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JUMO Process Control, Inc.
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Internet: www.jumousa.com

Bimetal Dial Thermometer

Electromechanical temperature switch with a fixed switching temperature

Special features

- Free of cadmium
- RoHS-compliant
- Protection type IP52, IP65, and IP67
- Switching capacity up to 10 A
- Simple installation

Brief description

Temperature switches are used in industry in general for limiting temperature. For example, they switch the machine off in the event of overheating or switch a fan on to cool the device.

Function
The temperature measurement is carried out using a bimetal disc that switches when the rated switching temperature is reached. After cooling down to the switchback temperature, the switch returns to its original state. The switchback temperature is typically 15 to 30 K below the switching temperature.

Contact version
The bimetal temperature switches are supplied with two switching outputs.

An N/C (normally closed) contact opens an electrical circuit and switches a machine off.

An N/O (normally open) contact closes an electrical circuit when the switching temperature is reached in order, for example, to activate a fan or a signal lamp.

In both cases, the contacts return to their original state after cooling back to below the switchback temperature, so that the monitored device can work again in normal mode.



Type 608301/10
with snap-action switch and tab connector



Type 608301/30
with miniature snap-action switch and round plug M12 × 1



Type 608301/10
with snap-action switch and round plug M12 × 1



Type 608301/10
with snap-action switch and line socket

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Technical data

Electrical data

Device with snap-action switch

Type 608301/10	**Tab connector A 6,3-08**	**Connecting cable with cable fitting**	**Attached cable** without protection conductor	**Attached cable** with protection conductor	**Line socket** acc. to EN 175301-803 (DIN 43650)	**Plug connector M12 × 1**
Fitting	Brass (CW614N) or stainless steel (1.4305), screw-in spigot similar to DIN 3852, form A for sealing with sealing ring					
Protection type	IP52	IP65	IP67	IP67	IP65	IP67
Electrical contact						
Connection	A 6.3-0.8 acc. to DIN 46244	Cable diameter approx. 6.5 mm^2, connection cross-section 0.75 mm^2			Cable diameter 6 to 8 mm, terminal 1, 2, protection conductor connected	–
Switching capacity	DC 30 V, max. 5 A					–
	≤ AC 48 V, cos φ = 0.95, 10 A	≤ AC 48 V, cos φ = 0.95, 10 A		≤ AC 250 V, cos φ = 0.95, 10 A		–
Switching capacity for snap-action switches with gold-plating	DC 6 to 30 V, AC 6 to 48 V, 10 to 100 mA			DC 6 to 30 V, AC 6 to 120 V, 10 to 100 mA		–
Max. current carrying capacity at ambient temperature on the wire/cable	–	≤ 50 °C: 10 A ≤ 75 °C: 7.3 A ≤ 85 °C: 4.2 A			–	–
Contact resistance	<30 mΩ					
Dielectric strength	AC 1,500 V for 1 min.					

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Device with slow-action contact

Type 608301/20	**Tab connector A 6,3-08**	**Connecting cable with cable fitting**	**Attached cable** without	**Attached cable** with protection conductor	**Line socket** acc. to EN 175301-803 (DIN 43650)	**Plug connector M12 × 1**
Fitting	Brass (CW614N) or stainless steel (1.4305), screw-in spigot similar to DIN 3852, form A for sealing with sealing ring					
Protection type	IP52	IP65	IP67	IP67	IP65	IP67
Electrical contact						
Connection	–	Cable diameter approx. 4.5 mm², connection cross-section 0.5 mm²			Cable diameter 6 to 8 mm, terminal 1, 2, protection conductor connected	–
Switching capacity	–	DC 12 V, 8 A, DC 24 V, 4 A, DC 30 V, 3 A, ≤ AC 48 V, 6 A	–	–	DC 12 V, 8 A, DC 24 V, 4 A, DC 30 V, 3 A, ≤ AC 48 V, 6 A	–
Max. current carrying capacity at ambient temperature on the wire/cable	–	≤ 85 °C: 8 A ≤ 105 °C: 3.7 A			–	–

