

# Expansion Thermometers Model 70, with Stainless Steel Case and Capillary

WIKA Data Sheet TM 81.01

## Applications

- General-purpose temperature measuring instruments for gaseous, liquid and highly-viscous process media in harsh working environments
- Refrigeration industry
- Machine building

## Special Features

- Case and stem made of stainless steel
- Design per DIN EN 13 190
- With capillary



Fig. left: Expansion Thermometer Model M70.50.100  
Fig. right: Expansion Thermometer Model B70.50.063

## Description

**Nominal size in mm**  
63, 100, 160

**Measuring principle**  
Bourdon tube system

**Fill medium**  
Xylol or silicon oil

**Accuracy class**  
Class 2

**Rated operating ranges and conditions**  
DIN EN 13 190

**Ingress protection**  
IP 56 per EN 60 529 / IEC 529

**Capillary entry**  
Lower or back

**Case**  
Stainless steel

**Bezel ring**  
Stainless steel

**Connection**  
Plain, stainless steel 1.4571

**Capillary**  
Length to customer specifications (max. 10 m), Ø 2 mm, stainless steel 1.4571, bending radius not less than 6 mm

**Stem**  
Ø 8 mm, stainless steel 1.4571

### Active length of sensor

Depending on Ø d and scale range

### Dial

Aluminium, white, black lettering

### Pointer

Aluminium, black

### Window

NS 100, 160: Instrument glass

NS 63: Transparent plastic

### Mounting options

- Surface mounting flange (H), stainless steel
- Surface mounting bracket (M), aluminium die cast
- Panel mounting flange (V), stainless steel
- Triangular bezel with bracket (B), stainless steel

## Options

- Scale range °F, °C/°F (dual scale)
- Laminated safety glass, clear plastic
- Ambient temperature compensation
- Accuracy class 1.0
- Thermowell per DIN or to customer specification
- Surface mounting bracket from other materials and in other lengths (A)
- Liquid filling with  
NS 100: Model X70.53.100  
NS 160: Model X70.53.160
- Designs per DIN EN ISO 13485, medical applications on request
- Model 70 with micro switch see WIKA data sheet TV 28.01

## Scale ranges, Measuring ranges <sup>1)</sup>

Scale range in °C	Measuring range in °C	Limit error ± °C	Scale division in °C
-60 ... +40	-50 ... +30	2	1
-40 ... +60	-30 ... +50	2	1
-30 ... +50	-20 ... +40	2	1
-20 ... +60	-10 ... +50	2	1
-20 ... +80	-10 ... +70	2	1
0 ... +60	+10 ... +50	2	1
0 ... +80	+10 ... +70	2	1
0 ... +100	+10 ... +90	2	1
0 ... +120	+10 ... +110	4	2
0 ... +160	+20 ... +140	4	2
0 ... +200	+20 ... +180	4	2
0 ... +250	+30 ... +220	5	5

Other scale ranges on request.

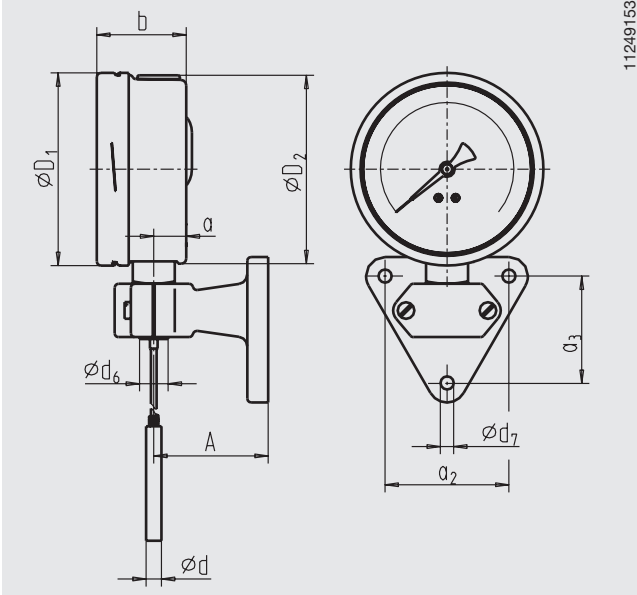
<sup>1)</sup> The measuring range is indicated on the dial by two triangular marks.  
The stated limit of error per DIN EN 13 190 is only valid within this range.

