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JUMO Instrument Co. Ltd.
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JUMO Process Control, Inc.
 6733 Myers Road
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 E-mail: info.us@jumo.net
 Internet: www.jumousa.com



Contact dial thermometer

Particularities

- Temperature controller with actual value display as panel-mounting or add-on device
- Stainless steel case with bayonet lock
- Class 1.5
- Protection class IP 53
- Case sizes Ø: 60 mm, 80 mm and 100 mm
 Front frame: 72x72 mm and 96x96 mm

Brief description

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

The temperature depending volume change in a measuring system filled with liquid or the temperature depending 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.



Technical Data

Case and front frame	Stainless steel (1.4301)
Cover cap	Plastic (PA6), gray, UV stabilized
Protection type	IP 51 as per DIN EN 60529 (IP 53 with extra code 401)
Front pane	Acryl glass (PMMA)
Chassis	Aluminum (3.2582.05)
Scale	white, labeled in black
Display	Class 1.5 similar to DIN EN 13190
Anti-kink spring	for devices with capillary on the case and the temperature probe
Set point value setting	by set point controller in the front window
Display correction	on the rear
Limit value temperatures	for transport and storage -30°C...+70°C (for display range -40...+40°C up to max. 50°C; -30...+50°C up to max. 60°C)
Rated position	any

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Technical Data

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

	Liquid filling	Gas filling
Measuring system	Display range (AB) ≤ 350°C	Display range (AB) ÷ 400°C
Time behavior	approx. 12 s, measured in water, with a probe Ø of 6 mm made of Cu.	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
	Higher ambient temperature – higher temperature display – lower switching point	
Anti-kink spring	for devices with capillary on the case and the temperature probe	
Set point value setting	by set point controller in the front window	
Display correction	on the rear	
Limit value temperatures	for transport and storage -30°C...+70°C (for display range -40...+40°C up to max. 50°C; -30...+50°C up to max. 60°C)	
Rated position	any	

	standard	Extra code (TZ) 650
Electric contact	Single-pole microswitch with mechanically actuate change-over contact	
Type of contact		
Contact rating	AC 230V, +10/-15%, 48...63Hz, cos φ = 1 (0.6)	
	5 (1.5) A	10 (3) A
Hysteresis	approx. 1.5% of the display range	1.5 to 3% of the display range
Switching point accuracy	± 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	

	standard	Design 02 and 22	Design 10, 23 and TZ 426	Case Ø 60 mm
Electrical connection	Screw-type terminals, connection cross section up to 2.5 mm ²	Connection cable 0.5 m with screw-type terminals	Cover cap with cable screw-connection, suitable for cable Ø from 6.5 to 13 mm	Cover cap with cable screw-connection, suitable for cable Ø from 8 to 10 mm

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**Note:**

Physical and toxic features of the expansion means, which could emerge in the event of a measuring system break.

Control range with scale limit value	Hazardous reactions	Fire and explosion hazard		hazardous to waters	Information about toxicology		
		Ignition temperature	Explosion limit		irritant	dangerous to health	toxic
< +200°C	no	+ 355°C	0.6 - 8 V%	yes	yes	^a	no
≥ 200°C ≤ +350°C		+ 490°C	- -	yes	yes	^a	
> 350°C ≤ +500°C		no	no	no	no	no	

^a There is currently no statement by the health authority concerning hazards to health in the event of short-term exposure and low concentration, e.g. measuring system break.

