

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: $\pm 0.3\%$ 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 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 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.

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

8301

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Stem Position, Code Letters, Dimensional Data and Weights

Vertical Bottom Stem Position

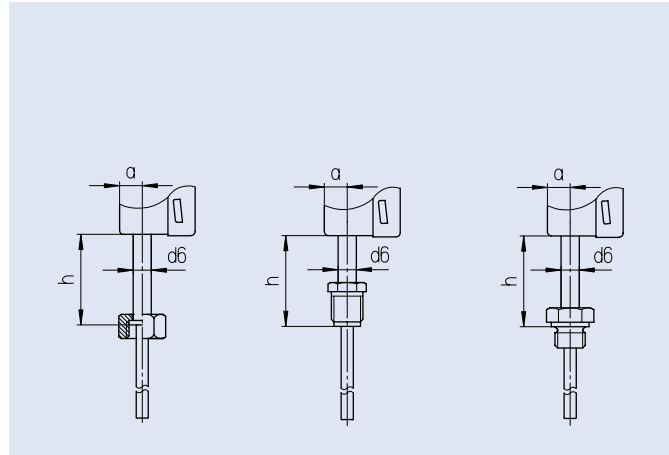
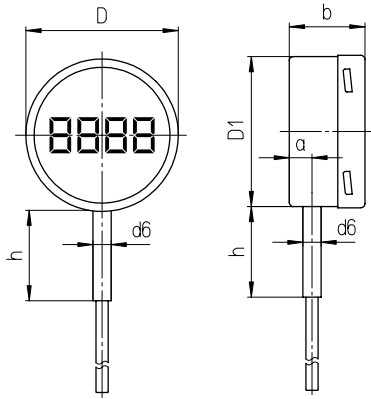
Stem model E1 (also E5)

Stem model E3 (also E6)

Stem model E4

Stem model E4.1

without code letters



Angular Bottom Stem Position

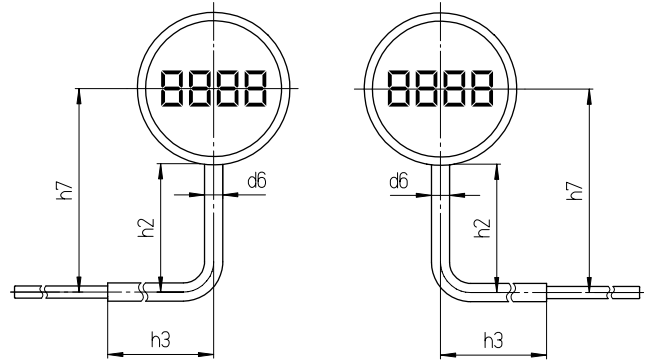
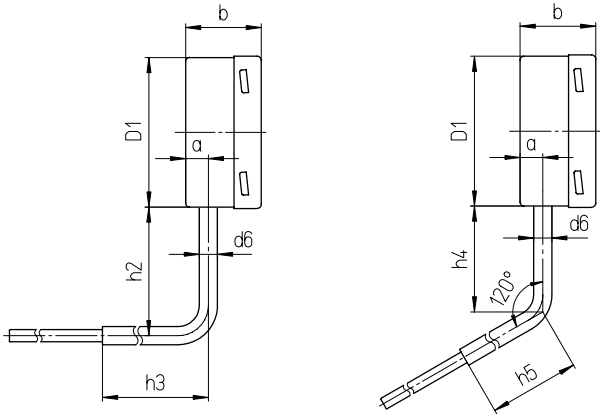
with angle:

