switching angle

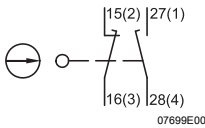
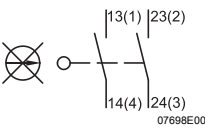
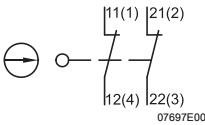
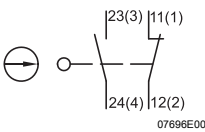
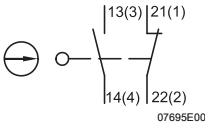
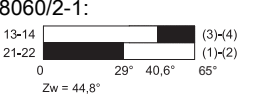
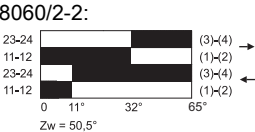
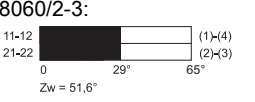
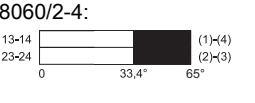
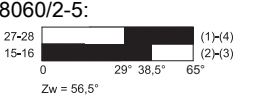
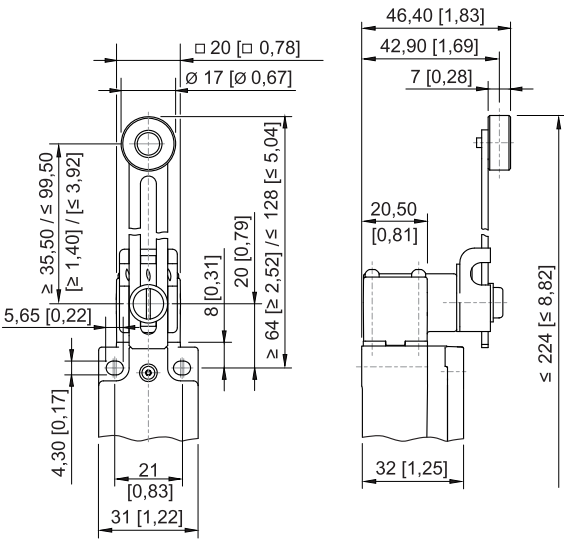
Actuator type	Actuation	Schematic	Nominal switching path or switching angle	Minimum force/torque
Type 8060/2	V = Max. operating speed	⊕ = Positive opening operation	■ = Closed contact □ = Open contact Zw = Positive opening distance	
Rocking lever 8060/2.-D-60	V = 1.5 m/s		8060/2-1: Zw = 44,8° 8060/2-2: Zw = 50,5° 8060/2-3: Zw = 51,6° 8060/2-4: Zw = 33,4° 8060/2-5: Zw = 56,5°	0.3 Nm

E4

Position Switches

Series 8060/2

Technical data
Operation, operating speed, switching path or switching angle

Actuator type	Actuation	Schematic	Nominal switching path or switching angle	Minimum force/torque
Type 8060/2	V = Max. operating speed	⊖ = Positive opening operation	■ = Closed contact □ = Open contact Zw = Positive opening distance	
Adjustable rocking lever 8060/2--DS-60	V = 1.5 m/s		8060/2-1:  18641E00 8060/2-2:  18642E00 8060/2-3:  18643E00 8060/2-4:  18644E00 8060/2-5:  18645E00	0.3 Nm
				

Position Switches Series 8060/2



Technical data
Operation, operating speed, switching path or switching angle

Actuator type	Actuation	Schematic	Nominal switching path or switching angle	Minimum force/torque
Type 8060/2	V = Max. operating speed	⊖ = Positive opening operation	= Closed contact = Open contact Zw = Positive opening distance	
Rod lever 8060/2-.-DD-60	V = 1.5 m/s Positive opening operation, not suitable for safety circuits		8060/2-1: 18641E00 8060/2-2: 18642E00 8060/2-3: 18643E00 8060/2-4: 18644E00 8060/2-5: 18645E00	0.3 Nm