## Models

Model	NS	Capillary entry	Mounting option
<b>B70.50.</b> <b>B70.53.</b>	063	back	Triangular bezel with bracket
<b>H70.50.</b> <b>H70.53.</b>	063 100 160	lower	Surface mounting flange
<b>M70.50.</b> <b>M70.53.</b>	063 100 160	lower	Surface mounting bracket
<b>V70.50.</b> <b>V70.53.</b>	063 100 160	back	Panel mounting flange

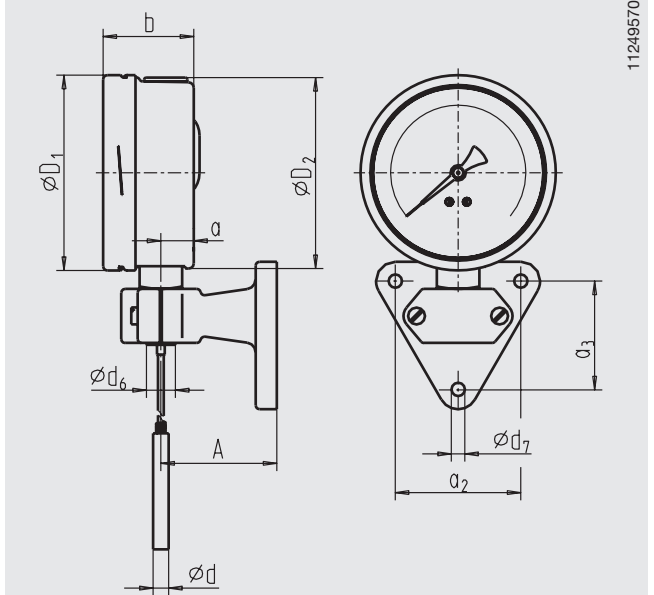
## Dimensions in mm

**Model M70, surface mounting bracket**



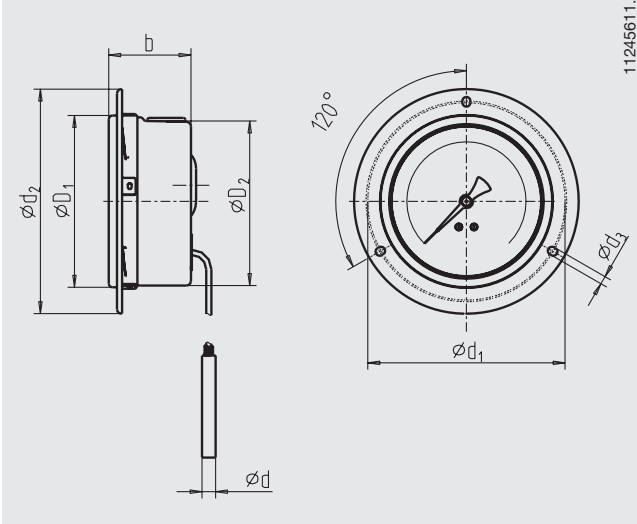
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**Model H70, surface mounting flange**



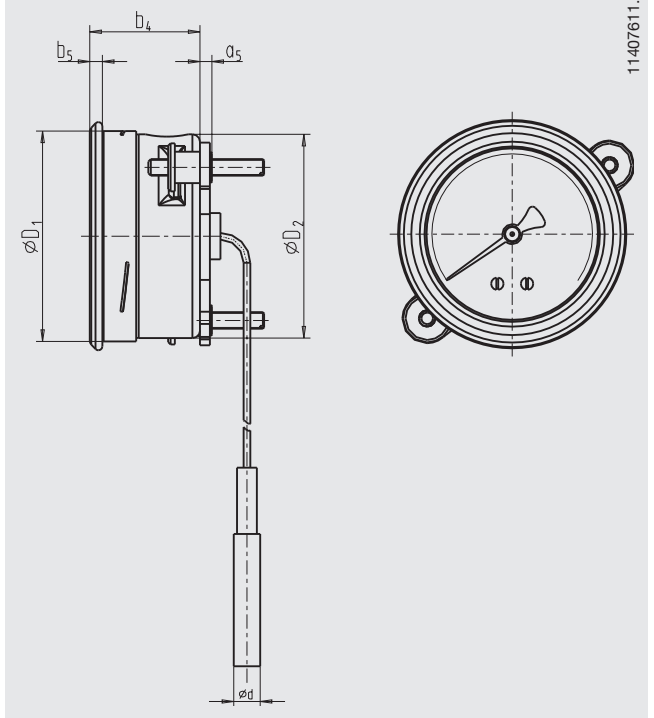
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**Model V70, Panel mounting flange**



