

**JUMO GmbH & Co. KG**

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**JUMO Instrument Co. Ltd.**

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**JUMO Process Control, Inc.**

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## Contact Dial Thermometers

### Special features

- Class 1.5
- Display range -40 to +600 °C
- Temperature controller with actual value display as built-in or add-on device in a stainless steel case
- With 1 or 2 microswitches
- Case sizes Ø: 60 mm, 80 mm, and 100 mm
- Front panel: 72 mm × 72 mm and 96 mm × 96 mm

### Brief description

Contact dial thermometers are devices with an actual value display for temperature measurement, control, and monitoring and can be used universally.

The temperature-dependent volume change in a measuring system filled with liquid or the temperature-dependent pressure change in a measuring system filled with gas is converted to a rotational movement of the actual value indicator by a bourdon tube; no transmission gear is required. The microswitch is actuated by the rotational movement of the indicator shaft via a tap system.

Contact dial thermometers in the series 608520/608550 are RoHS-compliant and cadmium-free.

**Type 608520/2380****Type 608550/1080**

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## Technical data

### General Information

Case and front panel	Stainless steel (1.4301)
Cover cap	Plastic (PA6), gray, UV-stabilized
Protection type	IP54 according to DIN EN 60529
Front pane	Acrylic glass (PMMA)
Chassis	Aluminum (3.2582.05)
Scale	White, with black lettering
Display	Class 1.5 similar to DIN EN 13190
Strain relief spring	For capillary devices on the case and the temperature probe
Setpoint value adjustment	By setpoint adjuster in the front pane
Display correction	On the rear
Limit value temperatures	For transport and storage -30 to +70 °C (for display range -40 to +40 °C up to max. 50 °C; -30 to +50 °C up to max. 60 °C)
Rated position (NL)	Any

### Display range

Display range (AB)	Display range °C	Measuring range in °C	Tolerance in K (±)
469	-40 to +40	-30 to +30	1.5
643	-20 to +120	-20 to +120	3.0
807	0 to 60	10 to 50	1.5
814	0 to 100	10 to 90	1.5
818	0 to 120	20 to 100	3.0
832	0 to 200	20 to 180	3.0
840	0 to 300	30 to 270	6.0
848	0 to 400	50 to 350	6.0
854	0 to 500	50 to 450	8.0
858	0 to 600	100 to 500	10.0

### Filling

	Liquid filling	Gas filling
Measuring system	Display range (AB) ≤ 350 °C	Display range (AB) ≥ 400 °C
Time constant $t_{0.632}$	Approx. 12 s, measured in water, with a probe-Ø of 6 mm made of copper	Approx. 4 s, measured in oil, with a probe Ø of 10 mm made of stainless steel
Ambient temperature influence effect	In % of the display range (referring to the deviation from the reference value 23 °C)	
On case	0.15 % of the display range per K ambient temperature change	0.05 % of the display range per K ambient temperature change
On capillary (per m)	0.03 % of the display range per K ambient temperature change	No influence
	At higher ambient temperature - higher temperature display - lower switching point	

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## Electrical contact

Electrical contact	Standard	Extra code (TZ) 650
Contact type	Single-pole microswitch with mechanically actuated changeover contact	
Switching capacity	AC 230 V, +10/-15 %, 48 to 63 Hz, $\cos \varphi = 1$ (0.6) 5 (1.5) A	10 (3) A
Switching differential	Approx. 1.5 % of the display range	1.5 to 3 % of the display range
Switching point accuracy	$\pm 0.5$ % of the display range referring to the switch-off point with rising temperature	
Switching reliability	To ensure a high switching reliability, we recommend a minimum voltage of 24 V and a minimum current of 100 mA.	

## Electrical connection

Electrical connection	Standard	Design type 02 and 22	Design type 10, 23 and extra code 426	Case Ø 60 mm
	Screw terminals, connection cross-section up to 2.5 mm <sup>2</sup>	Connection cable 0.6 m ferrule	Cover cap with cable fitting, suitable for cable Ø from 6.5 to 13 mm	Cover cap with cable fitting, suitable for cable Ø from 8 to 10 mm