Device with miniature snap-action switch

Type 608301/30	**Tab connector A 6,3-08**	**Connecting cable with cable fitting**	**Attached cable** without	**Attached cable** with protection conductor	**Line socket** acc. to EN 175301-803 (DIN 43650)	**Plug connector M12 × 1**
Fitting	Brass (CW614N) or stainless steel (1.4305), screw-in spigot similar to DIN 3852, form A for sealing with sealing ring					
Protection type	IP52	IP65	IP67	IP67	IP65	IP67
Electrical contact						
Connection	–	Cable diameter approx. 6.5 mm², connection cross-section 0.75 mm²			Cable diameter 6 to 8 mm, terminal 1, 2, protection conductor connected	Terminals 1 and 2 connected
Switching capacity N/C contact	–	≤ AC 48 V, 50/60 Hz, cos φ = 0.95 (0.6) 2.5 A/1.6 A	–	–	≤ AC 250 V, 50/60 Hz, cos φ = 0.95 (0.6) 2.5 A/1.6 A	≤ AC 48 V, 50/60 Hz, cos φ = 0.95 (0.6) 2.5 A/1.6 A
Switching capacity N/O contact	–	≤ AC 48 V, 50/60 Hz, cos φ = 0.95 (0.6) 2.5 A/1.6 A	–	–	≤ AC 250 V, 50/60 Hz, cos φ = 0.95 (0.6) 2.5 A/1.6 A	≤ AC 48 V, 50/60 Hz, cos φ = 0.95 (0.6) 2.5 A/1.6 A
Max. ambient temperature on the line/cable	–	90 °C			–	–
Contact resistance	<50 mΩ					
Dielectric strength	AC 1,500 V for 1 min.					

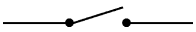
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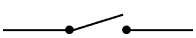
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Operating data

Device with snap-action switch

Switching temperature	0 to 140 °C Increments 5 K
Switching differential	Approx. 15 to 30 K below the switching temperature
Switching cycles	
With AC 250 V, 10 A	≥ 100,000
With AC 120 V, 15 A	≥ 100,000
With AC 48 V, 15 A	≥ 100,000
With DC 30 V, 5 A	≥ 10,000
With DC 24 V, 5 A	≥ 10,000
With DC 12 V, 5 A	≥ 10,000
With DC 6 V, 5 A	≥ 10,000
Switching point accuracy	At a temperature change rate of 1 K/min
Switching temperature	≤ 130 °C: ±5 K ≥ 130 °C: ± 10 K
Vibration strength	EN 60068-2-6
With a frequency of 50 Hz and an amplitude of ±0.75 mm	10 g
Response time $t_{0,9}$	Approx. 3.5 min.
Switching output (SA)	Relative to the rising temperature
NC contact (SA01)	
NO contact (SA02)	
Rated position	Any
Weight	Approx. 50 g

Device with slow-action contact

Switching temperature	10 to 140 °C Increments 5 K
Switching differential	Approx. 3 to 12 K below the switching temperature
Switching cycles	
With AC 48 V, 15 A	≥ 100,000
With DC 30 V, 5 A	≥ 10,000
With DC 24 V, 5 A	≥ 10,000
With DC 12 V, 5 A	≥ 10,000
Switching point accuracy	At a temperature change rate of 1 K/min
Switching temperature	≤ 130 °C: ±5 K ≥ 130 °C: ± 10 K
Ansprechzeit $t_{0,9}$	Approx. 3.0 min., measured in flowing oil bath
Switching output (SA)	Relative to the rising temperature
NC contact (SA01)	
NO contact (SA02)	
Rated position	Any
Weight	Approx. 50 g

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Device with miniature snap-action switch

Switching temperature	60 to 140 °C Increments 5 K
Switching differential	Approx. 20 to 45 K below the switching temperature
Switching cycles With AC 250 V, 2.5 A	 ≥ 10,000
Switching point accuracy Switching temperature	At a temperature change rate of 1 K/min ≤ 130 °C: ±5 K ≥ 130 °C: ±10 K
Vibration strength With a frequency of 10 to 1,000 Hz and an amplitude of ±0.75 mm	EN 60068-2-6 10 g
Response time $t_{0,9}$	Approx. 1.5 min.
Switching output (SA) NC contact (SA01) NO contact (SA02)	Relative to the rising temperature 
Rated position	Any
Weight	Approx. 50 g

