

# 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 that are built into a robust thermometer standard case made of stainless steel. They can be manufactured with the same construction types (according to DIN EN 13 190) as mechanical thermometers. They can be applied as an alternative to mechanical thermometers if 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 60 751

### 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 60 751 (±0.3 K at 0 °C)

### Measuring Rate

15 s

Display	TDSCh 63	TDSCh 100
	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 <sub>2</sub> ) 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 models: 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 1.4301,  
with pressure equalising element



### Nominal Case Size

63, 100 mm (2½, 4")

### Degree of Protection (DIN EN 60 529)

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**), (only NCS 100)
- lower back position (**r**), (only NCS 63)

Mounting device:

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

## Ordering Information

See page 4

## Special Versions and Further Options

- Other stem models, e.g. with connection for food/bio/ pharmaceutical industries
- Contact stem for temperature measurement at the outside of tanks and pipe barrels
- Other stem Ø, connection threads and materials upon request
- Case parts stainless steel 316L (1.4404) upon request
- Position of the connection radial at 3 o'clock, 9 o'clock, 12 o'clock, others upon request
- Rugged version (IP68) completely cast with polyurethane (only NCS 100)

## Accessories

Thermowells, see data sheet 8.8110 ff.



Sales and Export South, West, North

**ARMATURENBau GmbH**

Manometerstraße 5 • D – 46487 Wesel-Ginderich  
Tel.: +49 2803 9130 – 0 • Fax: +49 2803 1035  
www.armaturenba.com • mail@armaturenba.com

Subsidiary Company, Sales and Export East

**MANOTHERM Beierfeld GmbH**

Am Gewerbepark 9 • D – 08344 Grünhain-Beierfeld  
Tel.: +49 3774 58 – 0 • Fax: +49 3774 58 – 545  
www.manotherm.com • mail@manotherm.com

**8301**  
12/17

# Stem Position, Code Letters, Dimensional Data and Weights

## Vertical Bottom Stem Position

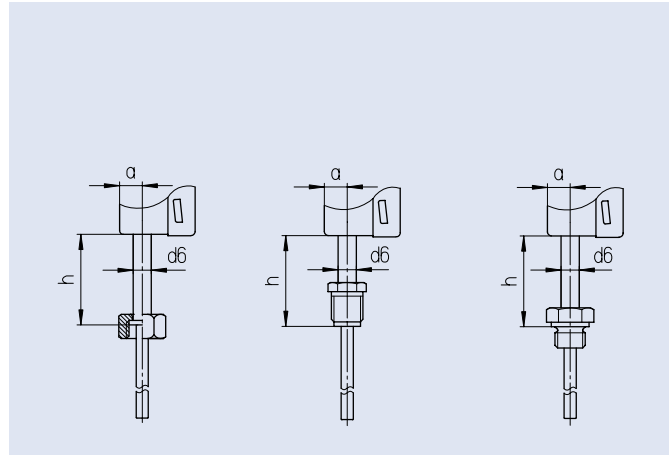
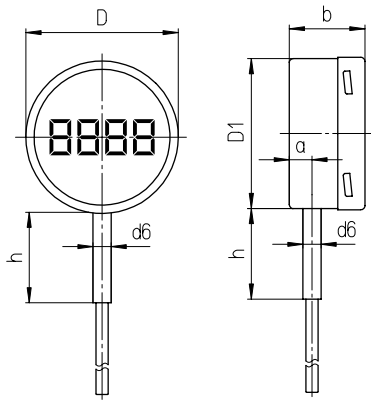
Stem model E1 (also E5)

Stem model E3 (also E6)

