

JUMO GmbH & Co. KG
 Delivery address: Mackenrodtstraße 14,
 36039 Fulda, Germany
 Postal address: 36035 Fulda, Germany
 Phone: +49 661 6003-0
 Fax: +49 661 6003-607
 e-mail: mail@jumo.net
 Internet: www.jumo.net

JUMO Instrument Co. Ltd.
 JUMO House
 Temple Bank, Riverway
 Harlow, Essex CM 20 2TT, UK
 Phone: +44 1279 635533
 Fax: +44 1279 635262
 e-mail: sales@jumo.co.uk
 Internet: www.jumo.co.uk

JUMO Process Control, Inc.
 8 Technology Boulevard
 Canastota, NY 13031, USA
 Phone: 315-697-JUMO
 1-800-554-JUMO
 Fax: 315-697-5867
 e-mail: info@jumo.us
 Internet: www.jumo.us



MICROSTAT-M

- Electromechanical temperature controller with indication
- Class 2 with two microswitches
- IP53 front protection
- Housing sizes: 60 mm, 80 mm and 100 mm dia.
 Bezel sizes: 72 x 72 mm and 96 x 96 mm

Brief description

The MICROSTAT-M is an electromechanical temperature controller with indication for universal use. The instrument has a plastic housing and a liquid-filled or gas-filled measuring system.

The temperature-dependent change in volume of a liquid-filled measuring system, or the temperature-dependent change in pressure of a gas-filled system, is converted by a Bourdon tube into a rotary movement of the pointer, without any transmission gearing. The rotary movement of the pointer spindle operates the microswitches through a lever system.




Type 608502/2160



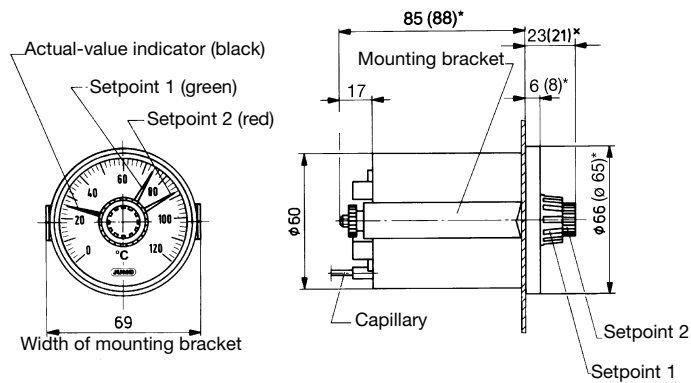
Type 608502/2596

Technical data

| | | |
|--|---|---|
| Housing or bezel | black plastic; steel housing (extra code 415) | |
| Enclosure protection | front: IP53 to EN 60 529 rear: IP00 to EN 60 529 (IP54 with extra code 426) | |
| Scale | white, black lettering | |
| Indication | linear, Class 2, to EN 13 190 | |
| Measuring system | liquid-filled | gas-filled |
| | indication range $\leq 350^{\circ}\text{C}$ | indication range $\geq 400^{\circ}\text{C}$ |
| Time constant t (to DIN 3440; for 63.2%) | approx. 8 sec, measured in a water bath, with a 6 mm dia. copper probe | approx. 2 sec, measured in an oil bath, with a 10 mm dia. stainless steel probe |
| Ambient temperature effect | in % of indication range (referred to the deviation from the reference value $+23^{\circ}\text{C}$) | |
| on housing | 0.15% of indication range per $^{\circ}\text{C}$ change in ambient temperature | 0.05% of indication range per $^{\circ}\text{C}$ change in ambient temperature |
| on capillary (per meter) | 0.015% of indication range per $^{\circ}\text{C}$ change in ambient temperature | no effect |
| | higher ambient temperature – higher temperature indication – lower switching point | |
| Electrical contact | standard | extra code (TZ) 650 |
| Contact type | single-pole microswitch with a mechanically operated changeover contact | |
| Contact rating | 230 V AC/DC $+10/-15\%$, 48 – 63 Hz, p.f. = 1 (0.6) | |
| | 5 (1.5) A | 10 (3) A |
| Switching differential | approx. 2% of indication range | 2 to 4% of indication range |
| Switching point accuracy | $\pm 0.5\%$ of indication range referred to the switch-off point with rising temperature | |
| Switching reliability | To ensure maximum switching reliability, we recommend a minimum voltage of 24 V and a minimum current of 20 mA. | |
| Electrical connection | standard faston connectors A 6.3 x 6.8 to DIN 46244 | extra code (TZ) 507 screw terminals: for cable up to 1.5 mm ² conductor cross-section |
| Setpoint adjustment | by setting device on the window | |
| Indication adjustment | With ambient temperatures that deviate considerably from the reference value but are constant, the indication can be adjusted by using a screwdriver as shown (not possible on Style 25). |  shift division by max. $\pm 4.5\%$ of the scale span by inserting a screwdriver in bore |
| Limit temperatures | for transport and storage: -20 to $+70^{\circ}\text{C}$ (for indication range -40 to $+40^{\circ}\text{C}$: up to 50°C ; for indication range -30 to $+50^{\circ}\text{C}$: up to 60°C) | |
| Nominal position | unrestricted | |