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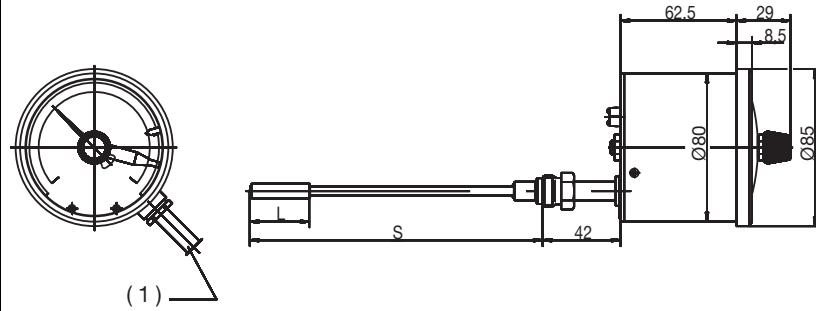
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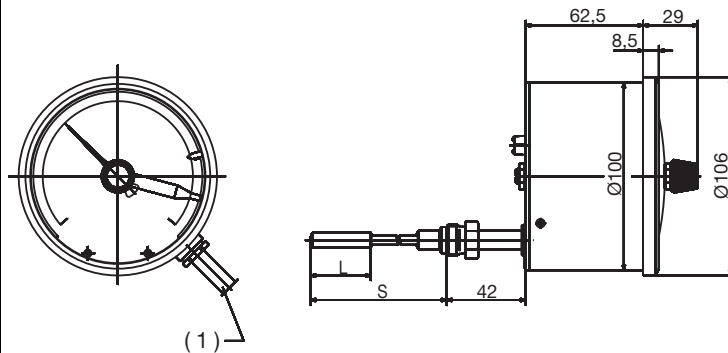
## Dimensions