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**Model B70, triangular bezel with bracket**



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NS	Dimensions in mm																			Weight in kg
	a	a <sub>1</sub>	a <sub>2</sub>	a <sub>3</sub>	a <sub>4</sub>	a <sub>5</sub>	b	b <sub>2</sub>	b <sub>4</sub>	b <sub>5</sub>	d	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>6</sub>	d <sub>7</sub>	A	D <sub>1</sub>	D <sub>2</sub>	
<b>63</b>	9.6	13	65	56	71	4	28	32	33.5	4	8	75	85	3.6	18	7	60	63.5	62	0.4
<b>100</b>	15.5	22	65	56			49.5	53			8	116	132	4.8	18	7	60	101	99	0.9
<b>160</b>	15.5	22	65	56			49.5	53			8	178	196	6	18	7	60	161	159	1.40

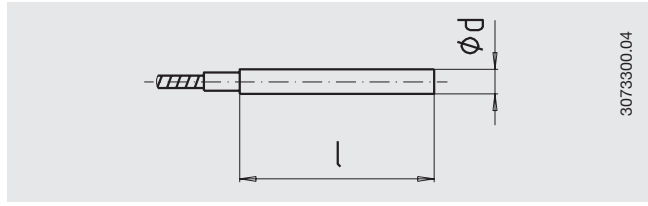
## Design of connection per DIN

### Design 1, plain connection (without thread)

Stem length in mm:  $l = 140, 200, 240, 290$   
 (Basis for design 4, compression fitting)

## Dimensions in mm

$l_F$  = Capillary length

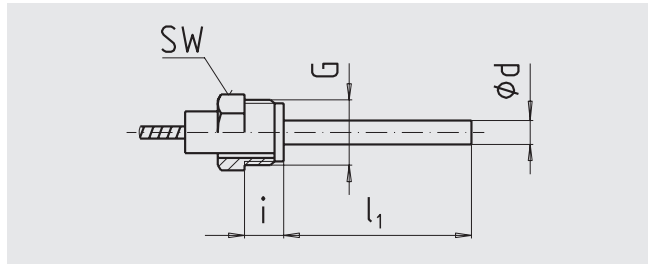


### Design 2, male nut

Process connection: G 1/2 B

Stem length in mm:  $l_1 = 80, 140, 180, 230$

Process connection	Dimensions in mm	
G	SW	i
G 1/2 B	27	20

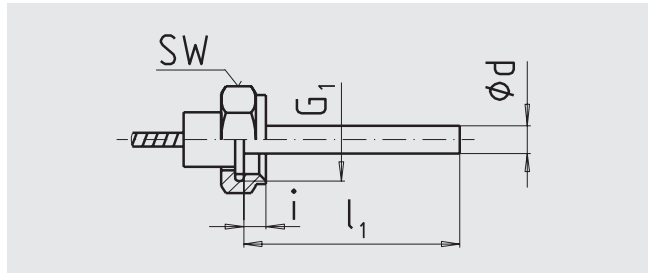


### Design 3, union nut

Process connection: G 1/2, G 3/4, M24 x 1.5

Stem length in mm:  $l_1 = 89, 126, 186, 226, 276$

Process connection	Dimensions in mm	
G	SW	i
G 1/2	27	8.5
G 3/4	32	10.5
M24 x 1.5	32	13.5



