

## NK10 | Level Limiter - structural tested

Models for Explosion-hazardous Areas  
Zone 1 and 2 - NK10#####I  
Zone 22 - NK10#####F

### Application

The level limiter NK10 is applied into heat and process engineering plants to ensure that the lowest permissible level is not fallen below. The instrument meets the requirements of DIN 4574 as a limiter.

This series' instruments are structural tested and have received the DIN registration number / prototype test mark of DIN CERTCO Gesellschaft für Konformitätsbewertung (company for validation of conformity).

### Main Features

- Temperature resistant up to 400°C
- Material in contact with medium of stainless steel
- Double wall metal bellows of stainless steel
- Varnish heat resistant

### Approvals

- EC prototype tested for application in explosion-hazardous areas

TÜV 07 ATEX 553595

Declaration for application in  
Zone 1 and 2

**Ex II 2 G EEx ib c IIC T6**

Zone 22


**Ex II 3 D c T80°C IP55**

The instruments may be applied in explosion-hazardous areas Zone 1 and Zone 2 - hazardous gas as well as in Zone 22 - hazardous dry dusts if they are connected to certified intrinsically safe circuits.



The demands of applicable standards for electrical and nonelectrical instruments' parts are met.

- Prototype tested as level limiter acc. to DIN 32728

**DIN Reg. No. 1D 01602** 

- EC prototype tested acc to directive 97/23/EC (Pressure Equipment Directive - PED) as equipment with safety function

**Certificate No.**  
**07 202 5435Z 0063/2/1**

- Type approval acc. to guidelines of Germanischer Lloyd for application on ships.

**Certifikate No. 65 353-93 HH,**  
**Test mark** 



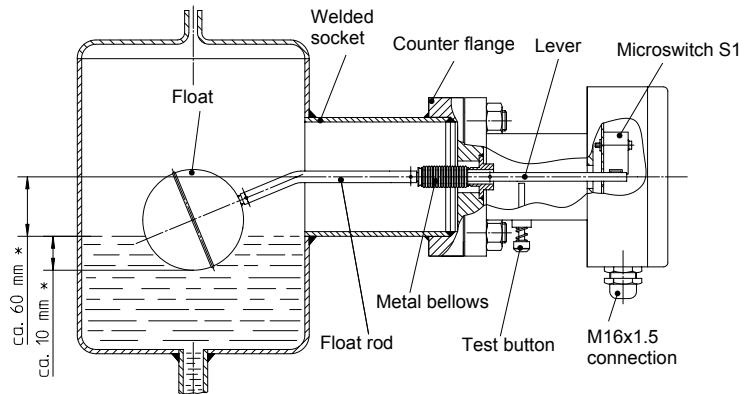
### Construction and Operation

The floater of the level limiter is located in the fluid filled vessel (expansion vessel). The float moves when the level changes. This movement is transported directly to a microswitch by the float rod. The float rod is sealed by metal bellows and its centre of rotation is outside the pressure chamber.

A test button is located outside the pressure chamber to enable a function test acc. to DIN 32728 without lowering of level. If the test button is pressed the floater is moved against its buoyancy.

If the instrument is used as level limiter, a locking and unlocking mechanism acc. to DIN 32728 needs to be installed into the subsequent electrical control. This safety device must meet demands of DIN 57116 / VDE 0116.

### Functional Scheme



\* in reference to density 1kg/dm³

### Specifications

#### Scope of Application

Atmospheric conditions of 0.8 to 1.1 bar (absolute) and ambient resp. medium temperature of -20°C to 60°C are basic conditions of the EC-prototype test. Suitability for differing pressures and temperatures has to be recorded by the operator in the explosion protection document.

#### Variant

**NK101, NK102, NK104, NK105, NK106**

Max. operating pressure 16 bar  
Max. medium temperature 400°C  
Min. medium temperature -20°C

#### Variant

**NK103**

Max. operating pressure 10 bar  
Max. medium temperature 350°C  
Min. medium temperature -20°C

#### Perm. ambient temperature in explosion-hazardous areas

$-20^{\circ}\text{C} \leq T_{\text{amb}} \leq 60^{\circ}\text{C}$

#### Perm. medium temperature during application in explosion-hazardous areas

The max occurring surface temperature corresponds to the medium temperature. Take temperature classes acc. to EN 60079-14 and ignition temperatures into account for respective application.