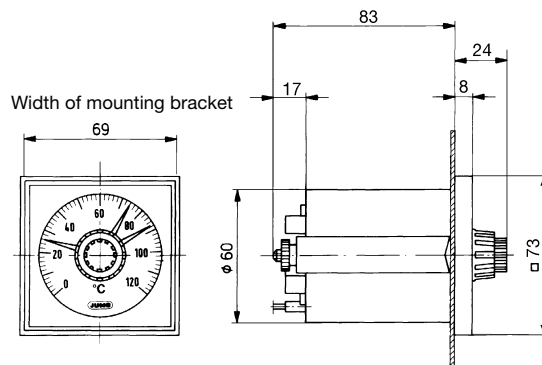
Dimensions

Types: 608502/2160
608502/2160 TZ 415



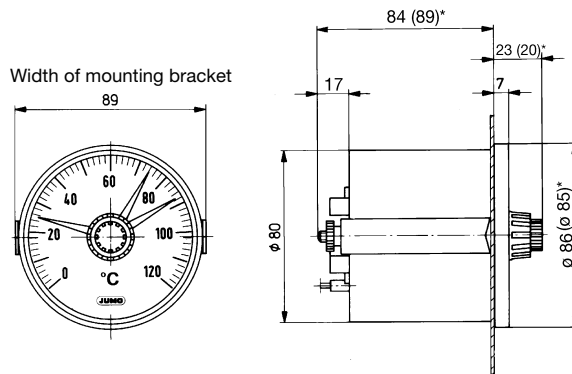
Panel cut-out $\varnothing 62^{+0.5}_0$ mm

Types: 608502/2572 TZ 415



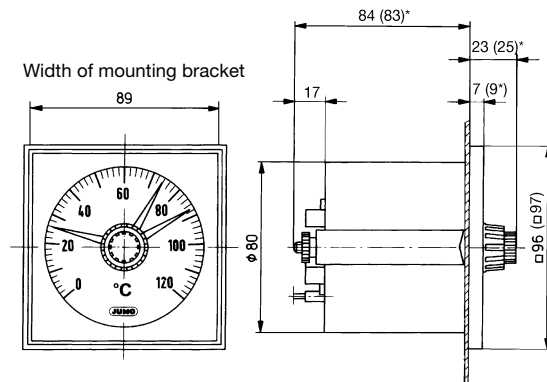
Panel cut-out $\varnothing 62^{+0.5}_0$ mm

Types: 608502/2180
608502/2180 TZ 415



Panel cut-out $\varnothing 82^{+0.5}_0$ mm

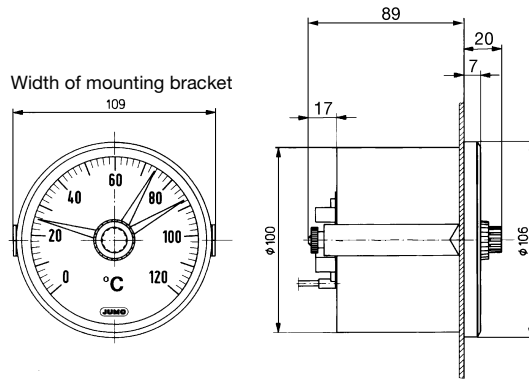
Types: 608502/2596
608502/2596 TZ 415



Panel cut-out $\varnothing 82^{+0.5}_0$ mm or 92 x 92 $^{+0.8}_0$ mm (TZ 460)