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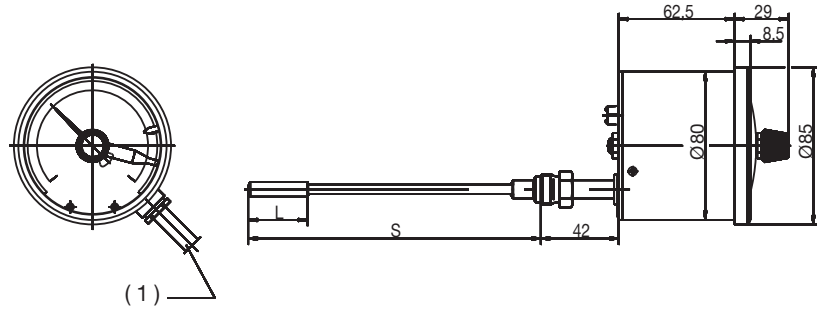
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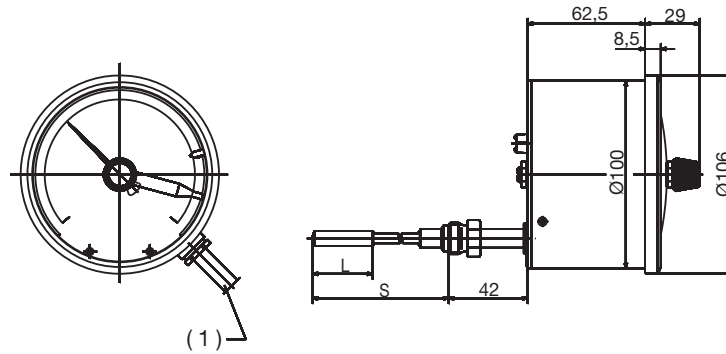
Dimensions

Type:
 608520/0280



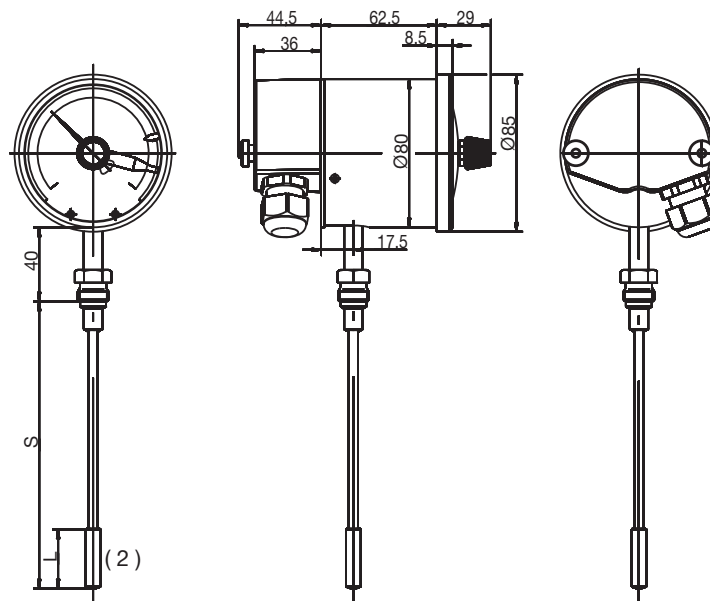
(1) Connection line 0.6 m long with screw terminal