Type 608520/0280



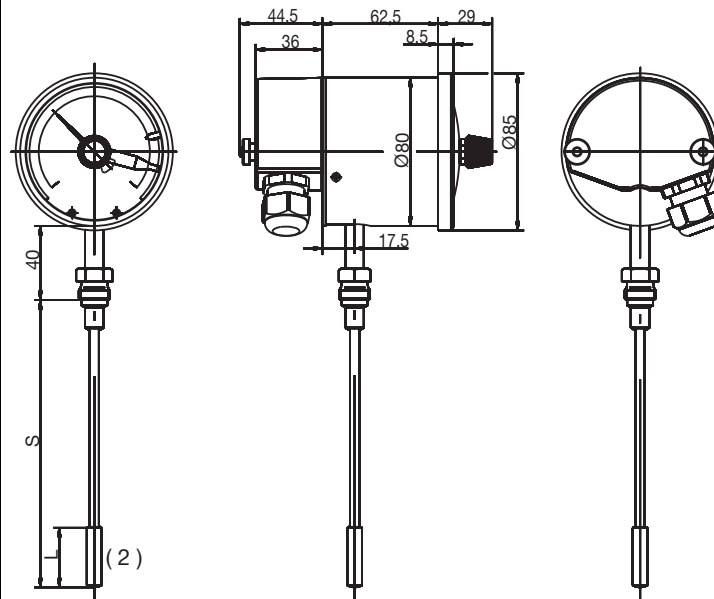
(1) Connecting cable 0.6 m

Type 608520/0210



(1) Connecting cable 0.6 m

Type 608520/1080



(2) Active probe dimension

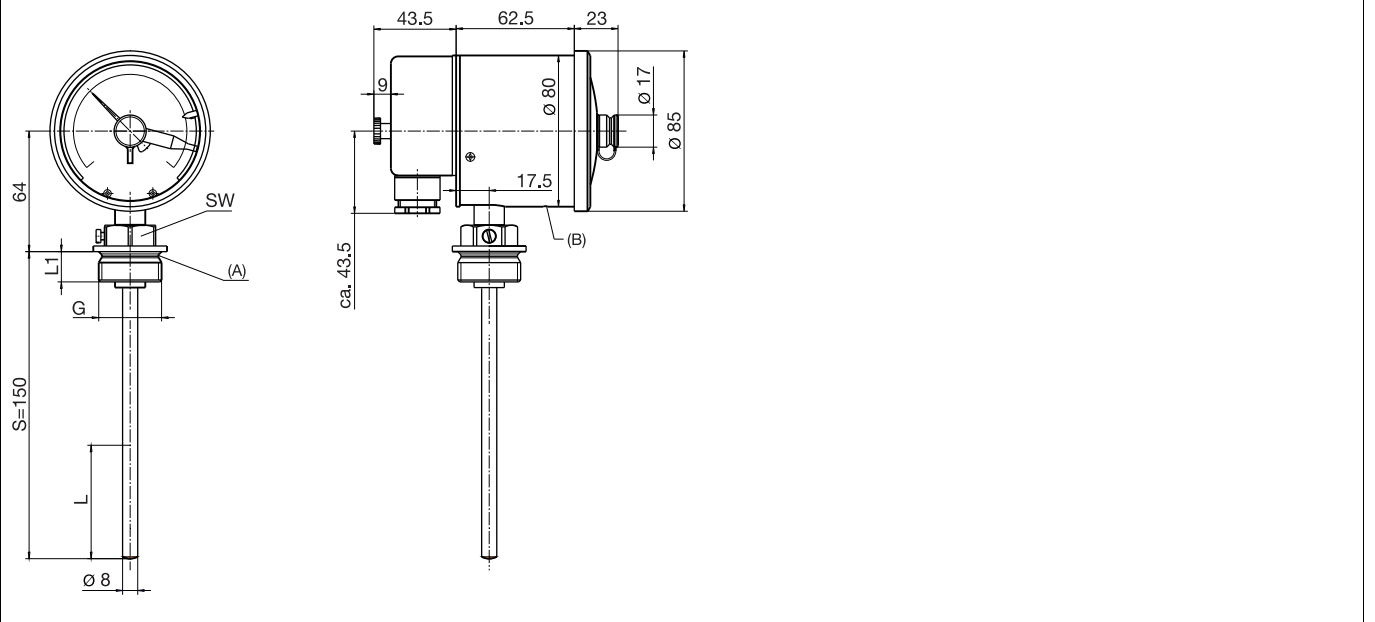
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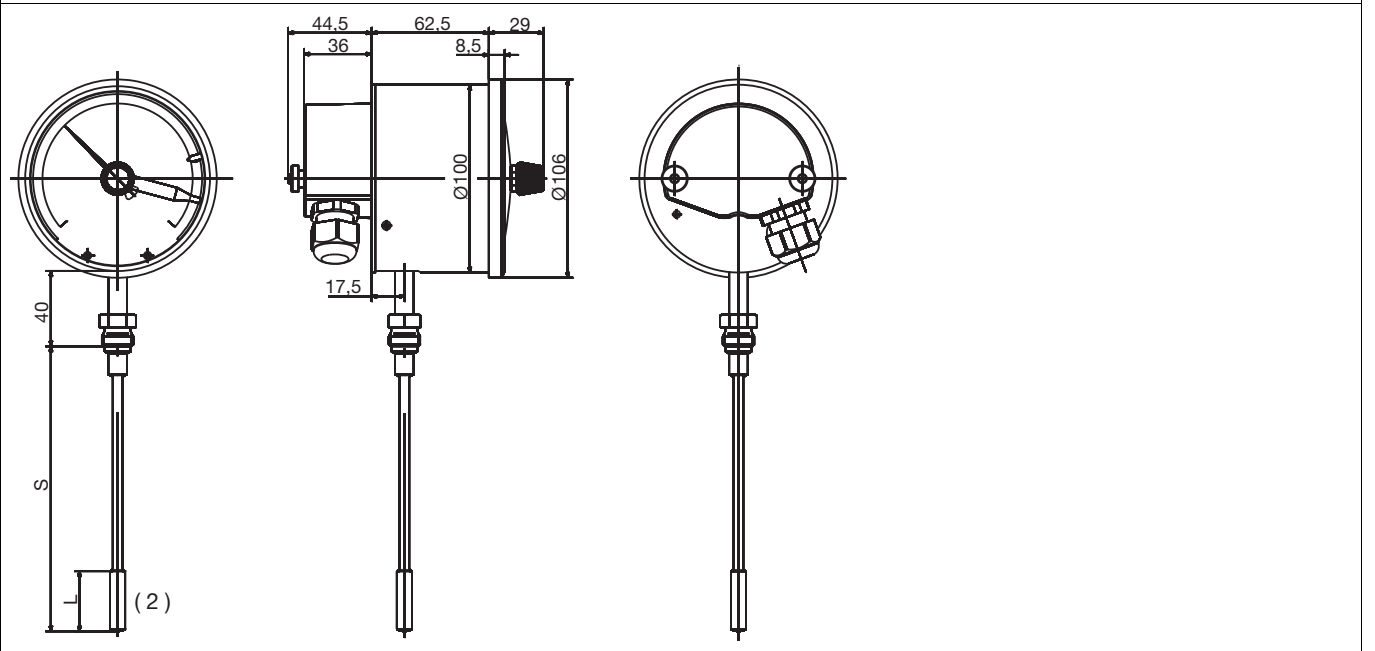


