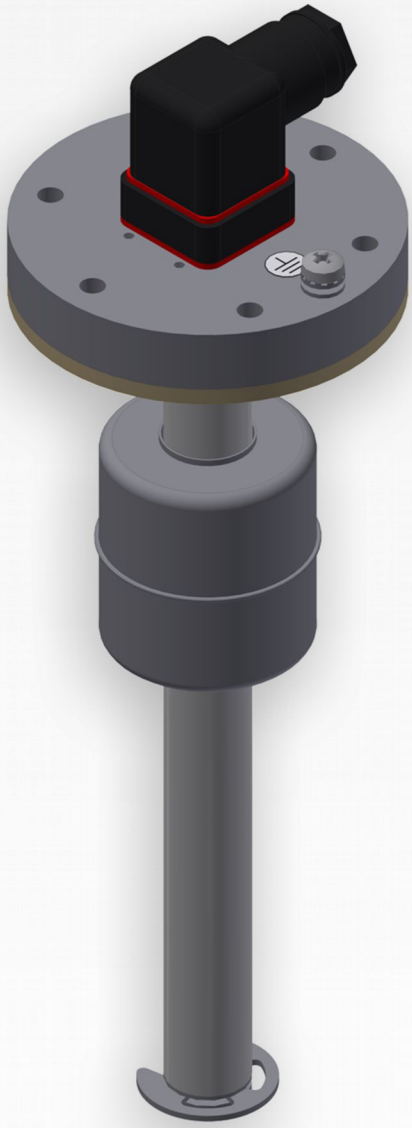
# Level and temperature switch
# NT 61-Z0-Atex

BÜHLER TECHNOLOGIES

FluidControl

In hydraulics and lubrication technology the fill level of oil tanks needs to be monitored continuously. Here, modern factory automation requires compatible signals. To minimise production costs and the space required on containers, it makes sense to use one monitor for both e.g. the fill level and oil temperature. The NT 61-Z0...-ATEX series meets virtually all requirements arising in this area of application. This model can be equipped with max. four fixed, bistable level contacts or max. three level plus one temperature contact to monitor the fill level. The temperature can alternatively also be assessed using a Pt100 resistance thermometer.

The NT 61-Z0...-ATEX is a simple electrical equipment without separate voltage source used to monitor the level and temperature inside a tank in explosive areas. Here the stainless steel tube a stainless steel float slides along is located inside the tank in zone 0. The stainless steel flange is mounted to the outside of the tank by 6 screws, meaning the connector plug is located outside the tank in zone 1. A flat seal between the tank and level switch flange provides the seal between the tank and the environment.



| |
|---|
| EU type test/IECEx certified<br>IECEX: IECEx IBE 17.0020X, ATEX: IBExU16ATEX1183 X |
| Area of application in Ex zone 0/1 |
| Level/temperature combination |
| Bistable = only one float |
| Standardised flange drawing: DIN 24557, part 2 |
| various plug options |
| variable lengths |
| Stainless steel version |
| Maintenance free |





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## Technical Data

### NT 61-Z0-Atex

| | |
|---|---|
| Operating pressure: | max. 1 bar |
| Operating temperature: | -20 °C to +70 °C |
| Ambient temperature: | -20 °C to +70 °C |
| Min. fluid density: | 0.85 kg/dm³ |
| Weight at L = 280 mm: | approx. 950 g |
| Each 100 mm add: | approx. 50 g |

### Material

| | |
|---|---|
| Float: | 1.4571 |
| Immersion tube: | 1.4571 |
| Flange (DIN 24557) | 1.4571 |

**Includes**
Mounting screws (quantity 6) and rubberised cork seal.

**Options**

| | |
|---|---|
| Stilling tube (SSR) | 1.4571/NBR |

| | |
|---|---|
| **The equipment comply with:** | IEC 60079-0 (Ed.6.0); IEC 60079-11 (Ed.6.0); EN 60079-0:2012+A11:2013; EN 60079-11:2012 |

