

# Expansion thermometer with microswitch

## Temperature limiter

### Model SC15

WIKA data sheet TV 28.02



for further approvals,  
see page 5

**Combistat**

#### Applications

- Large-scale plant
- Baking ovens
- Compressors
- Refrigeration industry

#### Special features

- Temperature limiter and indicator in a single instrument
- High switching reliability and long service life



Expansion thermometer with microswitch, model SC15

## Description

The model SC15 temperature limiter is a thermometer with a remote capillary for on-site display. Switch contacts ensure the simultaneous monitoring of limit values. This limits the temperature over or under a defined value. For this, the switching temperature can either be set via a knob on the window or is already fixed at the factory.

The shifting disk, which is arranged on the pointer shaft, actuates the switching operation at the microswitch when reaching the set switch point.

# Specifications

Basic information	
Nominal size in mm [in]	<ul style="list-style-type: none"> <li>■ 60 [2.3]</li> <li>■ 80 [3]</li> <li>■ 100 [4]</li> <li>■ 72 x 72 [2.8 x 2.8]</li> <li>■ 96 x 96 [3.8 x 3.8]</li> </ul>
Connection design	
BF1	Plain stem (without thread)
BF2	Rotatable threaded connection
BF3	Union nut
BF4	Compression fitting, sliding on stem
SF91 / SV19	Male nut with loose threaded connection
SF91 / SV20	Male nut with sealing cone
SF95	Threaded connection M10 x 1 with compression spring
	Further connection designs on request
Fill fluid	<ul style="list-style-type: none"> <li>■ Xylene</li> <li>■ Silicone oil</li> <li>■ Syltherm</li> </ul>
Mounting	<ul style="list-style-type: none"> <li>■ Panel mounting with mounting bracket</li> <li>■ Panel mounting flange (only with NS 60 [2.3"], 80 [3"] or 100 [4"])</li> </ul>
Material (in contact with the environment)	
Case	<ul style="list-style-type: none"> <li>■ Plastic, black</li> <li>■ Sheet steel (for NS 60 [2.3"], 80 [3"] or 100 [4"])</li> </ul>
Window	Plastic

Measurement principle	
Type of measurement principle	Bourdon tube system
Remote capillary	
Length	Max. 10 m [39.37 in]
Material (non-wetted)	<ul style="list-style-type: none"> <li>■ Copper, plastic-coated</li> <li>■ Copper, copper-braided</li> <li>■ Stainless steel</li> </ul>

Accuracy specifications	
Indication accuracy	Class 2 per EN 13190

Scale range	
Scale ranges	
Remote capillary from copper, plastic-coated	-40 ... +120 °C [-40 ... +248 °F]
Remote capillary from copper, copper-braided	-40 ... +350 °C [-40 ... +662 °F]
Remote capillary from stainless steel	-100 ... +400 °C [-148 ... +752 °F]
Unit (scale range)	<ul style="list-style-type: none"> <li>■ °C</li> <li>■ °F</li> <li>■ °C/°F (dual scale)</li> <li>■ °F/°C (dual scale)</li> </ul>

Scale range		
<b>Dial</b>		
Scale graduation	<ul style="list-style-type: none"> <li>■ Single scale</li> <li>■ Dual scale</li> </ul>	
Scale angle	Max. 270 °	
Scale colour	Single scale	Black
	Dual scale	Red
		Other colours on request
Materials	Aluminium, white	
<b>Pointer</b>		
Actual value pointer	Aluminium, black	
Set pointer 1	Aluminium, red	
Set pointer 2	Aluminium, green	

