

Digital Thermometers Model LILLY

TDSCh 63
TDSCh 100

With rigid temperature sensor

Application

The battery-operated digital thermometer models LILLY consist of an easy-to-read LC display and a platinum resistance thermometer built into a robust thermometer standard case made of stainless steel. They can be manufactured with the same construction types (according to DIN EN 13190) as mechanical thermometers. They can be applied as an alternative to mechanical thermometers when these reach their limits due to difficult installation conditions, vibrations or accuracy requirements.

Standard Versions

Measuring Element

Platinum measuring resistor Pt1000 according to DIN EN 60751

Measuring Ranges

| TDSCh 63 | | TDSCh 100 | |
|-------------------|------------|-------------------|------------|
| measuring range | resolution | measuring range | resolution |
| -50.0 / +199.9 °C | 0.1 K | -50.0 / +250.0 °C | 0.1 K |
| -50 / +550 °C | 1 K | -99.9 / +550.0 °C | 0.1 K |

Ambient Temperature Ranges

Operation -10 °C to +60 °C
Storage -20 °C to +70 °C

Accuracy

Display ±0.3 % FS ±1 digit
Sensor class B acc. to DIN EN 60751 (±0.3 K at 0 °C)

Measuring Rate

15 s

| Indication | TDSCh 63 | TDSCh 100 |
|--------------|---------------|---------------|
| Display | LC display | LC display |
| Digits | 3.5 | 4 |
| Digit height | 10 mm (0.39") | 18 mm (0.71") |

| Battery | TDSCh 63 | TDSCh 100 |
|---|----------------|--------------|
| Lithium battery (Li-SOCl ₂) 3.6 V | ½ AA, 1200 mAh | AA, 2600 mAh |

Included in the scope of delivery, replaceable by the customer
Battery life approx. 5 – 7 years, depending on application

Error Monitoring

Battery voltage, sensor short circuit, sensor break

Error codes:

ERR1 / LOBAT battery voltage low
ERR2 sensor short circuit or fallen below lower limit
ERR3 sensor break or upper limit exceeded

Temperature Sensor (Stem)

Material stainless steel 316Ti (1.4571)
Max. static operating pressure 25 bar
Stem types E1, E3, E4, E4.1, E5 or E6
Stem Ø dF 6, 8 or 10 mm (0.24, 0.31 or 0.39")
Stem length L max. 2.50 m (8.2')

Case

With bayonet ring, stainless steel 304 (1.4301), with pressure equalising element

Nominal Case Size

63, 100 mm (2½, 4")



Degree of Protection (DIN EN 60529)
IP65

Window

Instrument glass

Case Configuration

Connection to temperature sensor

- rigid mount with neck tube

Stem position

- vertical bottom position
- angular bottom position (**w**, **wst**, **wl**, **wr**)
- centre back position (**rm**), (NCS 100 only)
- lower back position (**r**), (NCS 63 only)

Mounting device

- without
- back flange for surface mounting for
- centre back connection (**rmRh**), (NCS 100 only)
- lower back connection (**rRh**), (NCS 63 only)

Ordering Information, Options

See page 4

Further Options

- Other stem types, e.g. with connection for food / bio / pharmaceutical industries
- Contact stem for temperature measurement at the outside of tanks and pipe barrels
- Position of connection radial at 3 o'clock, 9 o'clock, 12 o'clock
- Rugged version (IP68) completely cast with polyurethane (NCS 100 only)
- Window neutral

Special Versions Upon Request

- Other stem Ø, connection threads and materials
- Case parts stainless steel 316L (1.4404)
- Other position of connection
- Window customised
- Certificates and approvals, e.g. GOST (see also website)

Accessories

Thermowells, see data sheet 8.8110 ff.

www.armano-messtechnik.com

ARMANO

ARMANO Messtechnik GmbH

Location Beierfeld

Am Gewerbepark 9 • 08344 Grünhain-Beierfeld
Tel.: +49 3774 58 - 0 • Fax: +49 3774 58 - 545
mail@armano-beierfeld.com