Stem model E4

Stem model E4.1

without code letters



## Angular Bottom Stem Position

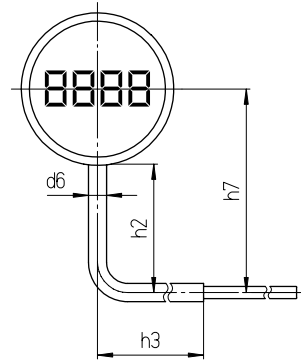
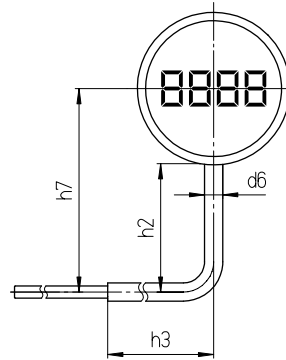
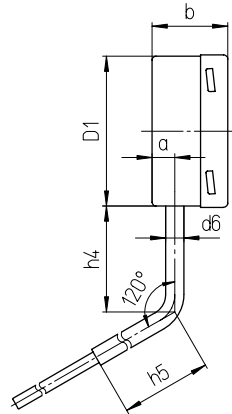
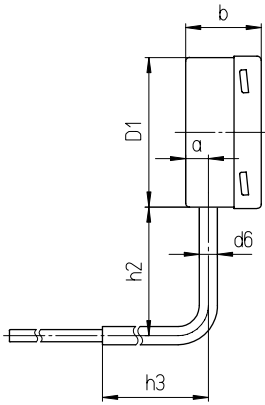
with angle:

right-angled to the back  
code letter **w**

obtuse-angled to the back  
code letters **wst**

lateral to the left  
code letters **wl**

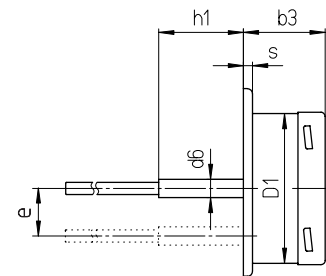
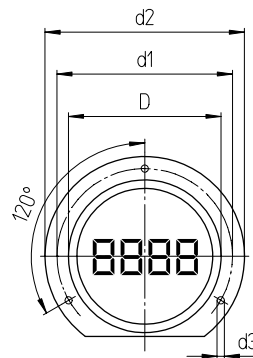
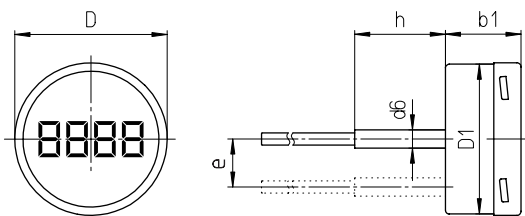
lateral to the right  
code letters **wr**



## Centre/Lower Back Stem Position<sup>1)</sup>

code letters **r(m)**

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



## Dimensional Data (mm/inch) and Weights (kg/lb)

NCS	a	b	b1	b3	D	D1	d1	d2	d3	d6	e	h	h1	h2	h3	h4	h5	s	approx. weight <sup>2)</sup>
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

<sup>1)</sup> 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).

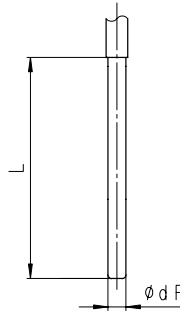
<sup>2)</sup> The data shall be deemed as example and apply to the version with stem E1, Ø 8 mm (0.31"), length 100 mm (4").

# Process Connections

## Process Connection

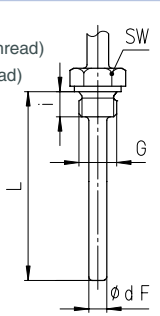
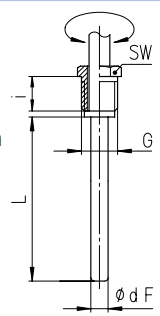
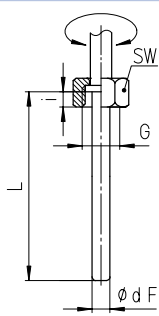
### without screw fitting, plain stem