Process connection	
<b>Thread size</b>	<ul style="list-style-type: none"> <li>■ G ½ B, male thread</li> <li>■ G ¾ B, male thread</li> <li>■ G ½, female thread</li> <li>■ G ¾, female thread</li> <li>■ M10 x 1, male thread</li> <li>■ M14 x 1.5, male thread</li> <li>■ M16 x 1.5, male thread</li> <li>■ M18 x 1.5, male thread</li> <li>■ ½ NPT, male thread</li> <li>■ ¼ NPT, male thread</li> <li>■ ½ NPT, male thread</li> </ul>
<b>Material</b>	<ul style="list-style-type: none"> <li>■ Copper alloy</li> <li>■ Stainless steel</li> </ul>
<b>Stem</b>	
Diameter	<ul style="list-style-type: none"> <li>■ 6 mm</li> <li>■ 8 mm</li> <li>■ 8.5 mm</li> <li>■ 10 mm</li> </ul>
Material (wetted)	<ul style="list-style-type: none"> <li>■ Copper alloy</li> <li>■ Stainless steel 316L</li> </ul>
Insertion length $l_1$	20 ... 600 mm [0.78 ... 23.62 in]
<b>Thermowell</b>	
Thermowell model	<ul style="list-style-type: none"> <li>■ Without</li> <li>■ SH16</li> <li>■ SB18</li> </ul>
Thermowell diameter	<ul style="list-style-type: none"> <li>■ 8 mm</li> <li>■ 10 mm</li> </ul>
Insertion length $U_1$	20 ... 600 mm [1.18 ... 23.62 in]

Output signal	
Type of contact	Microswitch
Contact version	<ul style="list-style-type: none"> <li>■ 1 adjustable change-over contact</li> <li>■ 2 adjustable change-over contacts</li> <li>■ 2 jointly adjustable change-over contacts</li> <li>■ 1 adjustable and 1 fixed change-over contact</li> <li>■ 1 fixed change-over contact</li> <li>■ 2 fixed change-over contacts</li> </ul>
Switch rating	<ul style="list-style-type: none"> <li>■ 5 A non-inductive at max. 250 V, 50 ... 60 Hz</li> <li>■ 10 A non-inductive at max. 250 V, 50 ... 60 Hz</li> </ul>
Switching power	cos $\phi$ = 1 (0.6)
Operating principle per EN 60730-1	Type 1.B Integrated RS Temperature limiter
Number of switching cycles per EN 60730-1	10,000 (for UL version 6,000)
Standard switch differential	< 2 % of measuring range
Switch point setting	<ul style="list-style-type: none"> <li>■ Knob</li> <li>■ Knob with key adjustment</li> </ul>






Electrical connection	
Connection type	<ul style="list-style-type: none"> <li>■ 0.8 x 6.3 mm [0.03 x 0.25 in] blade terminal per DIN 46244</li> <li>■ Terminal connection with conductor cross-section up to 1.5 mm<sup>2</sup></li> </ul>

Operating conditions	
Ambient temperature range	0 ... 50 °C [32 ... 122 °F]
Storage and transport temperature range	-40 ... +60 °C [-40 ... +140 °F]
Ingress protection (IP code) per IEC/EN 60529	<ul style="list-style-type: none"> <li>■ Front: IP53; Rear: IP00</li> <li>■ With protective cap: IP54</li> </ul>

## Approvals

Logo	Description	Country
	<b>UL</b> Component certification	USA and Canada

### Optional approvals

Logo	Description	Country
	<b>EAC</b>	Eurasian Economic Community
	EMC directive	
	Low voltage directive	
	<b>PAC Russia</b> Metrology, measurement technology	Russia
	<b>PAC Kazakhstan</b> Metrology, measurement technology	Kazakhstan
-	<b>MChS</b> Permission for commissioning	Kazakhstan
	<b>PAC Ukraine</b> Metrology, measurement technology	Ukraine
	<b>PAC Uzbekistan</b> Metrology, measurement technology	Uzbekistan
-	<b>CRN</b> Safety (e.g. electr. safety, overpressure, ...)	Canada

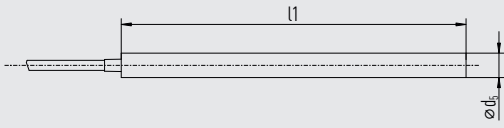
## Certificates (option)

Certificates	
<b>Certificates</b>	<ul style="list-style-type: none"> <li>■ 2.2 test report</li> <li>■ 3.1 inspection certificate with 3 test points (optionally with 5 test points)</li> </ul>