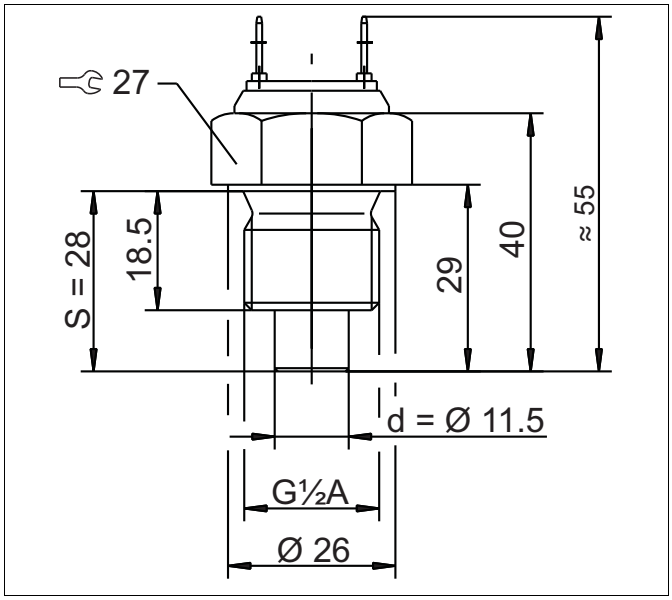
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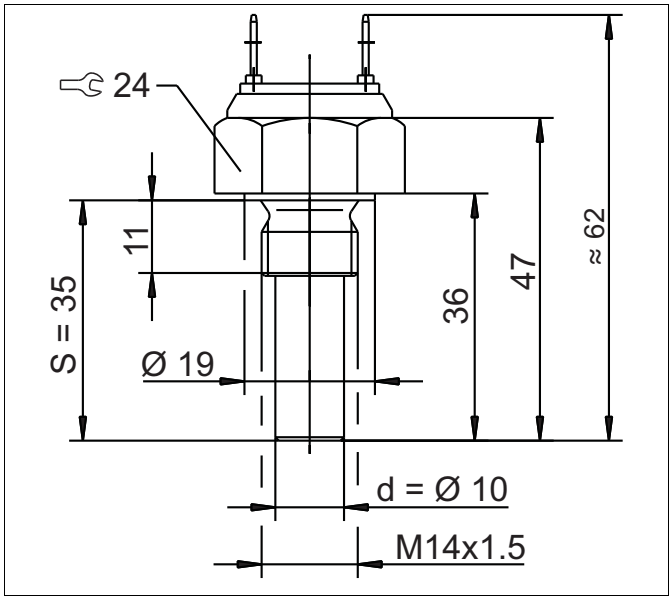
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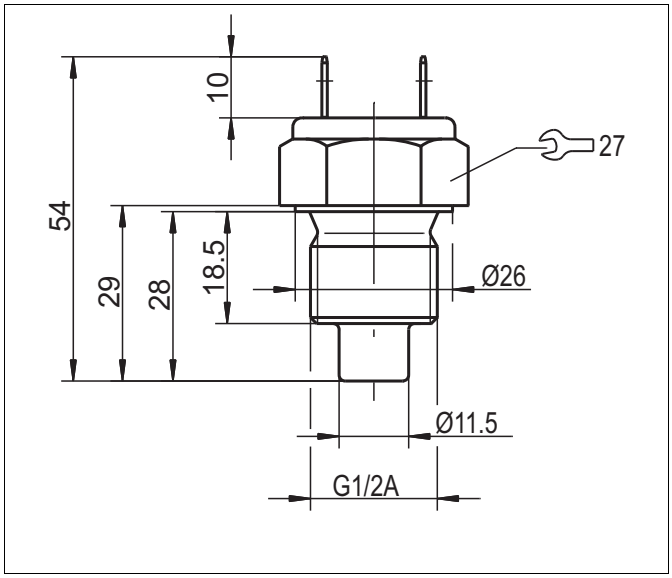
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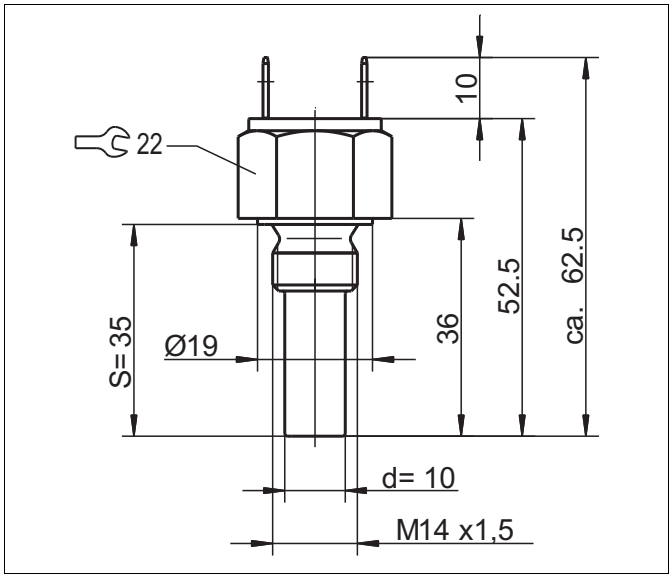
Dimensions