Temperature class	max. surface temperature °C
T1	450
T2	300
T3	200
T4	135
T5	100
T6	85

To avoid additional heating of instrument it must not be used in direct sunshine!

#### Load data / Contacts

**U max. = 30 V, I max. = 160 mA, P max. = 800 mW**

For application in explosion-hazardous areas the instrument needs to be connected to a certified intrinsically safe circuit.

Internal capacity  $C_i$  and internal inductivity  $L_i$  are negligible small.

Electrical connection	Internal connector bloc, M16 x 1.5 connection
Protection class	IP55 acc. to DIN EN 60529
Specified minimum density	0.6 kg/dm <sup>3</sup>
Switching hysteresis	Approx. 6 mm
Mounting direction	Horizontal

**For all variants with 2 microswitches**

Switching point difference between S1 and S2	2.5 ... 30 mm, adjustable ex works
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**Materials**

Housing	Aluminium
Float system	Stainless steel 1.4301
Metal bellows	Stainless steel 1.4571
Welded socket	St. 35.8
Flange	1.0425 (H II), 1.4571
Screws and nuts	G 7258 / C35PbK

**Dimensions** (all units in mm unless otherwise stated)

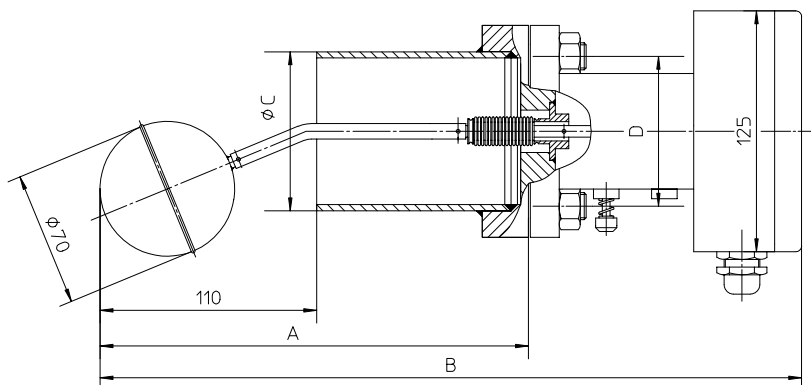
**Variants NK104 (10NS80)  
NK105 (10NS90)**

The welded socket is welded to the expansion vessel acc. to DIN 4754.

Regard the mounting position.

Max. temp. of heat transfer medium 400°C

Max. operating pressure PN16



Variant	Size A	Size B	Size C	Size D
NK104 (10NS80)	220	365	82,9	$\phi 110$
NK105 (10NS90)	250	395	88,9	$\square 90 \times 90$

**Variant NK102 (10N80)**

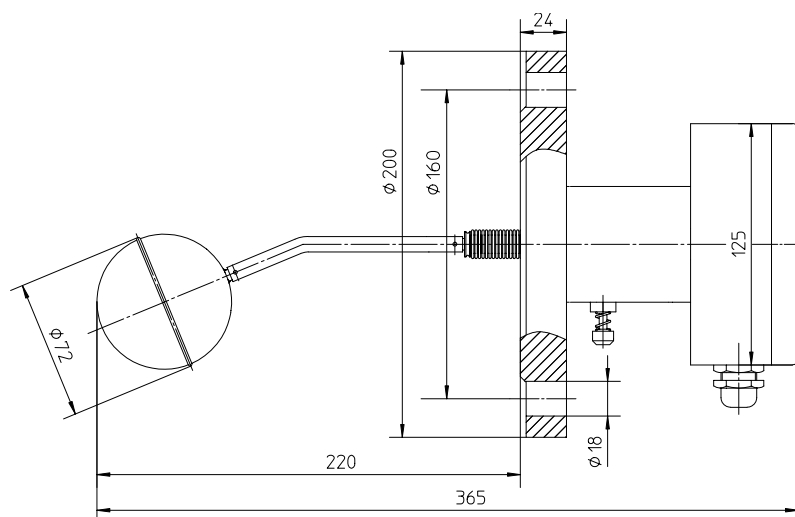
The instrument is designed with a mounting flange acc. to DIN 2527 form E.

**Fitting dimensions**

NK102 (10N80) - DN 80 PN 25

Max. temp. of heat transfer medium 400°C

Max. operating pressure PN16



**Variante NK101 (10N65)  
NK103 (10N65/10)**

The instrument is designed with a mounting flange acc. to DIN 2527 form E.