Type 608550/1080 + TA24



- (A) Screw-in spigot, DIN 3852 Form A
- (B) Air vent
- (L) Active probe dimension for indication range 0 to 120 °C, approx 70 mm  
 for indication range -20 to +120 °C, approx 60 mm

Type 608520/1010



- (2) Active probe dimension

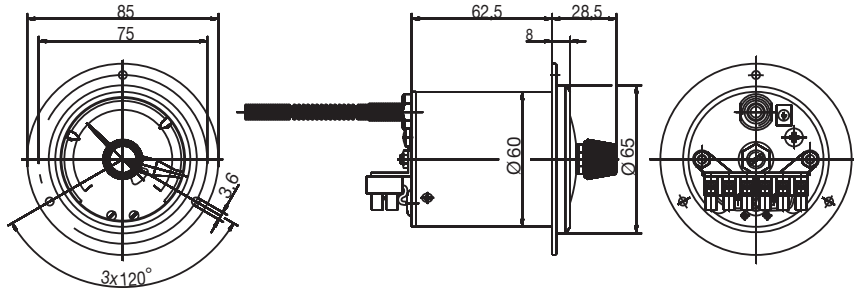
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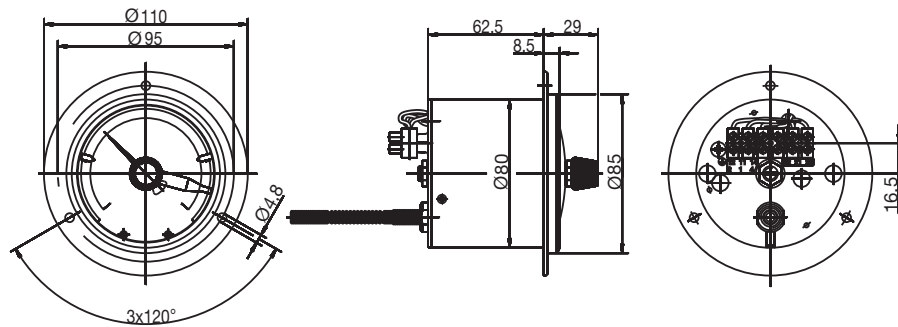


Type 608520/2060



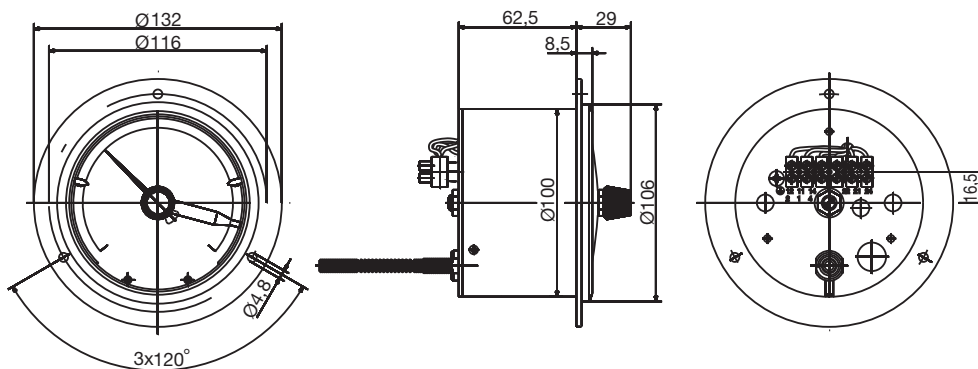
Panel cut-out for case  $\varnothing 60 \text{ mm} = 62^{+0.5/0} \text{ mm}$

Type 608520/2080



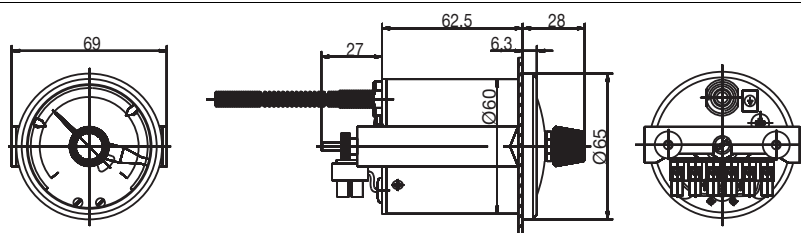
Panel cut-out for case  $\varnothing 80 \text{ mm} = 82^{+0.5/0} \text{ mm}$