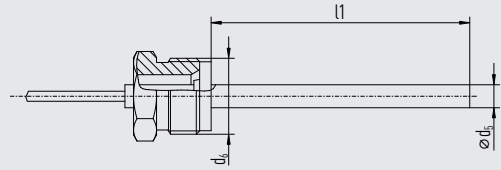
For approvals and certificates, see website

## Connection design

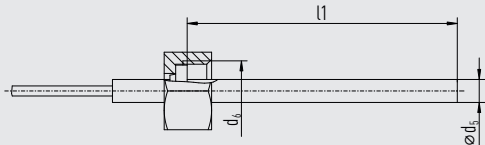
**BF1, plain stem (without thread)**



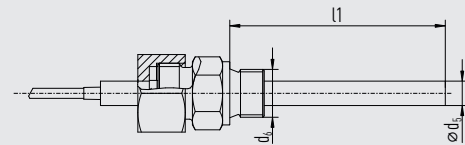
**BF2, rotatable threaded connection**



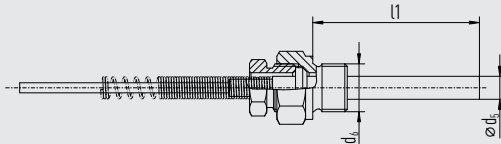
**BF3, union nut**



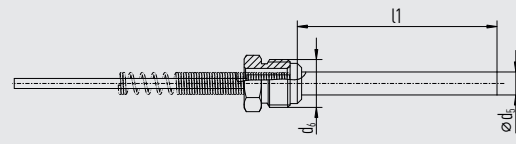
**Design 4, compression fitting, sliding on stem**



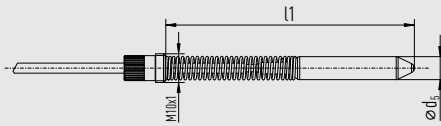
**SF91/SV19, male nut with loose threaded connection**



**SF91/SV20, male nut with sealing cone**



**SF95, threaded connection M10 x 1 with compression spring**



Legend:

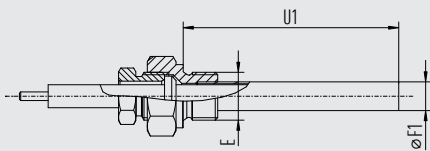
$\varnothing d_5$  Stem diameter

$\varnothing d_6$  Threaded process connection

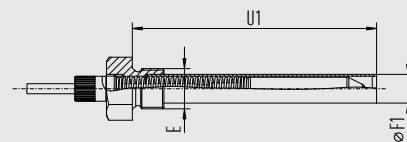
$l_1$  Variable insertion length

### With mounted thermowell

**SV20 with thermowell SH16**



**SF95 with thermowell SB18**



Legend:

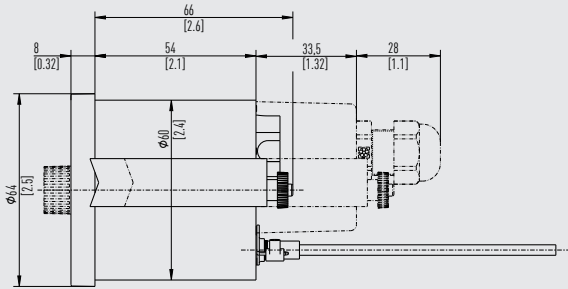
$\varnothing F_1$  Thermowell diameter

E Threaded process connection

$U_1$  Variable insertion length

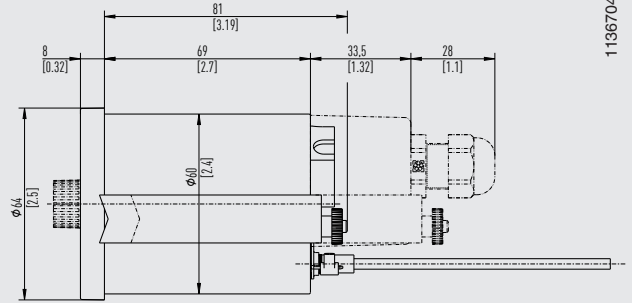
# Dimensions in mm [in]