Device with snap-action switch





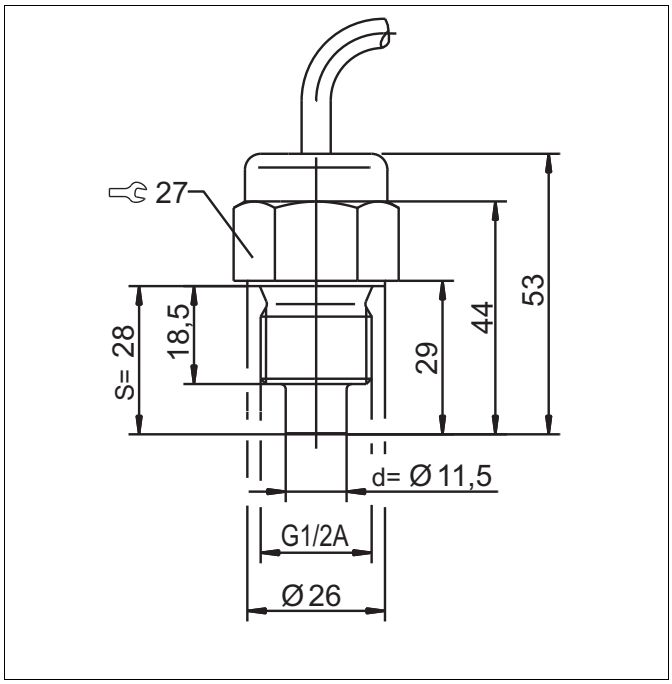


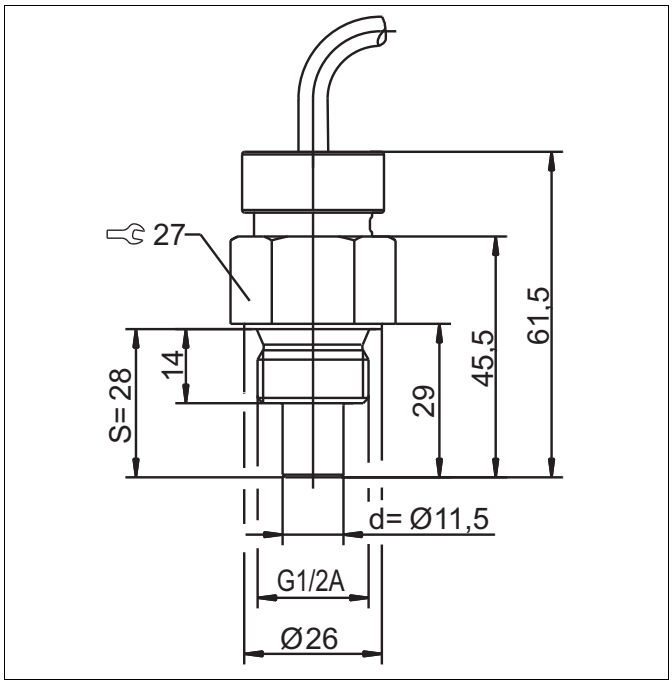