Type 608520/2010



Panel cut-out for case  $\varnothing 100 \text{ mm} = 100_0^{+0.5} \text{ mm}$

Type 608520/2160



Panel cut-out for case  $\varnothing 60 \text{ mm} = 62_0^{+0.5} \text{ mm}$

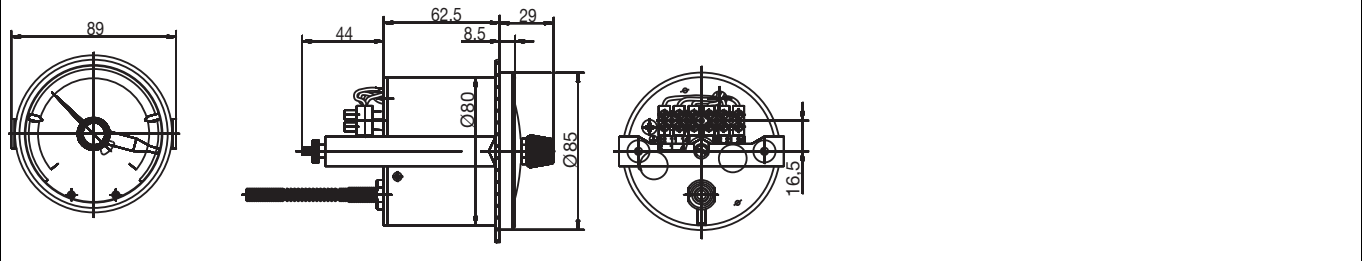
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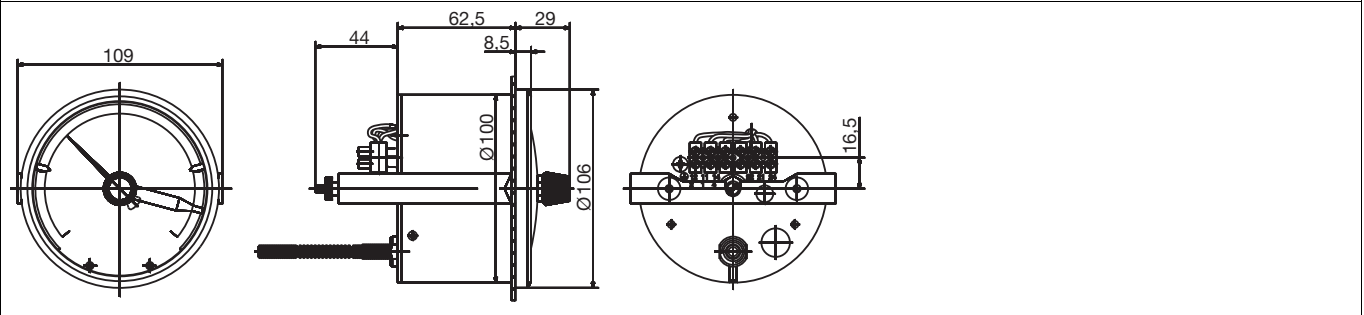


Type 608520/2180



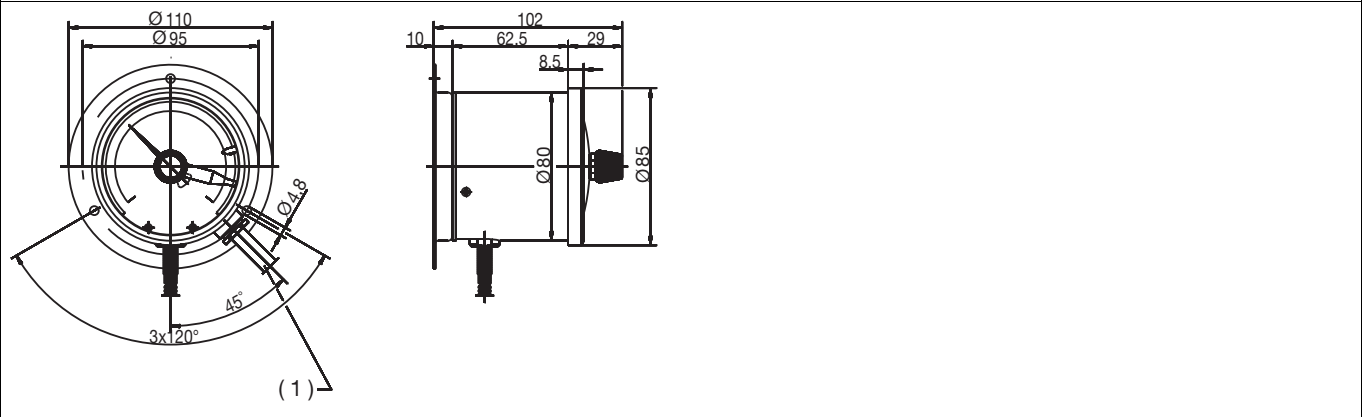
Panel cut-out for case  $\varnothing 80 \text{ mm} = 82_0^{+0,5} \text{ mm}$