Type:
 608520/0210



(1) Connection line 0.6 m long with screw terminal

Type:
 608520/1080



(2) active probe dimension

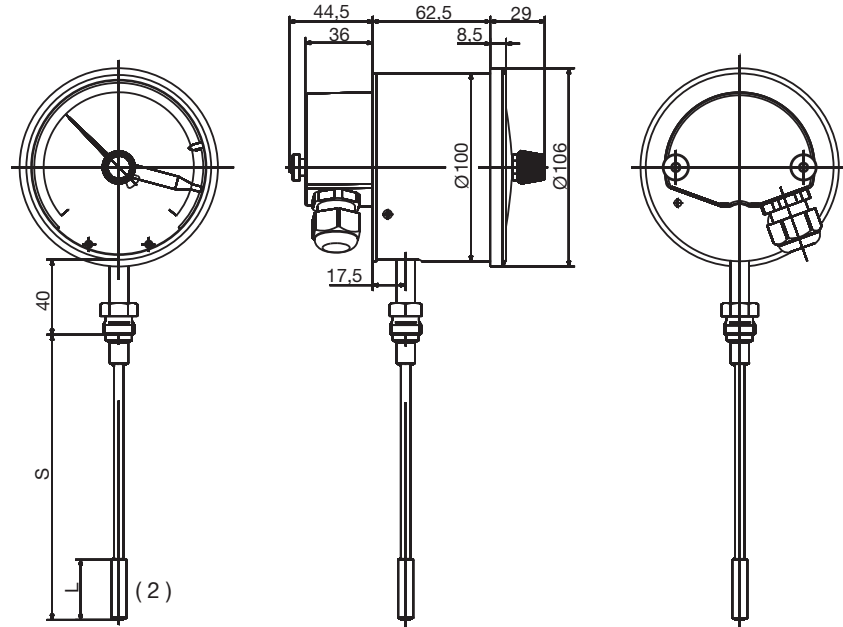
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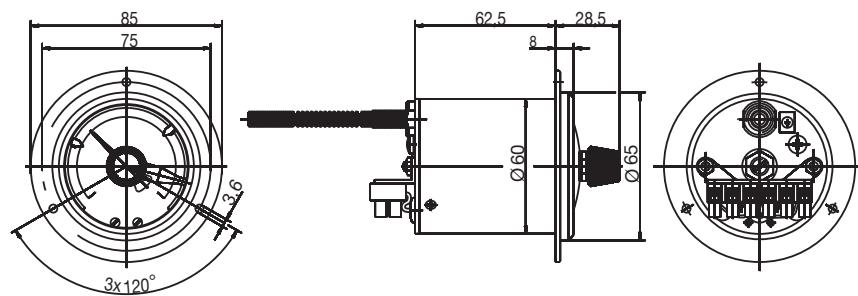


Type:
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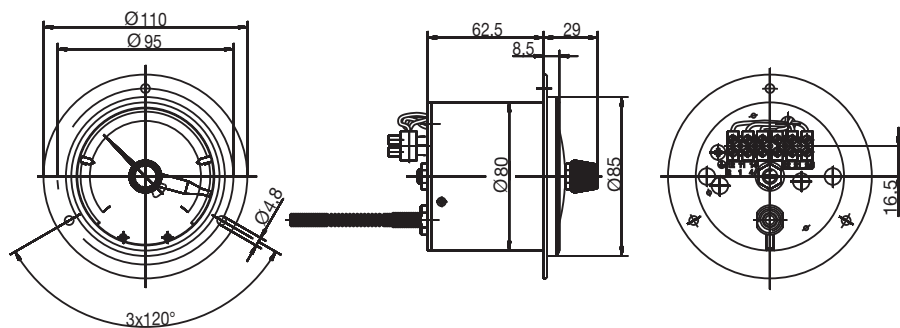
(2) active probe dimension