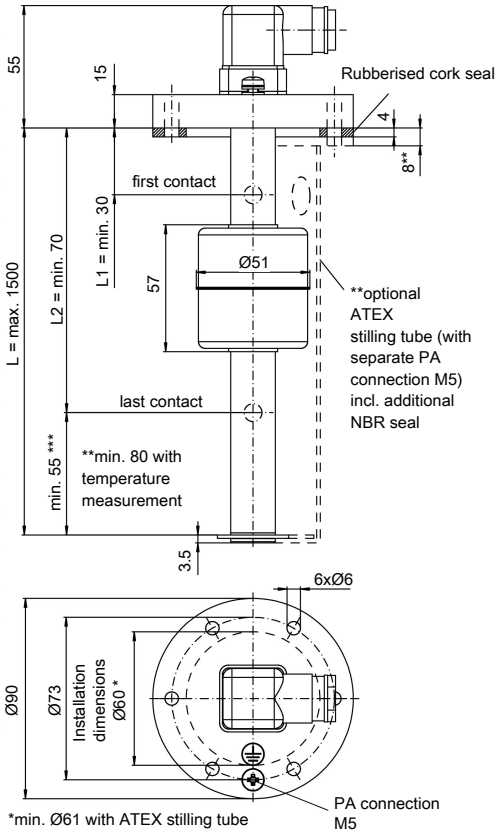
**ATEX/IECEx marking**


II 1G Ex ia IIC T4 Ga


II 1D Ex ia IIIC T70°C Da

**The level switches may only be operated on intrinsically-safe circuits!**

### Dimensions




### Level switching outputs

| Level contact | K10 | W11 |
|---|---|---|
| Function | NC/NO* | Change-over contact |
| $U_i$ | 30 V | |
| $I_i$ | 50 mA | |
| $L_i$; $C_i$ | Negligible | |
| $P_i$ | 100 mW | |

*NC = rising NC contact/falling NO contact, NO = rising NO contact/falling NC contact

### Optional temperature switching outputs

| Temperature contact | TKÖ | TKS |
|---|---|---|
| Function | NC** | NO** |
| $U_i$ | 30 V | |
| $I_i$ | 50 mA | |
| $L_i$; $C_i$ | Negligible | |
| $P_i$ | 100 mW | |

**NC = NC contact, NO = NO contact

### Temperature signal

**Pt100 Resistance Thermometer**

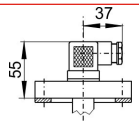
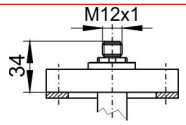
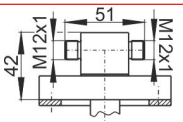
| | |
|---|---|
| Temperature sensor | Pt100 Class B, DIN EN 60 751 |
| Tolerance: | ±0.8 °K |
| $P_i$ | 100 mW |
| $U_i$ | 30 V |
| $I_i$ | 50 mA |
| $I_{Mess}$ (measuring current) | ≤1 mA |
| $L_i$; $C_i$ | Negligible |