Type 608520/2110



Panel cut-out for case  $\varnothing 100 \text{ mm} = 100_0^{+0,5} \text{ mm}$

Type 608520/2280



(1) Connecting cable 0.6 m long, ferrule

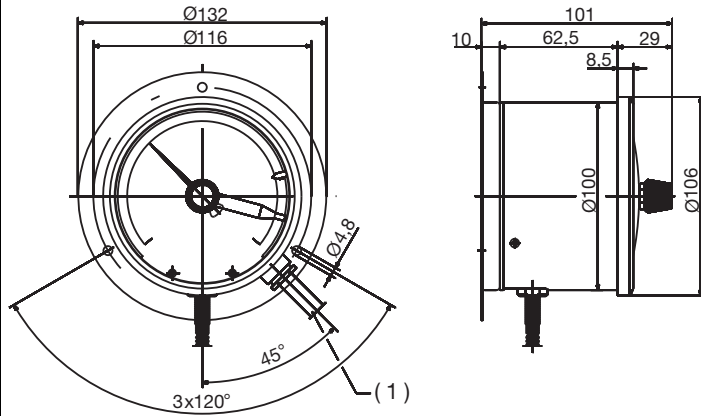
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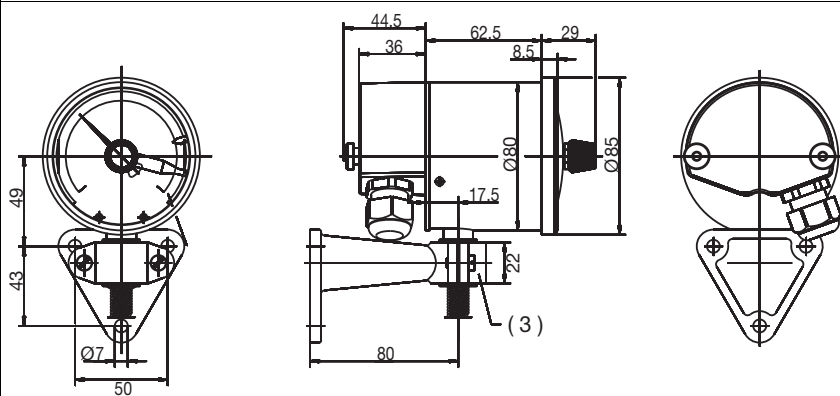


Type 608520/2210



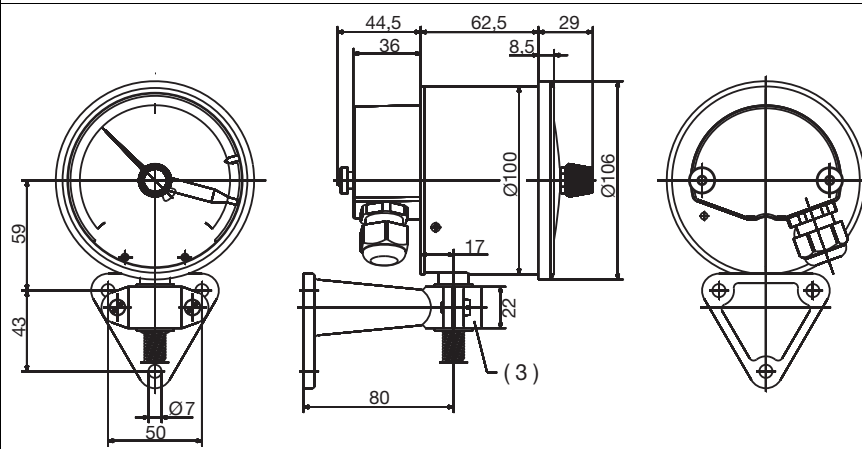
(1) Connecting cable 0.6 m long, ferrule