Type:
 608520/2060



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

Type:
 608520/2080



Panel cut-out for case
 $\varnothing 80 \text{ mm} = 62^{+0.5} \text{ mm}$

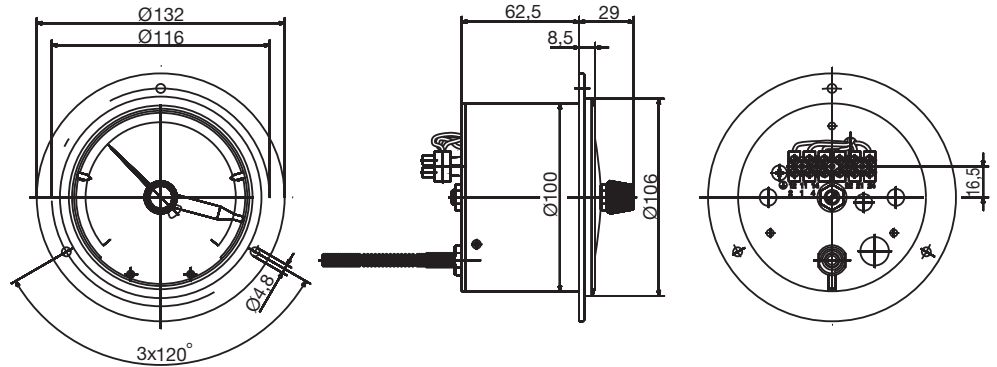
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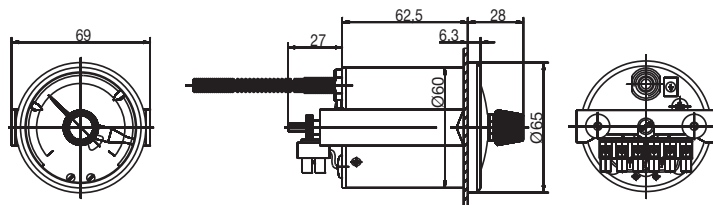


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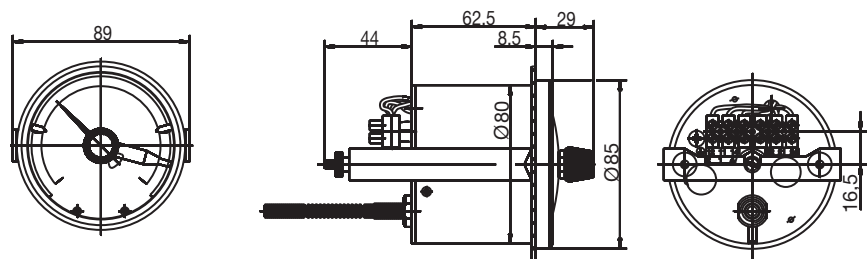
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Type:
 608520/2160



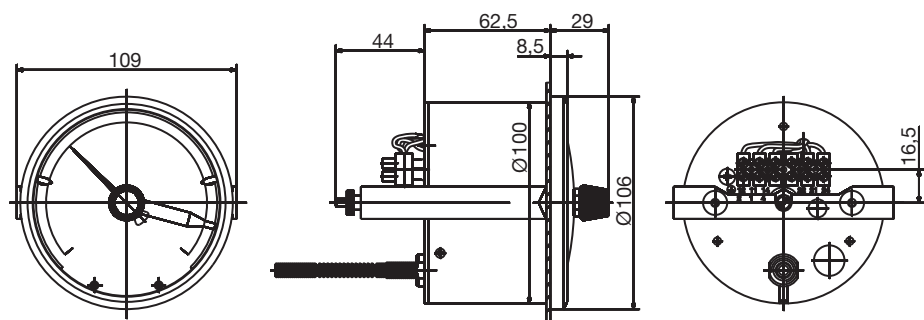
Panel cut-out for case
 $\text{Ø } 60 \text{ mm} = 62^{+0.5} \text{ mm}$

Type:
 608520/2180



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

Type:
 608520/2110



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

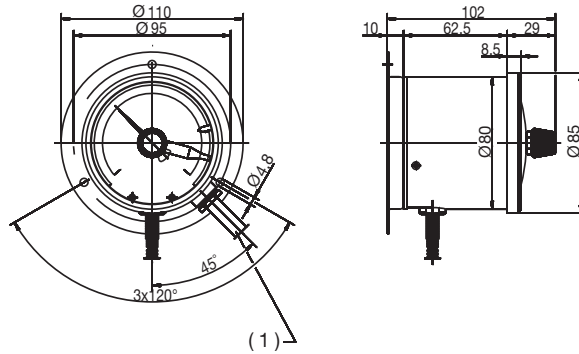
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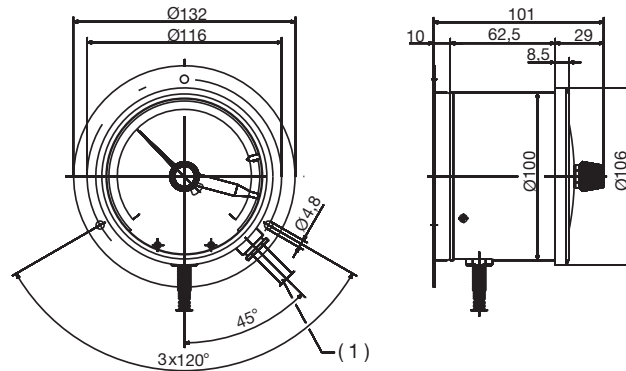