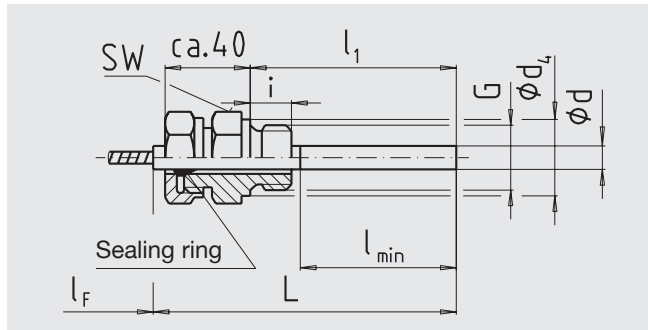
### Design 4, compression fitting (sliding on stem)

Process connection: G 1/2 B, G 3/4 B, M18 x 1.5 as well as  
 1/2 NPT, 3/4 NPT

Stem length in mm:  $l_1 = 100, 160, 200, 250$

(the stem length used can be reduced to a minimum  
 immersion length of  $l_{min} = 60$  mm)

Process connection	Dimensions in mm		
G	SW	d <sub>4</sub>	i
G 1/2 B	27	26	14
G 3/4 B	32	32	16
M18 x 1.5	24	23	12
1/2 NPT	22	-	19
3/4 NPT	30	-	20



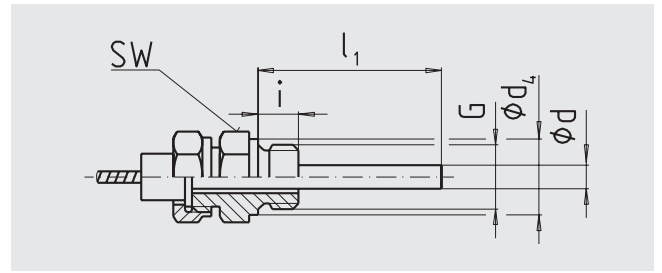
### Design 5, union nut with fitting

Union nut: G 1/2  
 Process connection: G 1/2 B, G 3/4 B or 1/2 NPT, 3/4 NPT

#### Option:

Union nut: M24 x 1.5  
 Process connection: M18 x 1.5  
 Stem length in mm:  $l_1 = 63, 100, 160, 200, 250$

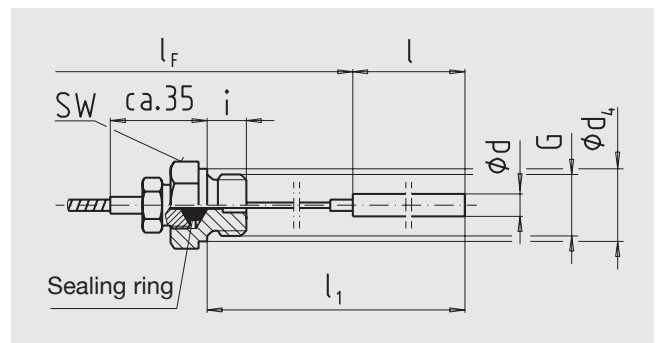
Process connection G	Dimensions in mm		
	SW	$d_4$	i
G 1/2 B	27	26	14
G 3/4 B	32	32	16
M18 x 1,5	24	23	12
1/2 NPT	22	-	19
3/4 NPT	30	-	20



### Design 6, compression fitting (sliding on capillary)

Process connection: G 1/2 B, G 3/4 B or 1/2 NPT, 3/4 NPT  
 Stem length in mm:  $l = 100, 140, 200, 240, 290$

Process connection G	Dimensions in mm		
	SW	$d_4$	i
G 1/2 B	27	26	14
G 3/4 B	32	32	16
1/2 NPT	22	-	19
3/4 NPT	30	-	20



### **Ordering information**

Model / Nominal size / Mounting flange / Design of connection / Scale range / Process connection / Stem- $\varnothing$  and -length / Capillary design and length / Options

Modifications may take place and materials specified may be replaced by others without prior notice.  
Specifications and dimensions given in this leaflet represent the state of engineering at the time of printing.



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