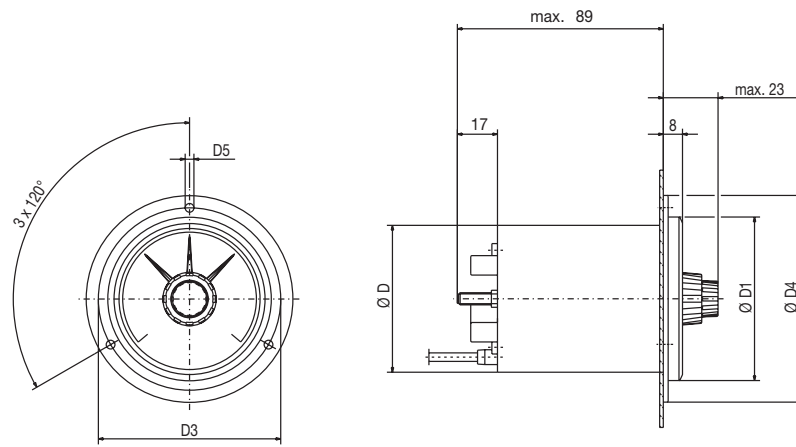
Dimensions

Types: 608502/2110 TZ 415



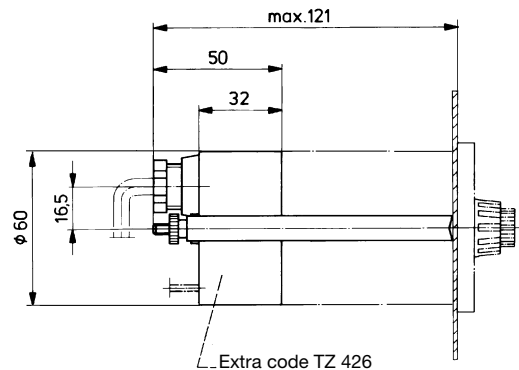
Panel cut-out $\varnothing 102^{+0.5}_0$ mm

Types: 608502/2060
608502/2060 TZ 415
608502/2080 TZ 415
608502/2010 TZ 415



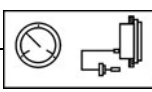
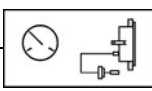
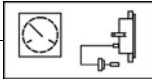
| Type | $\varnothing D$ | $\varnothing D1$ | $\varnothing D3$ | $\varnothing D4$ | $\varnothing D5$ | Panel cut-out $\varnothing^{+0.5}_0$ mm |
|-----------------------------------|-----------------|------------------|------------------|------------------|------------------|--|
| | (mm) | | | | | |
| 608502/2060 608502/2060 TZ 415 | 60 | 68 | 75 | 85 | 3.6 | 62 |
| 608502/2080 TZ 415 | 80 | 86 | 95 | 110 | 4.8 | 82 |
| 608502/2010 TZ 415 | 100 | 107 | 116 | 132 | 4.8 | 102 |