### Pt100 measuring resistance base values

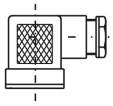
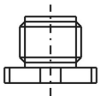
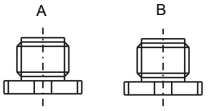
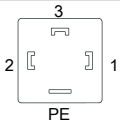
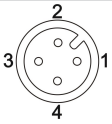
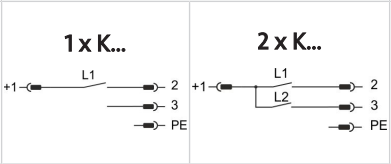
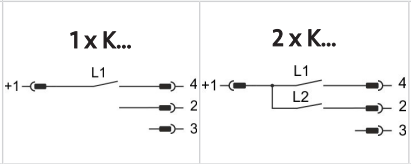
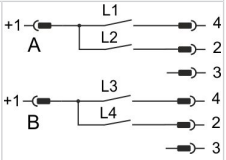
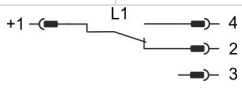
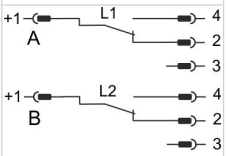
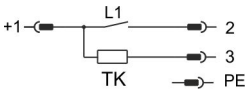
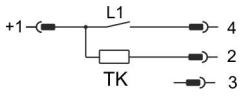
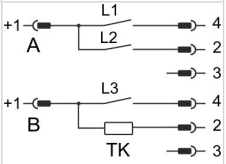
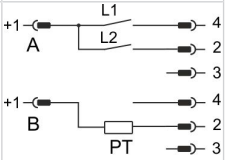
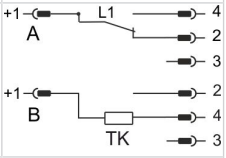
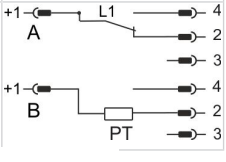
| °C | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Ohm | 100.00 | 103.90 | 107.79 | 111.67 | 115.54 | 119.40 | 123.24 | 127.07 | 130.89 | 134.70 | 138.50 |

## Standard pin assignment

### Plug connection

| | M3 | M12 | 2 x M12 |
|---|---|---|---|
| Dimensions |  |  |  |
| Number of pins | 3-pin + PE | 4-pin | 4-pin / 4-pin |
| DIN EN | 175301-803 | 61076-2-101 | 61076-2-101 |
| Degree of protection | IP65 | IP67** | IP67** |
| Cable fitting | PG 11 | | |

** with respective plug top

| | M3 | M12 (base) | 2 x M12 (base) |
|---|---|---|---|
| |  |  |  |
| Connection schematic |  |  | |
| Only level contact(s)<br>type K10 (NC/NO) |  |  |  |
| Only level contact(s)<br>type W11<br>(changeover contact) |  |  |  |
| Level contact(s)<br>type K10<br>plus temperature contact TK |  |  |  |
| Level contact(s)<br>type K10<br>plus Pt100 temperature sensor | | |  |
| Level contact(s)<br>type W11<br>plus temperature contact TK | | |  |
| Level contact(s)<br>type W11<br>plus Pt100 temperature sensor | | |  |

## Ordering Instructions

NT 61 - XX - XX - XX - X X - XX - ATEX - XX

**Type designation**

**Version**
Z0 Zone0

**Plug connection**
M3
M12
2M12

**Length in mm (max. 1500)**
280
370
500
variable (please specify)

**Level measurement**
1-4 Number of contacts

**Level contact**
K = NC/NO
W = Change-over contact

**Options**
SSR Stilling tube

**Temperature**
TK50NC = 50 °C NC
TK60NC = 60 °C NC
TK70NC = 70 °C NC

TK50NO = 50 °C NO
TK60NO = 60 °C NO
TK70NO = 70 °C NO

Pt100 Temperature sensor

## Ordering example

| | |
|---|---|
| You require: | Level switch, M12 plug connection, length L=280 mm, 1x level contact, contact at L1=100 mm function NC, temperature contact 60 °C function NO, with stilling tube |
| Order: | NT 61-Z0-M12-280-1K-TK60NO-ATEX-SSR, L1 = 100 NC |

| Item no. | Description |
|---|---|
| 9144 05 0010 | Connecting cable M12x1, 4-pin, 1.5 m, angular coupling and straight plug |
| 9144 05 0046 | Connecting cable M12x1, 4-pin, 3.0 m, angular coupling and straight plug |
| 9144 05 0047 | Connecting cable M12x1, 4-pin, 5.0 m, angular coupling and strands |