Location Wesel

Manometerstraße 5 • 46487 Wesel-Ginderich
Tel.: +49 2803 9130 - 0 • Fax: +49 2803 1035
mail@armano-wesel.com

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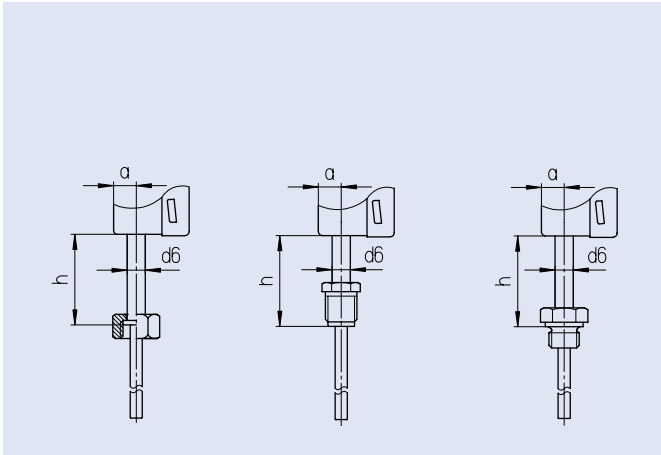
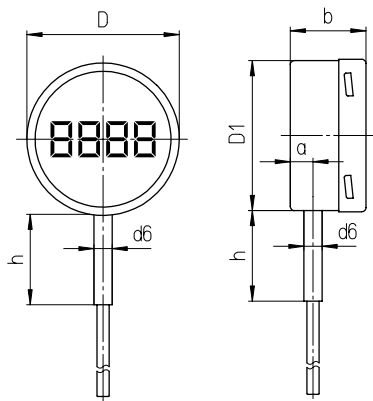
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Stem Position, Code Letters, Dimensional Data and Weight

Vertical Bottom Stem Position

Stem type E1 (and E5) Stem type E3 (and E6) Stem type E4 Stem type E4.1

without code letters



Angular Bottom Stem Position

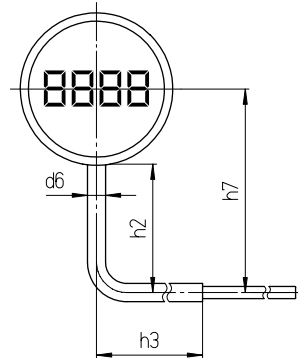
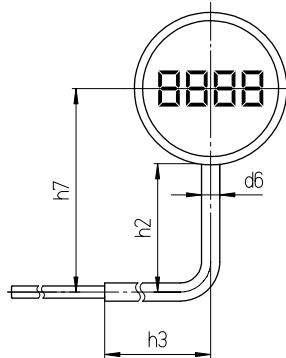
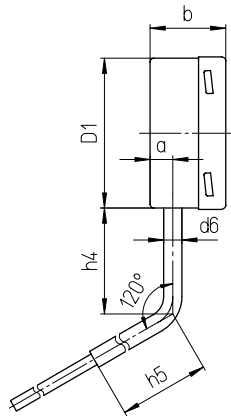
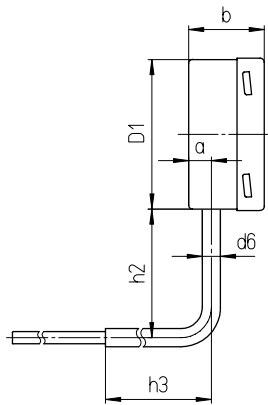
with angle