Extra code 426



Order details

MICROSTAT-M Type 608502

| | | |
|-------------------|--|---|
| Order code | (1) Basic type | |
| 608502 | Mechanical temperature controller MICROSTAT-M, Class 2, with two microswitches | |
| | (2) Basic type extensions | |
| 2060 | Style: 20; housing size: 60 mm dia. |  |
| 2080 | Style: 20; housing size: 80 mm dia. (with TZ 415 only) | |
| 2010 | Style: 20; housing size: 100 mm dia. (with TZ 415 only) | |
| 2160 | Style: 21; housing size: 60 mm dia. |  |
| 2180 | Style: 21; housing size: 80 mm dia. | |
| 2110 | Style: 21; housing size: 100 mm dia. (with TZ 415 only) | |
| 2572 | Style: 25; housing size: 72 x 72 mm (with TZ 415 only) |  |
| 2596 | Style: 25; housing size: 96 x 96 mm | |
| | (3) Indication range (AB) | |
| 469 | -40 to + 40°C; measuring range -30 to + 30°C, accuracy 2.0°C | |
| 566 | -30 to + 50°C; measuring range -20 to + 40°C, accuracy 2.0°C | |
| 643 | -20 to +120°C; measuring range 0 to +100°C, accuracy 4.0°C | |
| 807 | 0 to + 60°C; measuring range +10 to + 50°C, accuracy 2.0°C | |
| 810 | 0 to + 80°C; measuring range +10 to + 70°C, accuracy 2.0°C | |
| 814 | 0 to +100°C; measuring range +10 to + 90°C, accuracy 2.0°C | |
| 818 | 0 to +120°C; measuring range +20 to +100°C, accuracy 4.0°C | |
| 826 | 0 to +160°C; measuring range +20 to +140°C, accuracy 4.0°C | |
| 832 | 0 to +200°C; measuring range +20 to +180°C, accuracy 4.0°C | |
| 834 | 0 to +250°C; measuring range +30 to +220°C, accuracy 5.0°C | |
| 926 | +50 to +250°C; measuring range +70 to +230°C, accuracy 4.0°C | |
| 840 | 0 to +300°C; measuring range +30 to +270°C, accuracy 10.0°C | |
| 927 | +50 to +300°C; measuring range +80 to +270°C, accuracy 5.0°C | |
| 843 | 0 to +350°C; measuring range +50 to +300°C, accuracy 10.0°C | |
| 932 | +50 to +350°C; measuring range +80 to +320°C, accuracy 10.0°C | |
| 848 | 0 to +400°C; measuring range +50 to +350°C, accuracy 10.0°C | |
| 851 | 0 to +450°C; measuring range +50 to +400°C, accuracy 10.0°C | |
| 854 | 0 to +500°C; measuring range +50 to +450°C, accuracy 10.0°C | |
| 858 | 0 to +600°C; measuring range +100 to +500°C, accuracy 15.0°C | |
| | (4) Capillary type (FL)¹ | |
| 02 | FL02 copper capillary with copper braiding, approx. 2.5 mm dia. (up to +300°C top of indication range) | |
| 11 | FL11 copper capillary with PE sleeve, approx. 3.5 mm dia. (up to +120°C top of indication range) | |
| 17 | FL17 stainless steel capillary, 1.5 mm dia. | |
| 21 | FL21 copper capillary, 1.0 mm dia. (up to +300°C top of indication range) | |
| | (5) Capillary length¹ | |
| 1000 | 1000 mm | |
| 2000 | 2000 mm | |
| 3000 | 3000 mm | |
| 4000 | 4000 mm | |
| 5000 | 5000 mm | |
| ... | special length (specify in plain text: in 1000 mm steps, maximum length: 15000 mm) | |

¹ See data sheet 60.8730 for description and features.




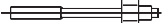





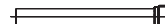


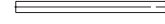
² Screw-in spigot to DIN 3852 Form A.

³ List extra codes in sequence, separated by commas.

Order details

MICROSTAT-M Type 608502

Order code

| (6) Process connection (PA)¹ | | |
|--|---|---|
| 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 nipple ² |  |
| 161 | TA 03; immersion tube with loose union nut |  |
| 847 | TA 06; sliding clamp fitting on support tube ² |  |
| 311 | TA 20; immersion tube with loose nipple and shoulder ² |  |
| 403 | TA 21; immersion tube with loose plug and conical seal |  |
| 351 | TA 22; immersion tube with loose plug, conical seal and loose nipple ² |  |
| 401 | TA 23; immersion tube with plug and spring clip |  |
| 913 | SH 07; screw-in pocket, assembled, with clamping clip and fixing screw ² |  |
| 820 | SH 09; weld-in pocket, assembled, with clamping clip and fixing screw (not with FL21 - welding shoulder with steel 1.4515) |  |
| 876 | SH10; screw-in pocket, assembled ² |  |
| 871 | SH11; screw-in pocket, assembled ² |  |
| (7) Diameter of process connection (PA)¹ | | |
| 6 | 6 mm dia. | |
| 8 | 8 mm dia. | |
| 10 | 10 mm dia. | |
| 11 | 11 mm dia. | |
| 12 | 12 mm dia. | |
| (8) Thread for process connection (PA)¹ | | |
| 000 | no thread (with TF 01 and TF 11) | |
| 103 | G ³ / ₈ thread | |
| 104 | G ¹ / ₂ thread | |
| 105 | G ³ / ₄ thread | |
| 114 | M 10 x 1 thread (with TA 23 and SH 11 only) | |