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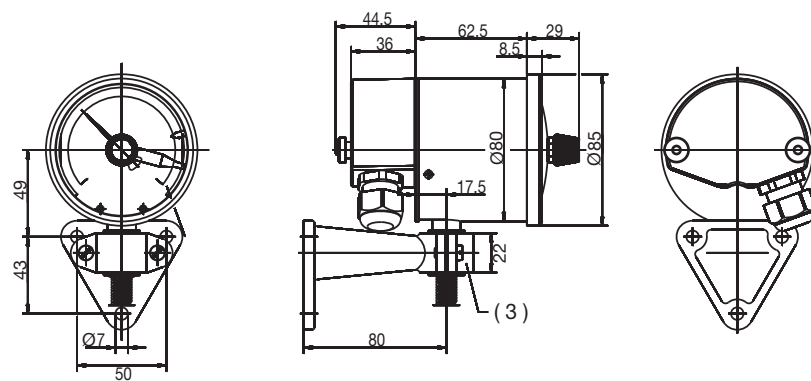
(1) Connection line 0.6 m long with screw terminal

Type:
 608520/2210



(1) Connection line 0.6 m long with screw terminal

Type:
 608520/2380



(3) Spigot \varnothing 20 mm

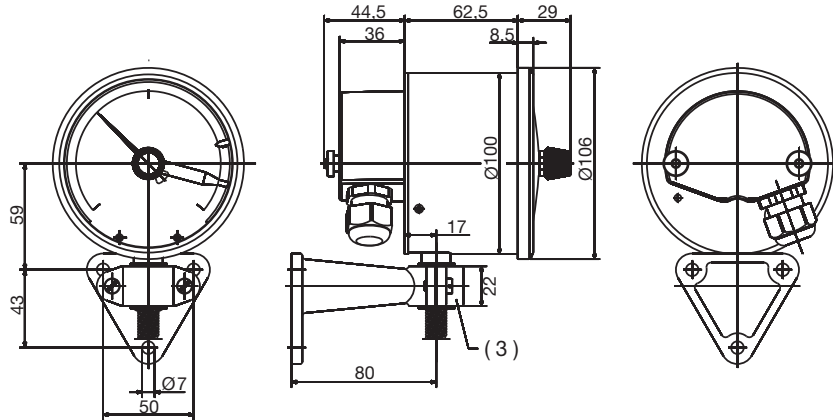
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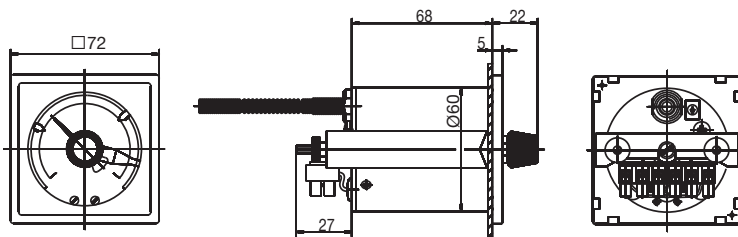