90° to the back
code letter **w**

120° obtuse to the back
code letters **wst**

90° to the left
code letters **wl**

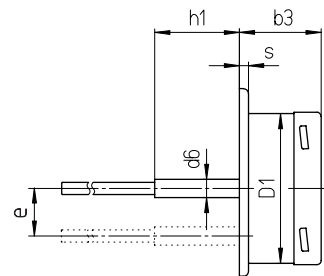
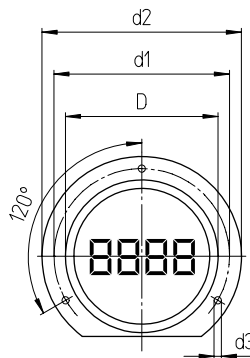
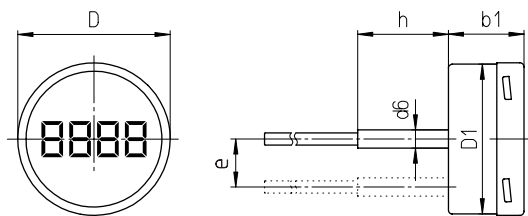
90° to the right
code letters **wr**



Centre / Lower Back Stem Position¹⁾

code letters **r(m)**

back flange for surface mounting
code letters **r(m)Rh**



Dimensional Data (mm / inch) and Weight (kg / lb)

| NCS | a | b | b1 | b3 | D | D1 | d1 | d2 | d3 | d6 | e | h | h1 | h2 | h3 | h4 | h5 | s | approx. weight ²⁾ |
|-----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------------------------------|
| 63 | 12 | 39 | 39 | 42 | 64 | 62 | 75 | 85 | 3.6 | 12 | 18 | 60 | 57 | 85 | 120 | 70 | 120 | 5 | 0.24 |
| 2½" | 0.47 | 1.54 | 1.54 | 1.65 | 2.52 | 2.44 | 2.95 | 3.35 | 0.14 | 0.47 | 0.71 | 2.36 | 2.24 | 3.35 | 4.72 | 2.76 | 4.72 | 0.2 | 0.53 |
| 100 | 15 | 50 | 50 | 53.5 | 101 | 99 | 116 | 132 | 4.8 | 12 | - | 60 | 56.5 | 85 | 120 | 70 | 120 | 6 | 0.46 |
| 4" | 0.59 | 1.97 | 1.97 | 2.11 | 3.98 | 3.9 | 4.57 | 5.2 | 0.19 | 0.47 | - | 2.36 | 2.22 | 3.35 | 4.72 | 2.76 | 4.72 | 0.24 | 1.01 |

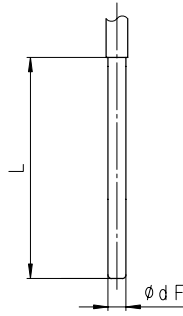
¹⁾ for nominal case size 100 (4"), the stem position is executed as centre back position (rm) and for nominal case size 63 (2½") as lower back position (r)
²⁾ example, data for version with stem E1, Ø 8 mm (0.31"), length 100 mm (4")

Process Connections

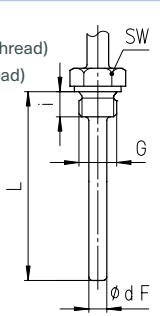
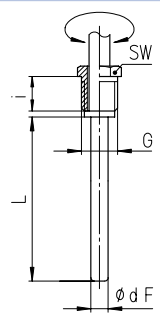
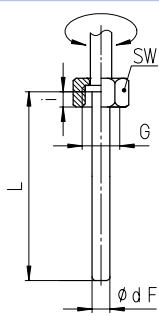
Process Connection

without screw fitting, plain stem

Stem type E1
Form acc. to DIN EN 13190 form 1
Stem material 1.4571
Stem Ø dF 6, 8, 10 mm
Order length L
Suitable thermowell models SK1 (8.8140)
 (data sheet) SK2 (8.8141)