**NS 60 [2.3"], plastic with 1 contact**



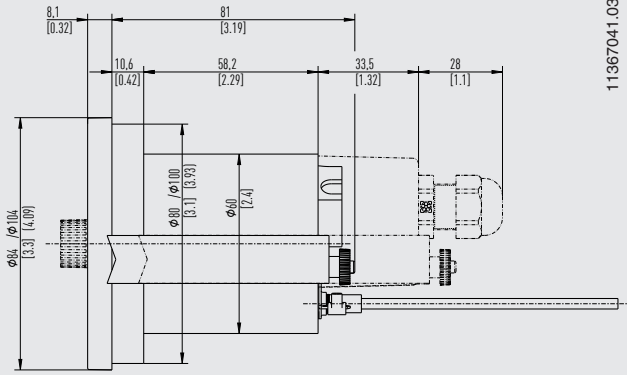
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**NS 60 [2.3"], plastic with 2 contacts**



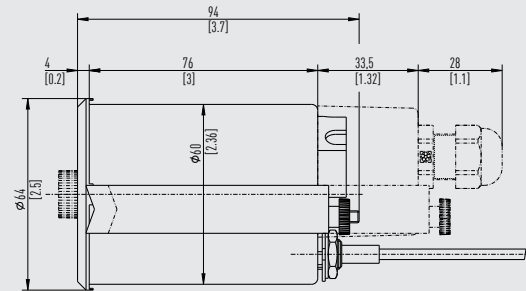
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**NS 80 [3"]/NS 100 [4"], plastic**



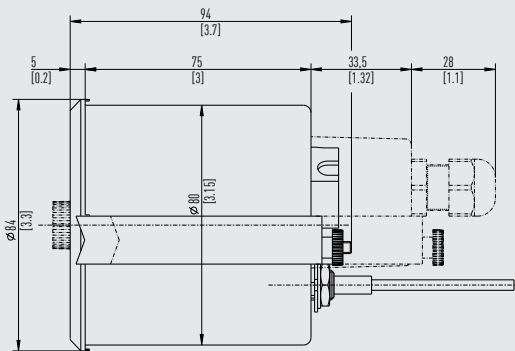
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**NS 60 [2.3"], sheet steel**



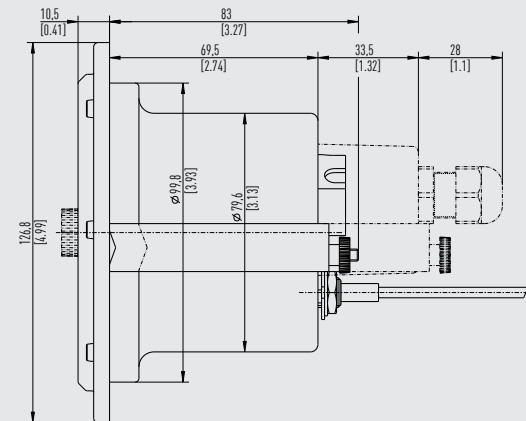
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**NS 80 [3"], sheet steel**



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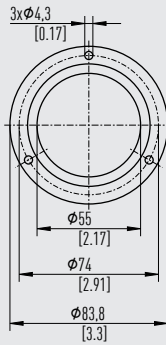
**NS 100 [4"], sheet steel**



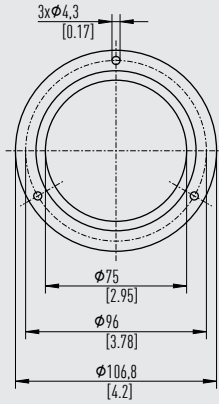
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## Front mounting

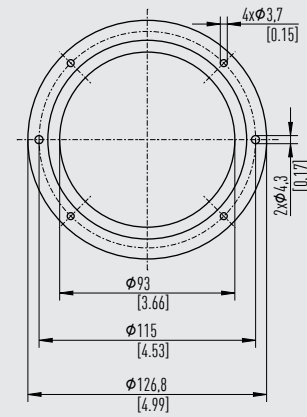
NS 60 [2.3"]



NS 80 [3"]



NS 100 [4"], sheet metal



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## Ordering information

Model / Nominal size / Scale range / Contact version / Switch points / Remote capillary / Remote capillary length / Connection design / Options

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