**Stem model:** E1  
**Form acc. to DIN EN 13 190:** 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
--	-----------	-----------------------	--------------------

<b>Stem model:</b> E3 <b>Form acc. to DIN EN 13 190:</b> form 5  <b>Stem material:</b> 1.4571 <b>Stem Ø dF:</b> 6, 8, 10 mm <b>Screw fitting material:</b> 1.4571 <b>Order length:</b> L	<b>E4</b> form 4  1.4571 6, 8, 10 mm 1.4571 L	<b>E4.1</b> form 6 (cylindrical thread) form 7 (conical thread)  1.4571 6, 8, 10 mm 1.4571 L	
--	---	---	--



**Suitable thermowell models:** (data sheet)  
 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)

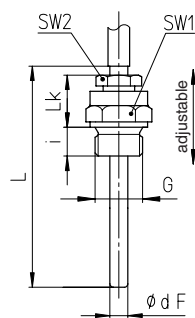
**Thread (dimensional data in mm/inch):**

G	SW	i	G	SW	i	G	SW	i
G 1/2"	27	10	G 1/2 B	22	20	G 1/2 B	27	14
1/2" BSP	1.06	0.39	1/2" BSP	0.87	0.79	1/2" BSP	1.06	0.55
G 3/4"	32	12	G 3/4 B	27	23	G 3/4 B	32	16
3/4" BSP	1.26	0.47	3/4" BSP	1.06	0.91	3/4" BSP	1.26	0.63
M 20x1.5	27	10	M 18x1.5	22	14	1/2" NPT	27	19
	1.06	0.39		0.87	0.55	1/2" NPT	1.06	0.75
M 24x1.5	32	12	M 20x1.5	22	20	3/4" NPT	27	19
	1.26	0.47		0.87	0.79	3/4" NPT	1.06	0.75
M 27x2	32	12				M 18x1.5	24	14
	1.26	0.47					0.94	0.55
						M 20x1.5	27	14
							1.06	0.55

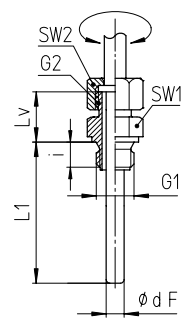
**Thermowell required!**

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

**Stem model:** E5  
 (E1 with compression fitting)  
**Form acc. to DIN EN 13 190:** 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



**E6**  
 (E3 with double male adapter)  
 —  
 1.4571  
 6, 8, 10 mm  
 1.4571  
 L1



**Suitable thermowell models:** (data sheet)  
 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	SW1	SW2	i	Lk	G1	G2	SW1	SW2	i	Lv
G 1/2 B	27	22	14	42	G 1/2 B	G 1/2 B	27	27	14	28
1/2" BSP	1.06	0.87	0.55	1.65	1/2" BSP	1/2" BSP	1.06	1.06	0.55	1.1
G 3/4 B	32	22	16	42	G 3/4 B	G 3/4 B	32	27	16	28
3/4" BSP	1.26	0.87	0.63	1.65	3/4" BSP	1/2" BSP	1.26	1.06	0.63	1.1
1/2" NPT	27	22	19	42	1/2" NPT	G 1/2 B	27	27	19	28
	1.06	0.87	0.75	1.65	1/2" NPT	1/2" BSP	1.06	1.06	0.75	1.1
3/4" NPT	27	22	19	42	3/4" NPT	G 1/2 B	27	27	19	28
	1.06	0.87	0.75	1.65	3/4" NPT	1/2" BSP	1.06	1.06	0.75	1.1
M 20x1.5	27	22	14	42	M 20x1.5	M 20x1.5	27	27	14	28
	1.06	0.87	0.55	1.65			1.06	1.06	0.55	1.1
					M 24x1.5	M 20x1.5	32	27	14	28
							1.26	1.06	0.55	1.1
					M 27x2	M 20x1.5	32	27	16	28
							1.26	1.06	0.63	1.1