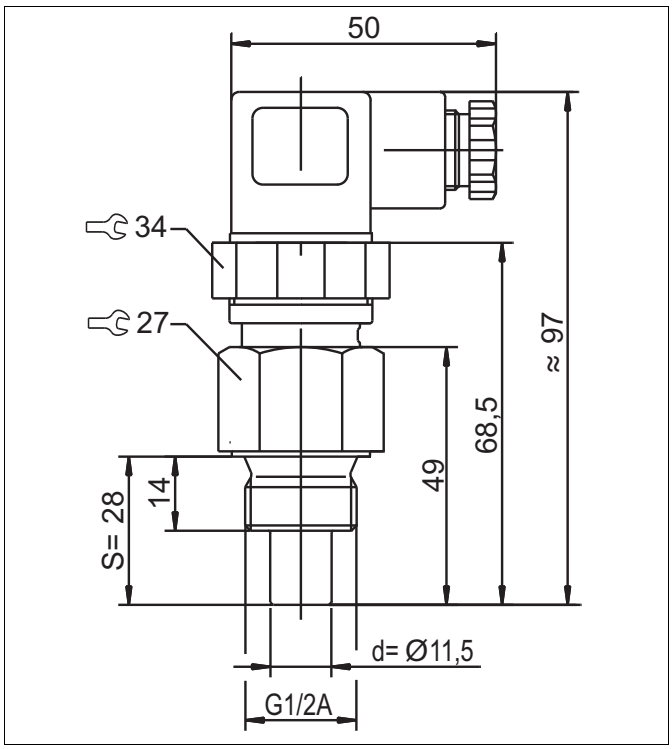
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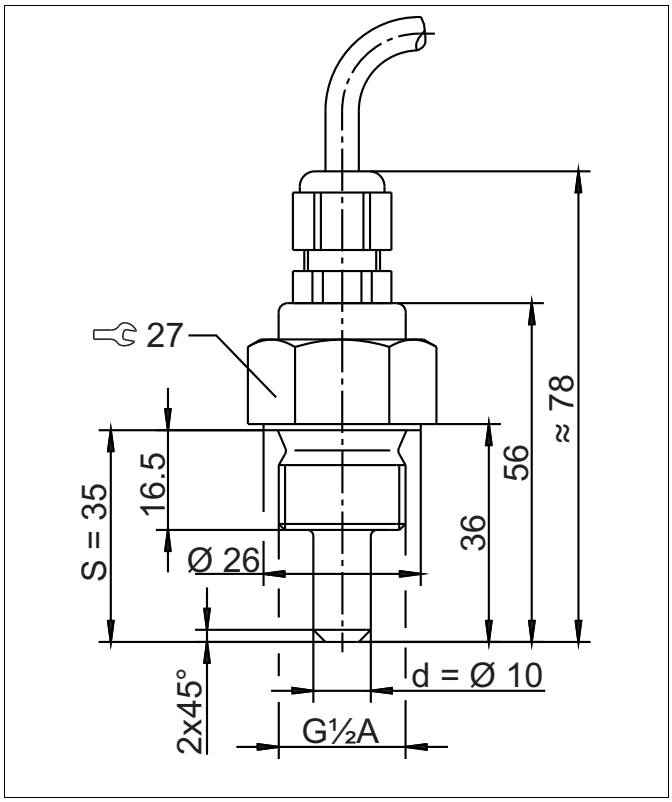