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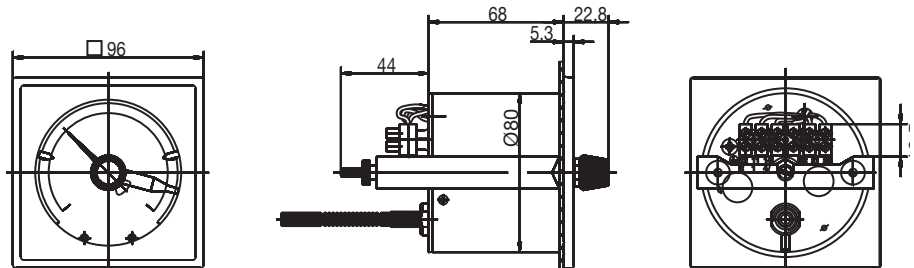
(3) Spigot Ø 20 mm

Type:
 608520/2572



Panel cut-out for front frame
 72 x 72 mm = Ø 62^{+0,5} mm

Type:
 608520/2596



Panel cut-out for front frame
 96 x 96 mm = Ø 82^{+0,5} mm oder
 96 x 96 mm = 92 x 92^{+0,5} mm (TZ 460)

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Order details

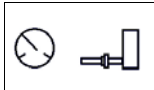

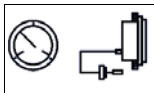
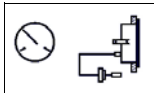
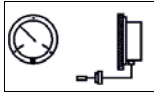
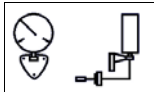
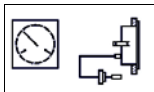
Order code

(1) Basic type

608520	Mechanical Contact dial thermometer, class 1.5
608550	Mechanical Contact dial thermometer, class 1.5, Transformer version (only basic type extension 1080)

(2) Basic type extensions

Case size Ø

0280	Design 02		80 mm
0210			100 mm
1080	Design 10		80 mm
1010			100 mm
2060	Design 20		60 mm
2080			80 mm
2010			100 mm
2160	Design 21		60 mm
2180			80 mm
2110			100 mm
2280	Design 22		80 mm
2210			100 mm
2380	Design 23		80 mm
2310			100 mm
2572	Design 25		Case size □
2596			72 x 72 mm 96 x 96 mm

(3) Display range in °C

469	-40...+40
643	-20...+120
807	0...+60
814	0...+100
818	0...+120
832	0...+200
840	0...+300
848	0...+400
854	0...+500
858	0...+600

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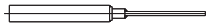
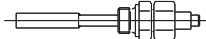


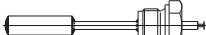




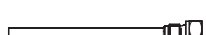



(4) Capillary type (FL) ^a

- 00 Without (with rigid connection)
- 02 FL 02 Cu capillary with Cu textile braiding, approx. Ø 2.5 mm (up to AB limit value +300°C)
- 11 FL 11 Cu capillary with PE jacketing, approx. Ø 3.5 mm (up to AB limit 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 limit value +300°C)

(5) Capillary ^b

- 0 Without (with rigid connection)
- 1000 1000 mm
- 2000 2000 mm
- 3000 3000 mm
- 4000 4000 mm
- 5000 5000 mm
- ... Special length (specifications in plain text: 1000 mm steps, maximum length 6000 mm), further lengths on request

(6) Process connection (PA) ^a

- | | | | |
|-----|-------|---|---|
| 750 | TF 01 | Temperature probe with stepped support tube |  |
| 752 | TF 11 | Temperature probe without support tube |  |
| 843 | TA 02 | Immersion tube with union nut and loose screw-connection ^b |  |
| 161 | TA 03 | Immersion tube with loose screw-connection |  |
| 847 | TA 06 | Immersion tube with displaceable clamping screw-connection on support tube ^b |  |
| 311 | TA 20 | Immersion tube with loose screw-connection and connection collar ^b |  |
| 872 | TA 21 | Immersion tube with loose screw-connection and sealing cone (only G 3/8 possible) |  |
| 873 | TA 22 | Immersion tube with loose pressure screw, sealing cone and loose screw-connection ^b |  |
| 874 | TA 24 | immersion tube with screw fitting, O ring seal and clamping screw ^{a b} |  |
| 401 | TA 23 | Immersion tube with pressure screw and contact pressure spring (only M 10x1 possible) |  |
| 913 | SH 07 | Screw-in sheath, multi-part, with clamping piece and locking screw (suitable for TF 01 and TF 11) |  |
| 820 | SH 09 | Weld-in sheath, multi-part, with clamping piece and locking screw ^b (not for FL 21 - welding collar with steel 1.4515) |  |
| 876 | SH 10 | Screw-in sheath, multi-part ^b (suitable for TA 21) |  |
| 871 | SH 11 | Screw-in sheath, multi-part ^b (suitable for TA 23) |  |