Type 608520/2380



(3) Spigot Ø 20 mm

Type 608520/2310



(3) Spigot Ø 20 mm



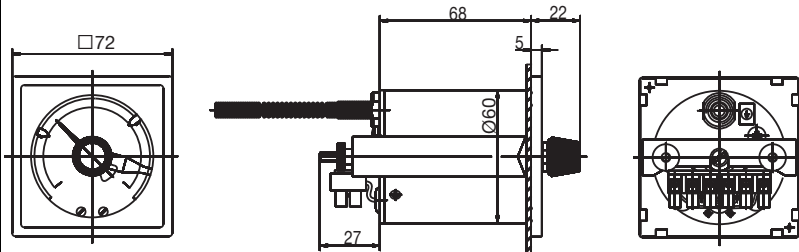
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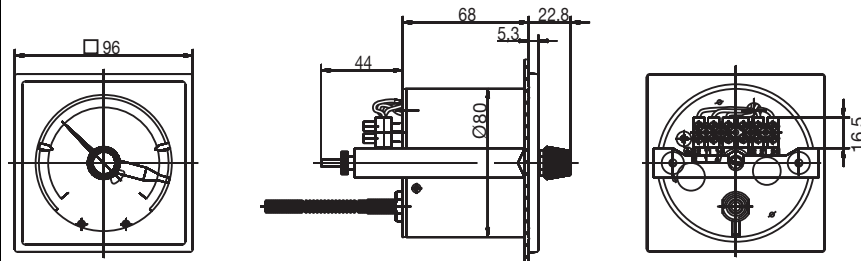


Type 608520/2572



Panel cut-out for front panel 72 mm × 72 mm = Ø 62<sub>0</sub><sup>+0.5</sup> mm

Type 608520/2596



Panel cut-out for front panel 96 mm × 96 mm = Ø 82<sub>0</sub><sup>+0.5/0</sup> mm or 92 mm × 92<sub>0</sub><sup>+0.5/0</sup> mm (extra code 460)

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## Order details

<b>(1) Basic type</b>			
608520	Mechanical contact dial thermometer, class 1.5		
608550	Mechanical contact dial thermometer, class 1.5 – Transformer version (only basic type extension 1080)		
<b>(2) Basic type extension</b>		Case size Ø	
0280	Design type 02		80 mm
0210	Design type 02		100 mm
1080	Design type 10		80 mm
1010	Design type 10		100 mm
2060	Design type 20		60 mm
2080	Design type 20		80 mm
2010	Design type 20		100 mm
2160	Design type 21		60 mm
2180	Design type 21		80 mm
2110	Design type 21		100 mm
2280	Design type 22		80 mm
2210	Design type 22		100 mm
2380	Design type 23		80 mm
2310	Design type 23		100 mm
2572	Design type 25		72 mm × 72 mm
2596	Design type 25		96 mm × 96 mm
<b>(3) Display range in °C</b>			
469	-40 to +40		
643	-20 to +120		
807	0 to 60		
814	0 to 100		
818	0 to 120		
832	0 to 200		
840	0 to 300		
848	0 to 400		
854	0 to 500		
858	0 to 600		
<b>(4) Capillary type<sup>a</sup></b>			
00	Without (with rigid connection)		
02	FL 02 Cu capillary with Cu textile braiding, approx. Ø 2.5 mm (up to AB end value 300 °C)		
11	FL 11 Cu capillary with PE coating, approx. Ø 3.5 mm (up to AB end value 120 °C)		
17	FL 17 Stainless steel capillary, approx. Ø 1.5 mm		
21	FL 21 Cu capillary, approx. Ø 1.0 mm (up to AB end value 300 °C)		
<b>(5) Capillary length<sup>b</sup></b>			
0	Without (with rigid connection)		
1000	1000 mm		
2000	2000 mm		
3000	3000 mm		
4000	4000 mm		
5000	5000 mm		