| | union nut | male thread, turnable | male thread, rigid |
|-----------------------------------|---|--|--|
| Stem type | E3 | E4 | E4.1 |
| Form acc. to DIN EN 13190 | form 5 | form 4 | form 6 (cylindrical thread) form 7 (conical thread) |
| Stem material | 1.4571 | 1.4571 | 1.4571 |
| Stem Ø dF | 6, 8, 10 mm | 6, 8, 10 mm | 6, 8, 10 mm |
| Screw fitting material | 1.4571 | 1.4571 | 1.4571 |
| Order length | L | L | L |
| Suitable thermowell models | SF4.1 (8.8111), SF4.1F (8.8113) SF8 (8.8130), SF9 (8.8131) | SF4 (8.8110), SF4F (8.8112) SF5 (8.8120), SF6, SF7 (8.8121) | SF4 (8.8110), SF4F (8.8112) SF5 (8.8120), SF6, SF7 (8.8121) |



Thread
 (dimensional data in mm / inch)

| G | SW | i |
|----------|------|------|
| G 1/2 B | 27 | 10 |
| 1/2" BSP | 1.06 | 0.39 |
| G 3/4 B | 32 | 12 |
| 3/4" BSP | 1.26 | 0.47 |
| M20x1.5 | 27 | 10 |
| | 1.06 | 0.39 |
| M24x1.5 | 32 | 12 |
| | 1.26 | 0.47 |
| M27x2 | 32 | 12 |
| | 1.26 | 0.47 |

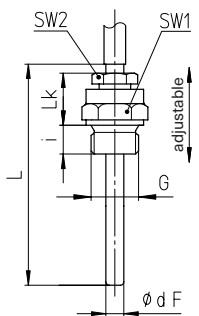
| G | SW | i |
|----------|------|------|
| G 1/2 B | 22 | 20 |
| 1/2" BSP | 0.87 | 0.79 |
| G 3/4 B | 27 | 23 |
| 3/4" BSP | 1.06 | 0.91 |
| M18x1.5 | 22 | 14 |
| | 0.87 | 0.55 |
| M20x1.5 | 22 | 20 |
| | 0.87 | 0.79 |

| G | SW | i |
|----------|------|------|
| G 1/2 B | 27 | 14 |
| 1/2" BSP | 1.06 | 0.55 |
| G 3/4 B | 32 | 16 |
| 3/4" BSP | 1.26 | 0.63 |
| 1/2" NPT | 27 | 19 |
| | 1.06 | 0.75 |
| 3/4" NPT | 27 | 19 |
| | 1.06 | 0.75 |
| M18x1.5 | 24 | 14 |
| | 0.94 | 0.55 |
| M20x1.5 | 27 | 14 |
| | 1.06 | 0.55 |

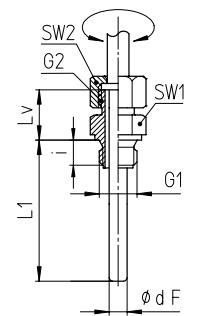
Thermowell required!

male thread / compression fitting male thread, turnable / double male adapter

Stem type E5
 (E1 with compression fitting)
Form acc. to DIN EN 13190 form 2 (cylindrical thread)
 form 3 (conical thread)
Stem material 1.4571
Stem Ø dF 6, 8, 10 mm
Screw fitting material 1.4571
Order length L



Stem type E6
 (E3 with double male adapter)
Form acc. to DIN EN 13190 —
Stem material 1.4571
Stem Ø dF 6, 8, 10 mm
Screw fitting material 1.4571
Order length L1



Suitable thermowell models SF4 (8.8110), SF4F (8.8112)
 (data sheet) SF5 (8.8120), SF6, SF7 (8.8121)

Suitable thermowell models SF4 (8.8110), SF4F (8.8112)
 SF5 (8.8120), SF6, SF7 (8.8121)