E4

Position Switches

Series 8060/2

Technical data
 Operation, operating speed, switching path or switching angle

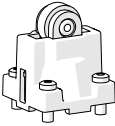
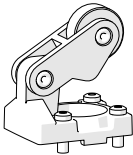
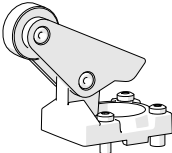
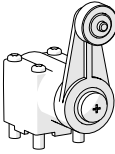
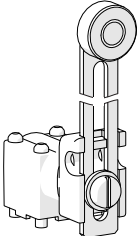
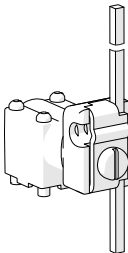
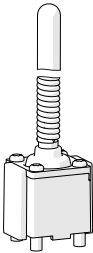
Actuator type	Actuation	Schematic	Nominal switching path or switching angle	Minimum force/torque
Type 8060/2	V = Max. operating speed	⊖ = Positive opening operation	■ = Closed contact □ = Open contact Zw = Positive opening distance	
Spring rod 8060/2--TK-60	Positive opening operation, not suitable for safety circuits	 07701E00	Only for use with snap-action contact! 8060/2-2: 18640E00	—
				18578E00
Safety switches 8060/2--AZ-60		 07695E00 07697E00	8060/2-1: 18639E00 8060/2-3: 18628E00	—
			Note: Illustration of the shifting travel for an engaged actuator. Actuators must be ordered separately.	18571E00

Position Switches

Series 8060/2



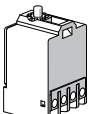
Accessories and Spare Parts

Designation	Figure	Description		Art. no.	Weight kg
Actuator	 18614E00	Roller	8060/2-0-R	257054	0.020
	 18565E00	Roller lever	8060/2-0-WH	257055	0.020
	 18564E00	Parallel roller lever	8060/2-0-WPH	257056	0.022
	 18562E00	Rocking lever	8060/2-0-D	257057	0.035
	 18561E00	Adjustable rocking lever	8060/2-0-DS	257058	0.020
	 18560E00	Rod lever	8060/2-0-DD	257059	0.050
	 18661E00	Spring rod Only for use with snap-action contact!	8060/2-0-TK	257060	0.055

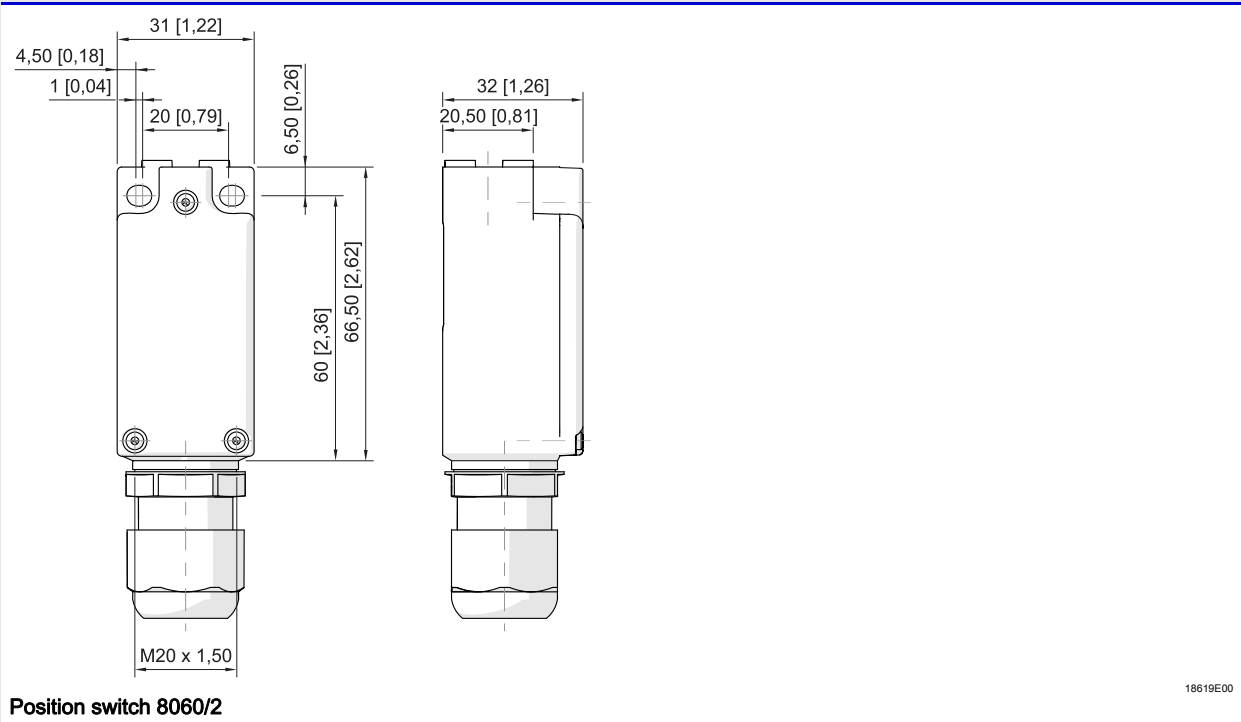
E4

Position Switches Series 8060/2

Accessories and Spare Parts

Designation	Figure	Description			Art. no.	Weight kg
Actuator	 18689E00	Straight actuator	8060/2-0-AZ		257052	0.040
	 18690E00	Bent actuator	8060/2-0-AZ		257053	0.040
Contact	 10809E00	1 NC + 1 NO	Slow-action contact	8080/1-1	132529	0.025
		1 NC + 1 NO	Slow-action contact, with spring	8080/1-2	132531	0.025
		1 NC + 1 NO	Slow-action contact, make before break	8080/1-5	132534	0.025
		2 NC	Slow-action contact	8080/1-3	132532	0.025
		2 NO	Slow-action contact	8080/1-4	132533	0.025