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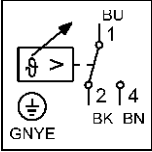
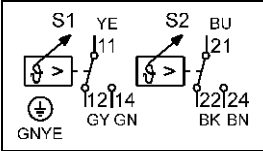
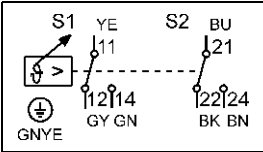
...	Special length (specifications in plain text: 1,000 mm increments, maximum length 6,000 mm), additional lengths upon request		
<b>(6) Process connection<sup>a</sup></b>			
750	TF 01	Temperature probe with stepped support tube	
752	TF 11	Temperature probe without support tube	
843	TA 02	Protection tube with union nut and loose screw connection <sup>b</sup>	
161	TA 03	Protection tube with loose screw connection	
847	TA 06	Protection tube with displaceable threaded fitting on support tube <sup>b</sup>	
311	TA 20	Protection tube with loose screw connection and connection collar <sup>b</sup>	
872	TA 21	Protection tube with loose pressure screw and conical seal (only G 3/8 possible)	
873	TA 22	Protection tube with loose pressure screw, conical seal and loose screw connection <sup>b</sup>	
874	TA 24	Protection tube (CuNi) with screw connection (CuZn), O-ring seal and clamping screw <sup>a, b</sup>	
401	TA 23	Protection tube with pressure screw and contact pressure spring (only M10 × 1 possible)	
913	SH 07	Screw-in protection tube, multi-sectional, with clamping piece and fixing screw (suitable for TF 01 and TF 11)	
820	SH 09	Weld-in protection tube, multi-sectional, with clamping piece and fixing screw <sup>b</sup> (not for FL 21 - welding collar with steel 1.4515)	
876	SH 10	Screw-in protection tube, multi-sectional <sup>b</sup> (suitable for TA 21)	
871	SH 11	Screw-in protection tube, multi-sectional <sup>b</sup> (suitable for TA 23)	
<b>(7) Diameter of process connection<sup>a</sup></b>			
6	6 mm		
8	8 mm		
10	10 mm		
11	11 mm		
12	12 mm		
<b>(8) Thread type of process connection<sup>a</sup></b>			
000	Without (for TA 01 and TF 11)		
103	Screw connection G 3/8		
104	Screw connection G 1/2		
105	Screw connection G 3/4		
106	Screw connection G 1		
114	Screw connection M10 × 1 (only with TA 23)		
<b>(9) Material probe/support tube<sup>a</sup></b>			
26	Stainless steel (CrNi, 1.4571)		

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96	Copper (Cu)/Brass (CuZn) (up to 200 °C)
95	Stainless steel (CrNi, 1.4571) - probe/brass (CuZn) - support tube (from 250 °C)
<b>(10) Process connection material<sup>a</sup></b>	
00	Without (only TF 01 and TF 11)
26	Stainless steel (CrNi, 1.4571)
46	Brass (CuZn)
<b>(11) Insertion length process connection<sup>a</sup> (dimension „EL“ or „S“)</b>	
0	Minimum insertion length TF 11 (active probe dimension)
50	50 mm
100	100 mm
150	150 mm
200	200 mm
...	Special length (specifications in plain text, 50 mm increments)
<b>(12) Switching output</b>	
20	1 changeover switch 
21	2 changeover switches 
22	2 changeover switches with fixed sequence 
<b>(13) Extra codes</b>	
000	Without
426	Cover cap to protect the screw terminals against contact and spray water (standard for design types 10 and 23; not for design type 02 and 22; not in conjunction with extra code 460)
430	Drag indicator (includes extra code 477)
460	Device centering for panel cut-out 92 mm × 92 mm (only for basic type extension 2596)
477	Setpoint adjustment protected by the bolted cover, adjustment with screwdriver
518	Stop for Min.- or Max.-setpoint value limitation, default setting
522	Customized scale
650	Microswitch 10 (3) A [AC/DC 230 V, +10/-15 %, 48 to 63 Hz, cos φ = 1 (0.6)]
<b>Special versions upon request!</b>	

<sup>a</sup> For the description and special features refer to data sheet 608730.

<sup>b</sup> Screw-in spigot according to DIN 3852, form A

**Order code**                    (1)    (2)    (3)    (4)    (5)    (6)    (7)    (8)    (9)    (10)    (11)    (12)    (13)  
□ / □ - □ - □ - □ - □ - □ - □ - □ - □ - □ - □ / □ , ...<sup>a</sup>  
**Order example**                    608520 / 210 - 818 - 21 - 2000 - 104 - 10 - 000 - 26 - 00 - 100 - 20 / 650

<sup>a</sup> List extra codes in sequence, separated by commas.

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## Stock versions

Delivery within 3 working days after receipt of order

Type	Display range °C	Switching output	Temperature probe, process connection	Protection tube mm	Part no.
608550/0180-643-874-8-106-50-150-20/434-522 with drag indicator	-20 to +120	20 (1 contact)	TF 05 d = 8 mm TA 24, G 1", CuZn	150	00455918
608550/0180-643-874-8-106-50-150-21/434-522 with drag indicator		21 (2 contacts)			00455919