¹ See data sheet 60.8730 for description and features.

² Screw-in spigot to DIN 3852 Form A.

³ List extra codes in sequence, separated by commas.

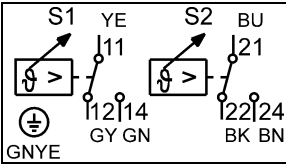
Order details

MICROSTAT-M Type 608502

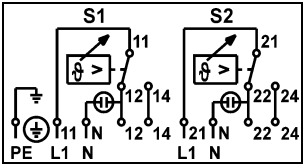
Order code

| | |
|-----|--|
| | (9) Material of probe / support tube¹ |
| 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 (250°C and above) |
| | (10) Material of process connection (PA)¹ |
| 00 | none (TF01 and TF11 only) |
| 01 | steel (St) |
| 26 | stainless steel (CrNi, 1.4571) |
| 46 | brass (CuZn) |
| | (11) Fitting length of process connection (PA)¹ (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 (specify in plain text, in 50 mm steps) |

| | |
|----|-----------------------------------|
| | (12) Switching output (SA) |
| 21 | SA 21 two contacts |



Connection diagram, standard



Connection diagram, with indicator light (TZ 572)

| | |
|-----|--|
| | (13) Extra codes (TZ) |
| 000 | no extra code |
| 507 | electrical connection by screw terminals for cable up to 1.5 mm ² conductor cross-section |
| 426 | plastic cover to protect the faston connectors or screw terminals against touching and splashing water, IP54, with cable gland, suitable for 6 – 8 mm cable dia. |
| 650 | microswitch 10 (3) A (230 V AC/DC +10/-15%, 48 – 63 Hz, p.f. = 1 (0.6)) |
| 410 | metal bezel or flange, black (not on 80 mm dia. housing) |
| 411 | metal bezel or flange (not on 80 mm dia. housing) |
| 572 | indicator light (only with types: 608502/2572 TZ 460, 415 and 608502/2596 TZ 460, 415) |
| 510 | stop for upper or lower limit of setpoint adjustment, factory-set |
| 573 | two changeover contacts with a fixed spacing; minimum spacing: 2% of scale span; please state contact spacing when ordering |
| 460 | housing centered for panel cut-out 68 x 68 mm and 92 x 92 mm (with basic type extensions 2572 and 2596 only) |
| 415 | steel housing with metal bezel or flange |
| 315 | capillary reinforcement on housing and probe (not with FL21) |
| 477 | setpoint adjustment protected by screw cap, adjustment with tool. |
| 522 | customized scale |

Special versions on request!

| | | | | | | | | | | | | | |
|-------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|-------------|-------------|-------------|-------------|
| Order code | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) |
| | 608502 | / | | - | ... | - | .. | - | | - | ... | - | .. |

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|----------------------|--------|---|------|---|-----|---|----|---|------|---|-----|---|---|---|-----|---|----|---|----|---|---|---|----|---|------------------|
| Order example | 608502 | / | 2160 | - | 818 | - | 21 | - | 2000 | - | 752 | - | 8 | - | 000 | - | 96 | - | 00 | - | 0 | - | 21 | / | 000 ³ |
|----------------------|--------|---|------|---|-----|---|----|---|------|---|-----|---|---|---|-----|---|----|---|----|---|---|---|----|---|------------------|

¹ See data sheet 60.8730 for description and features.

² Screw-in spigot to DIN 3852 Form A.

³ List extra codes in sequence, separated by commas.