^a For the description and particularities refer to data sheet 608730.

^b Screw-in spigot as per DIN 3852, form A.

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Order code	(7)	Ø Process connection (PC) ^a
6		6 mm
8		8 mm
10		10 mm
11		11 mm
12		12 mm
	(8)	Thread type of process connection (PA) ^a
000		Without thread (for TA 01 and TF 11)
103		Screw connection G 3/8
104		Screw-connection G 1/2
105		Screw-connection G 3/4
114		Screw-connection M 10 x 1 (only for TA 23)
	(9)	Material, probe / support tube ^a
26		Stainless steel (CrNi, 1.4571)
96		Copper (Cu) / Brass (CuZn) (up to 200°C)
95		Stainless steel (CrNi, 1.4571) - probe / Brass (CuZn) - support tube from 250°C)
	(10)	Material of process connection (PA) ^a
00		Without (only TF 01 and TF 11)
26		Stainless steel (CrNi, 1.4571)
46		Brass (CuZn)
	(11)	Fitting length, process connection (PA) ^a (dimension "EL" or "S")
0		Minimum fitting 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 steps)

^a For the description and particularities refer to data sheet 608730.

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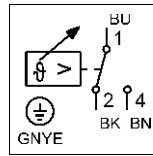
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 1-800-554-5866
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 E-mail: info.us@jumo.net
 Internet: www.jumousa.com



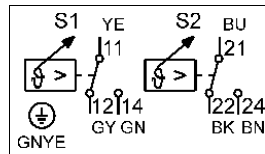
Order code

(12) Switching output (SA)

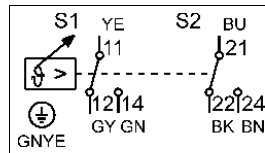
20 SA 20 One contact



21 SA 21 Two contacts



22 SA 22 Two contacts - Sequence switch



(13) Extra codes (TZ)

- 000 Without extra codes
- 430 Fly back (includes TZ 477)
- 426 Cover cap to protect the screw terminals against access and splashing water (standard for design 10 and 23; not for design 22; not in connection with TZ 460)
- 650 Microswitch 10 (3) A (AC/DC 230 V, +10/-15%, 48...63 Hz, cos φ = 1 (0.6))
- 518 Stop for Min. — or Max. — set point value limitation, factory set
- 460 Device centering for panel cut-out 92 x 92 mm (only for basic type extension 2596)
- 477 Set point adjustment protected by the bolted cover. Adjustment with screwdriver.
- 401 Protection class IP 53 as per EN 60529, includes TZ 426 and TZ 477 (not for case Ø = 60 mm and front frame 72 x 72 mm; not for design 02 and 22)
- 522 Customized scale

Special versions on request !

Order code

(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13)
 608520 / [....] - [...] - [...] - [...] - [...] - [...] - [...] - [...] - [...] - [...] - [...] - [...] / [...], ...

Order example

608520 / 2010 - 818 - 21 - 2000 - 104 - 10 - 000 - 26 - 00 - 100 - 20 / 650^a, ...

^a State extra codes one after another, separated by commas.

Stock versions

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

Delivery within 3 working days after receipt of order