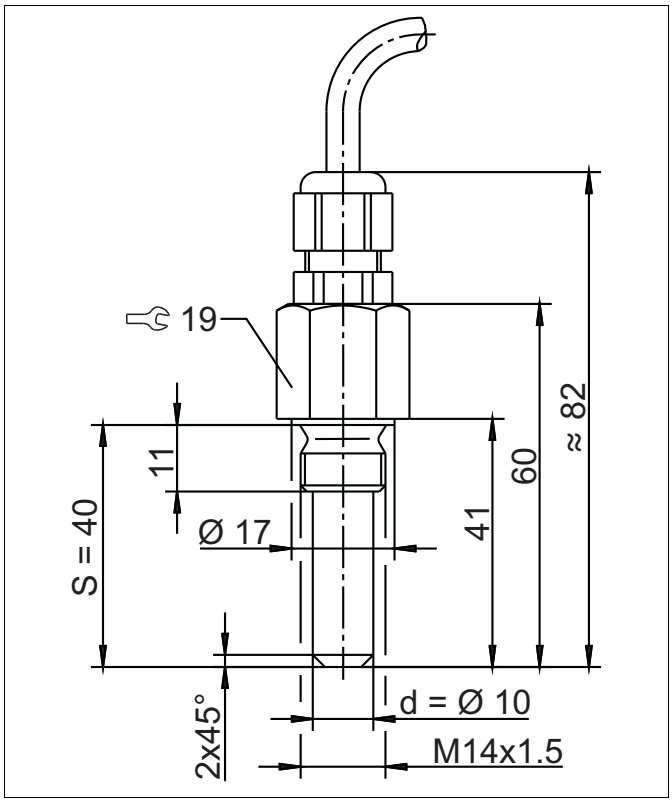


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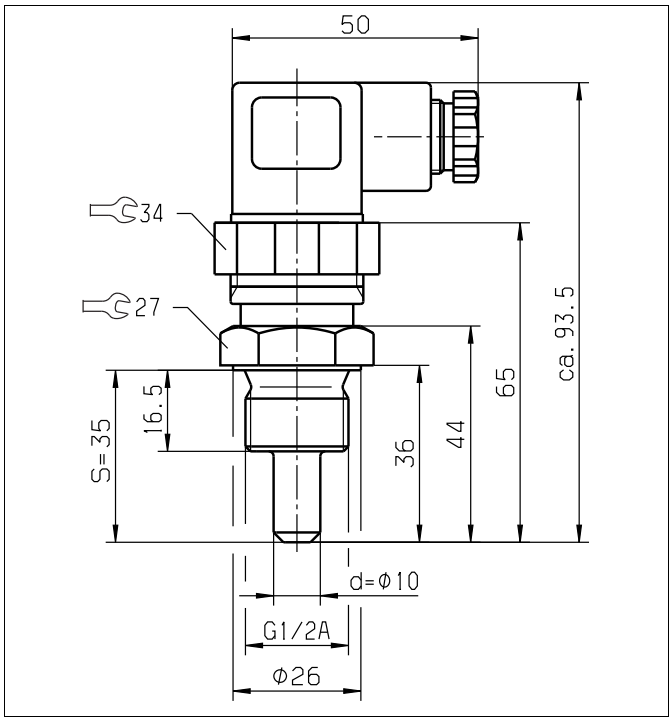
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Device with slow-action contact