**Fitting dimensions**

NK101 (10N65) - DN 65 PN 25

Max. temp. of heat transfer medium 400°C

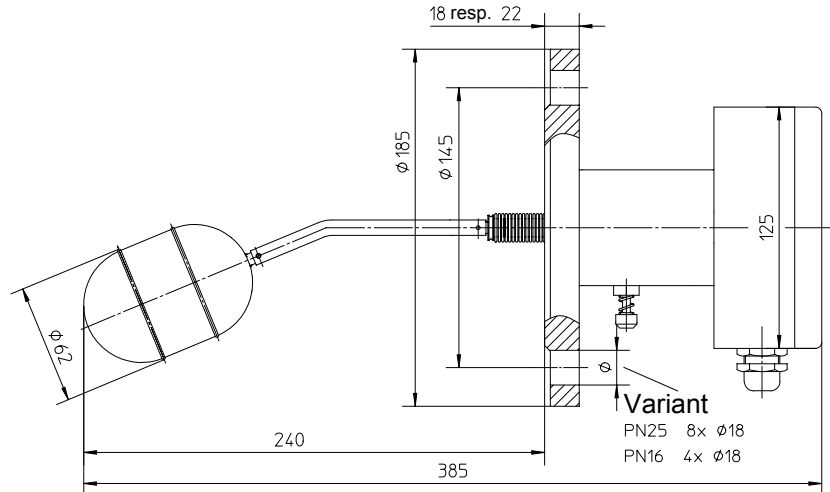
Max. operating pressure PN16

**Exception**

NK103 (10N65/10) - DN 65 PN 16

Max. temp. of heat transfer medium 350°C

Max. operating pressure PN10



**Variante NK106 (10N65F)**

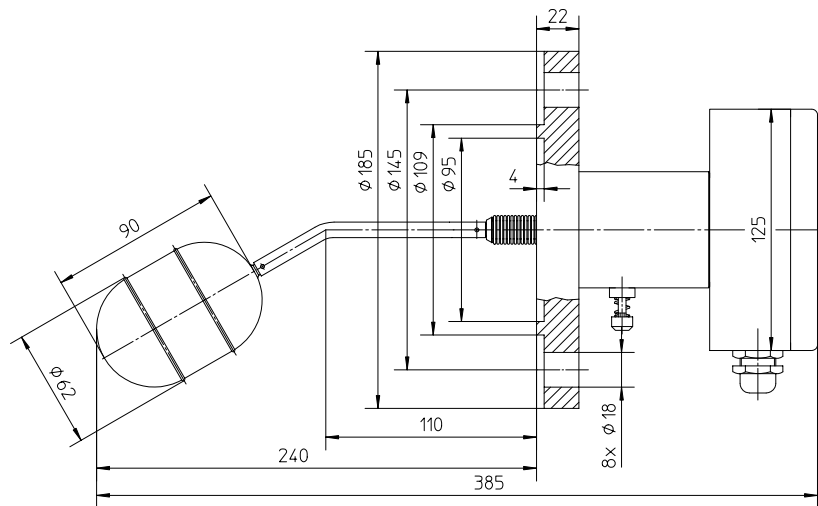
The instrument is designed with a mounting flange acc. to DIN 2527 form E and spring acc. to DIN 2512 form F.

**Fitting dimensions**

NK106 (10N65F) - DN 65F PN 25

Max. temp. of heat transfer medium 400°C

Max. operating pressure PN16



**Ordering Code**

**Level Limiter**

Models for Explosion-hazardous Areas

**NK10**

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**Type Series**

- Flange connection acc. to DIN 2527 form E DN65 PN25..... > 1
- Flange connection acc. to DIN 2527 form E DN80 PN25..... > 2
- Flange connection acc. to DIN 2527 form E DN65 PN16..... > 3
- Flange connection acc. to DIN 2527 form E and spring acc. to DIN 2512 form F DN65 PN40 > 6
- Welding connection - 82.5 mm ..... > 4
- Welding connection - 88.9 mm ..... > 5

**Switching Section**

- 1 Microswitch ..... > 1
- 2 Microswitch ..... > 2

**Approval Variants**

- Instrument with switching contacts (built-in microswitches)
- Zone 1 and 2 - Hazardous gases CE II 2 G EEx ib c IIC T6 ..... > # # # I
- Instrument with switching contacts (built-in microswitches)
- Zone 22 - Hazardous dry dust CE II 3 D c T80°C IP55 ..... > # # # F