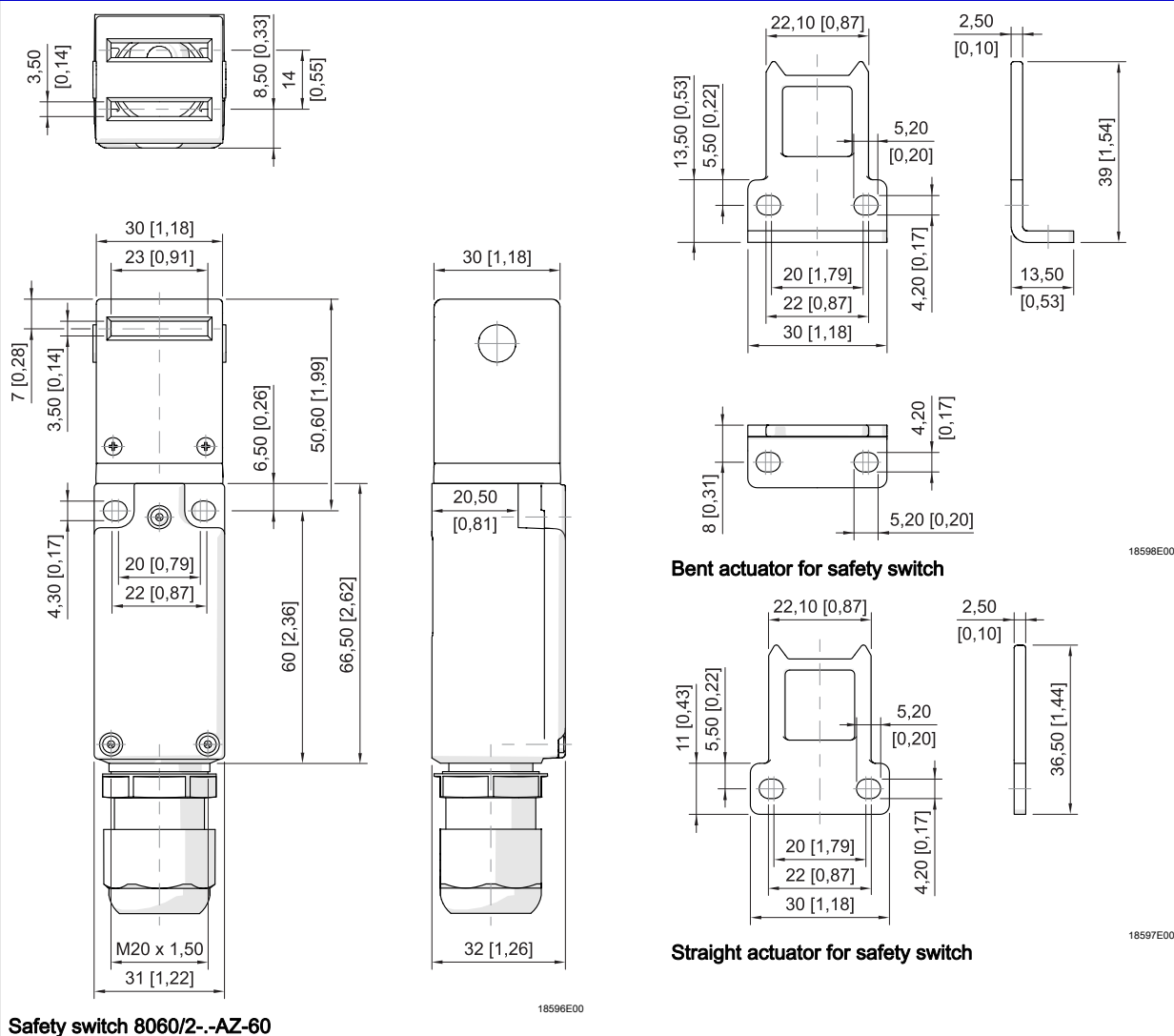
Dimensional drawings (all dimensions in mm [inches]) – Subject to modifications



Position Switches

Series 8060/2

Dimensional drawings (all dimensions in mm [inches]) – Subject to modifications



Safety switch 8060/2-AZ-60

We reserve the right to make alterations to the technical data, dimensions, weights, designs and products available without notice. The illustrations cannot be considered binding.