Thread
 (dimensional data in mm / inch)

| G | SW1 | SW2 | i | Lk |
|----------|------|------|------|------|
| G 1/2 B | 27 | 22 | 14 | 42 |
| 1/2" BSP | 1.06 | 0.87 | 0.55 | 1.65 |
| G 3/4 B | 32 | 22 | 16 | 42 |
| 3/4" BSP | 1.26 | 0.87 | 0.63 | 1.65 |
| 1/2" NPT | 27 | 22 | 19 | 42 |
| | 1.06 | 0.87 | 0.75 | 1.65 |
| 3/4" NPT | 27 | 22 | 19 | 42 |
| | 1.06 | 0.87 | 0.75 | 1.65 |
| M20x1.5 | 27 | 22 | 14 | 42 |
| | 1.06 | 0.87 | 0.55 | 1.65 |

| G1 | G2 | SW1 | SW2 | i | Lv |
|----------|----------|------|------|------|-----|
| G 1/2 B | G 1/2 B | 27 | 27 | 14 | 28 |
| 1/2" BSP | 1/2" BSP | 1.06 | 1.06 | 0.55 | 1.1 |
| G 3/4 B | G 1/2 B | 32 | 27 | 16 | 28 |
| 3/4" BSP | 1/2" BSP | 1.26 | 1.06 | 0.63 | 1.1 |
| 1/2" NPT | G 1/2 B | 27 | 27 | 19 | 28 |
| | 1/2" BSP | 1.06 | 1.06 | 0.75 | 1.1 |
| 3/4" NPT | G 1/2 B | 27 | 27 | 19 | 28 |
| | 1/2" BSP | 1.06 | 1.06 | 0.75 | 1.1 |
| M20x1.5 | M20x1.5 | 27 | 27 | 14 | 28 |
| | | 1.06 | 1.06 | 0.55 | 1.1 |
| M24x1.5 | M20x1.5 | 32 | 27 | 14 | 28 |
| | | 1.26 | 1.06 | 0.55 | 1.1 |
| M27x2 | M20x1.5 | 32 | 27 | 16 | 28 |
| | | 1.26 | 1.06 | 0.63 | 1.1 |

Ordering Information, Options

| Basic Model | Digital Thermometer Model LILLY | | TDSCh |
|---|---|-------------------------|----------------------|
| Nominal case size | case Ø 63, 100 mm (2½, 4") | | 63, 100 |
| Stem position / case configuration | vertical bottom position | without mounting device | without code letters |
| | angular bottom position | 90° to the back | w |
| | | 120° obtuse to the back | wst |
| | | 90° to the left | wl |
| | | 90° to the right | wr |
| | lower back position (NCS 63 only) | without mounting device | r |
| back flange for surface mounting | | rRh | |
| centre back position (NCS 100 only) | without mounting device | rm | |
| | back flange for surface mounting | rmRh | |
| Temperature ranges | -50.0 / +199.9 °C (NCS 63) or -50.0 / +250.0 °C (NCS 100) | | NT |
| | -50 / +550 °C (NCS 63) or -99.9 / +550.0 °C (NCS 100) | | HT |
| Process connection | without screw fitting, plain stem | | E1 |
| | union nut | | E3 |
| | male thread, turnable | | E4 |
| | male thread, rigid | | E4.1 |
| | male thread / compression fitting | | E5 |
| | male thread, turnable / double male adapter | | E6 |
| Stem Ø dF | 6 mm (0.24") | | dF = 6 mm |
| | 8 mm (0.31") | | dF = 8 mm |
| | 10 mm (0.39") | | dF = 10 mm |
| Stem length | L or L1 in mm | e.g. | L = 100 mm |
| Connection thread | see page 3 | e.g. | G½ B |

These options are to be ordered in written form. Please contact us to ensure compatibility when combining options.

| | |
|------------------------------|---|
| Window | laminated safety glass |
| | acrylic glass (PMMA) |
| | polycarbonate (PC) |
| Case polished | |
| Bayonet ring polished | |
| Instrument tag | stainless steel plate 12 x 55 mm (0.47 x 2.17") |
| | sticker on the case |

Example

TDSCh 100, NT, E4, dF = 6 mm, L = 200 mm, G½ B

Special Versions: Please describe your requirements in cleartext!