right-angled to the back
code letter w

obtuse-angled to the back
code letters wst

lateral to the left
code letters wl

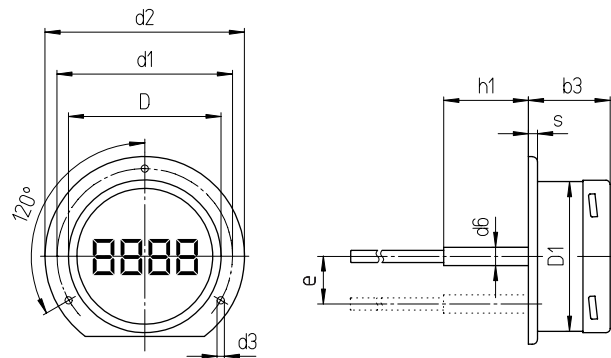
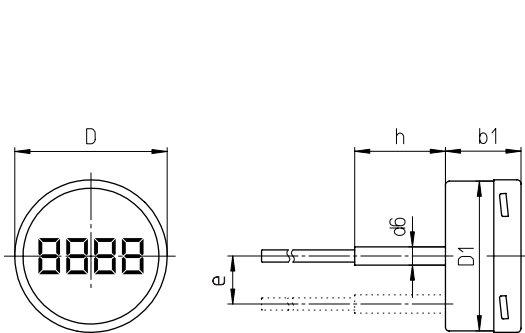
lateral to the right
code letters wr



Centre/Lower Back Stem Position¹⁾

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 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).

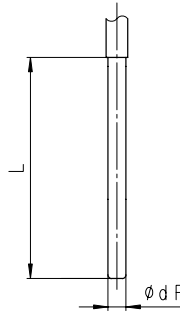
²⁾ The data shall be deemed as example and apply to the version with stem E1, Ø 8 mm (0.31"), length 100 mm (4").

Process Connections

Process Connection

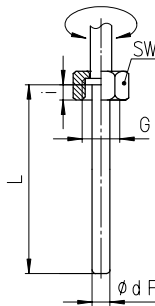
without screw fitting, plain stem

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)

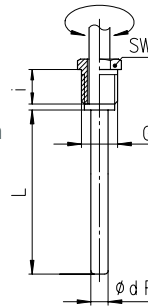


	union nut	male thread, turnable	male thread, rigid
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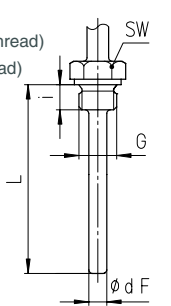
Stem model: E3
Form acc. to DIN EN 13 190: form 5
Stem material: 1.4571
Stem Ø dF: 6, 8, 10 mm
Screw fitting material: 1.4571
Order length: L



Stem model: E4
Form acc. to DIN EN 13 190: form 4
Stem material: 1.4571
Stem Ø dF: 6, 8, 10 mm
Screw fitting material: 1.4571
Order length: L



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



Suitable thermowell models: SF4.1 (8.8111), SF4.1F (8.8113)
 (data sheet) SF8 (8.8130), SF9 (8.8131)

Suitable thermowell models: SF4 (8.8110), SF4F (8.8112)
 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	SW	i
G 1/2"	27	10
1/2" BSP	1.06	0.39
G 3/4"	32	12
3/4" BSP	1.26	0.47
M20x1.5	1.06	0.39
M24x1.5	32	12
M27x2	32	12
	1.26	0.47

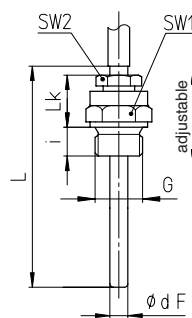
G	SW	i
G 1/2 B	22	20
1/2" BSP	0.87	0.79
G 3/4 B	27	23
3/4" BSP	1.06	0.91
M18x1.5	22	14
	0.87	0.55
M20x1.5	22	20
	0.87	0.79

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!

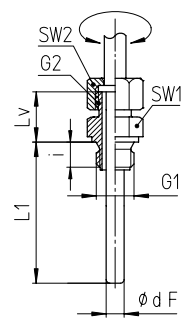
male thread/compression fitting

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



male thread, turnable/double male adapter

Stem model: E6
 (E3 with double male adapter)
Form acc. to DIN EN 13 190: —
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

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	right-angled to the back	w	
		obtuse angled to the back	wst	
		angle lateral to the left	wl	
		angle lateral to the right	wr	
	lower back position (only NCS 63)	without mounting device	r	
		back flange for surface mounting	rRh	
	centre back position (only NCS 100)	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.	G ½ B	
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, G ½ B

Special Versions: Please describe your requirements in cleartext!