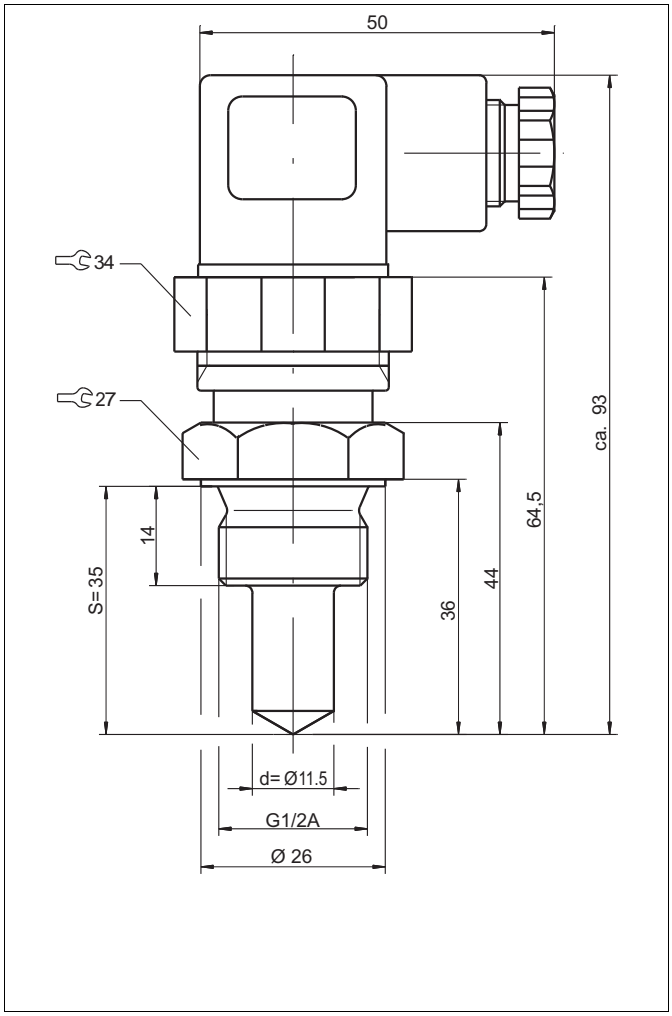


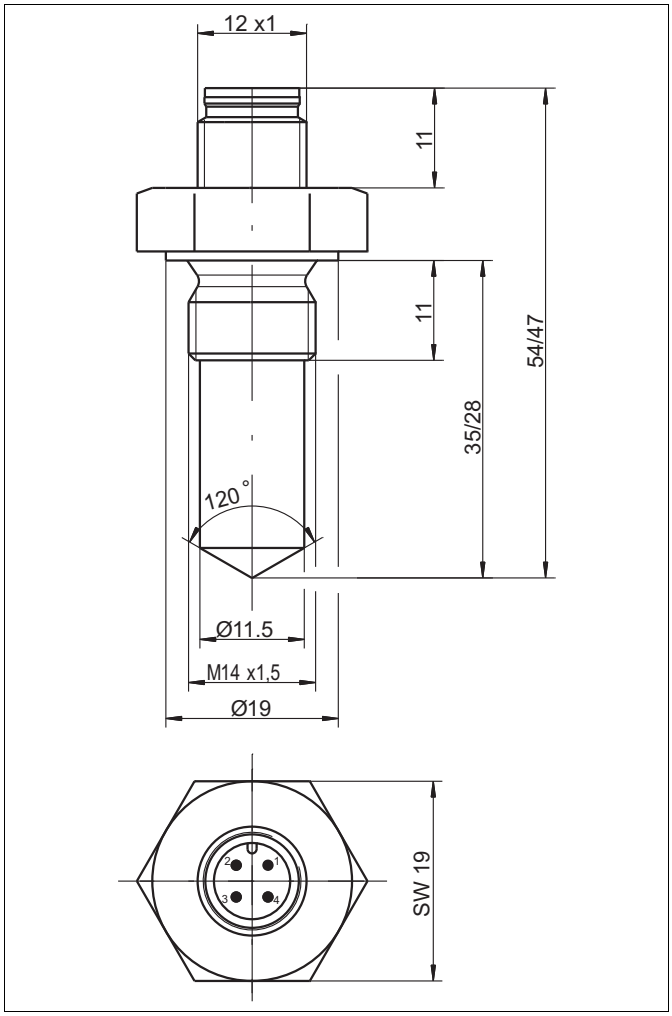
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Device with miniature snap-action switch





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Order details

	(1)	**Basic type**
608301		Bimetal Dial Thermometer - Electromechanical temperature switch with a fixed switching temperature
	(2)	**Basic type extension**
10		Snap-action switch
20		Slow-action contact
30		Miniature snap-action switch
	(3)	**Switching temperature**
40		40 °C
45		45 °C
50		50 °C
55		55 °C
60		60 °C
65		65 °C
70		70 °C
75		75 °C
80		80 °C
85		85 °C
90		90 °C
95		95 °C
100		100 °C
105		105 °C
110		110 °C
115		115 °C
120		120 °C
125		125 °C
130		130 °C
135		135 °C
140		140 °C
	(4)	**Switching output**
98		NC contact (SA01)
99		NO contact (SA02)
	(5)	**Nominal voltage**
50		AC 6 to 48 V
51		AC 6 to 230 V
52		DC 12 to 30 V for version with slow-action contact
53		AC 6 to 120 V for version with snap-action switch and snap-action contact with gold-plating
54		DC 6 to 30 V for version with snap-action switch and snap-action contact with gold-plating
	(6)	**Electrical connection**
01		Tab connector
11		Attached cable
18		Connecting cable with cable fitting
36		Plug connector M12 × 1
61		Cable socket DIN EN 175301-803, Form A
	(7)	**Process connection material**
50		CuZn CW614N
78		CrNi 1.4305
	(8)	**Diameter**
10		10 mm
11.5		11.5 mm

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	(9)	**Thread type of process connection**
104		Screw connection G 1/2
121		Screw connection M14 × 1,5
	(10)	**Insertion length**
28.00		28 mm
35.00		35 mm
40.00		40 mm
	(11)	**Cable length**
000		None
1000		1,000 mm
2000		2,000 mm
3000		3,000 mm
4000		4,000 mm
5000		5,000 mm
	(12)	**Extra codes**
000		None
702		Snap action contact with gold-plating
840		With integrated Pt100
841		With integrated Pt1000

	(1)		(2)		(3)		(4)		(5)		(6)		(7)		(8)		(9)		(10)		(11)		(12)	
Order code		/		-		-		-		-		-		-		-		-		/		, ...[a]
Order example	60831	/	10	-	140	-	98	-	50	-	01	-	50	-	10	-	121	-	35	-	0	/	000	

[a] List extra codes in sequence, separated by commas.

Minimum order quantity: 50 pieces

Additional versions upon request (switching temperature, fitting e.g.).

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Possible combinations

(2) Basic type extension	...	(5) Nominal voltage		(6) Electrical connection	...	(8) Diameter of process connection	(9) Thread type of process connection	(10) Insertion length	Wrench size
608301/10	...	50	(AC 0 to 48 V)	01	...	11.5 mm	G 1/2 A	28 mm	27
608301/10	...	50	(AC 0 to 48 V)	01	...	10 mm	M14 × 1.5	35 mm	24
608301/10	...	51	(AC 0 to 230 V)	61	...	11.5 mm	G 1/2 A	28 mm	27[a]
608301/10	...	51	(AC 0 to 230 V)	61	...	10 mm	M14 × 1.5	35 mm	27[a]
608301/10	...	50	(AC 0 to 48 V)	11	...	11.5 mm	G 1/2 A	28 mm	27
608301/10	...	51	(AC 0 to 230 V)	11	...	11.5 mm	G 1/2 A	28 mm	27[a]
608301/10	...	50	(AC 0 to 48 V)	11	...	10 mm	M14 × 1.5	35 mm	22
608301/10	...	51	(AC 0 to 230 V)	11	...	10 mm	M14 × 1.5	35 mm	27[a]
608301/20	...	52	(AC 0 to 30 V)	61	...	10 mm	G 1/2 A	35 mm	27
608301/20	...	52	(AC 0 to 30 V)	61	...	10 mm	M14 × 1.5	35 mm	27
608301/20	...	52	(AC 0 to 30 V)	18	...	10 mm	G 1/2 A	35 mm	27
608301/20	...	52	(AC 0 to 230 V)	18	...	10 mm	M14 × 1.5	40 mm	19
608301/30	...	51	(AC 0 to 230 V)	61	...	11.5 mm	G 1/2 A	35 mm	27[a]
608301/30	...	51	(AC 0 to 48 V)	61	...	11.5 mm	M14 × 1.5	28 mm	27[a]
608301/30	...	50	(AC 0 to 48 V)	18	...	11.5 mm	G 1/2 A	35 mm	27
608301/30	...	50	(AC 0 to 48 V)	18	...	11.5 mm	M14 × 1.5	28 mm	19
608301/30	...	50	(AC 0 to 48 V)	36	...	11.5 mm	G 1/2 A	35 mm	27
608301/30	...	50	(AC 0 to 48 V)	36	...	11.5 mm	M14 × 1.5	28 mm	19

[a] With protection conductor.