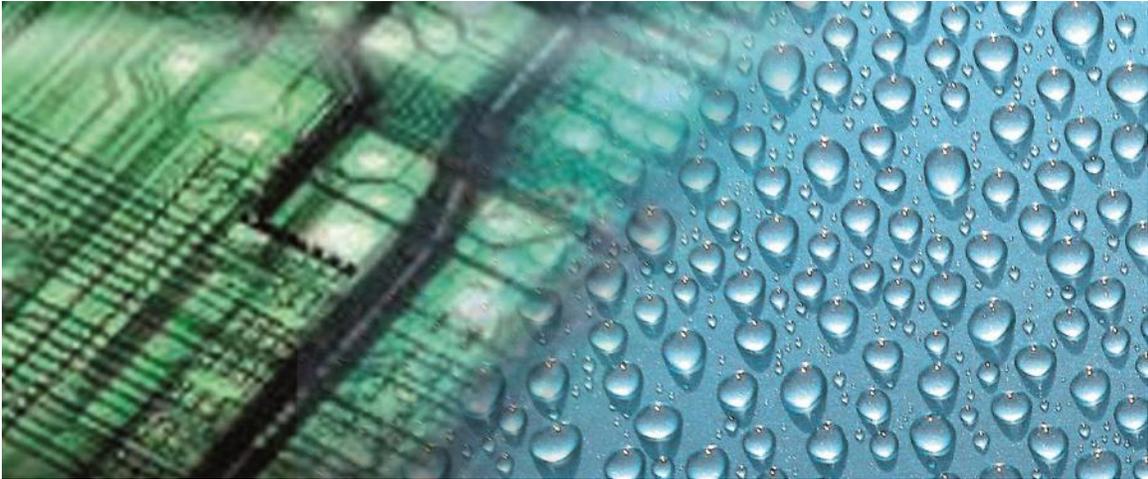


# Installation and operating instructions



**ENGLER**  
Steuer- und Messtechnik

Lange Strasse 151  
72535 Heroldstatt-Sontheim  
Germany  
Telefon: +49 (0)7389-90920  
Telefax : +49 (0)7389-909240  
Homepage: [www.engler-msr.de](http://www.engler-msr.de)  
E-Mail: [info@engler-msr.de](mailto:info@engler-msr.de)



## Company

*The company Engler Steuer- und Messtechnik GmbH & Co. KG. stands for 40 years of competence and innovation in industry-independent level, temperature and pressure measurement technology.*

*The company Engler develops, manufactures and distributes float switches, temperature sensors, temperature display and evaluation devices as well as control and regulating devices.*

*Our products are used in many areas of industry, e.g. in water treatment, in hydraulic and lubrication systems. In short, wherever fill levels are monitored in containers with a wide variety of liquids or temperatures.*

*The UniEx family of devices meets the increasing demand for equipment in explosive/hazardous areas of Zones 0/1 and 2*

*UniExSS - float switch also combined with temperature measurement*

*UniExM - mini float switch combined with temperature measurement*

*UniExT - temperature switch / sensor*

*UniExANM - analog level measuring system*

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## Introduction

*The installation and operating instructions serve as aids for the correct installation as well as the operation and the maintenance of the device.*

*It supplements the device description.*

*Read the instructions carefully before installing and operating the unit.*

*Special versions and special applications are not included in the operating instructions, but are possible on request.*

*All devices have been carefully checked for functionality before delivery.*

*Please make a visual inspection on delivery to detect any damage that may have occurred during shipping.*

*If you have detected any defects, please contact us. In addition to the error description, we require the specification of the device type and / or type no. the delivery.*

*We assume no guarantee for our own repair attempts. In the case of complaint, unless otherwise agreed, the equipment has to be sent to us for inspection.*

*The operation and configuration of the ENGLER Ex device group UniExSS ... and UniExM ... and UniExANM ... and UniExT .. are described in the separate instructions.*

*The ATEX certification for the ENGLER Ex-device groups UniExSS ... and UniExM ... and UniExANM ... and UniExT .. is in the EC-Type Examination Certificate BVS 15 ATEX E 086 X acc. Directive 94/9 / EC has been carried out by the "Notified Body" (testing center) DEKRA-EXAM.*

## Application area

Float switches should only be used to monitor the level of liquid media in open or pressurized containers. The medium must not have any strongly adhering soiling or coarse particles and should not tend to crystallize out.

*The device works on the Archimedean buoyancy principle. The buoyancy of the float depends on the density of the medium and must therefore be designed for the liquid to be measured. (Standard is the density 1 water)*

*It has to be ensured that the media-contacting materials such as sliding or guide tube and float are sufficiently chemically resistant to the medium to be monitored.*

*The permissible temperatures and pressures must be observed in accordance with the technical data.*

### Functionality:

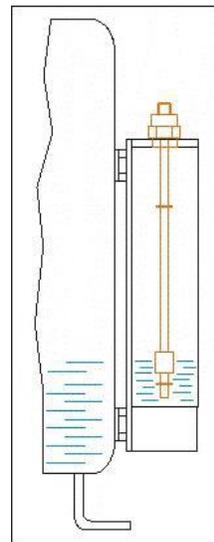
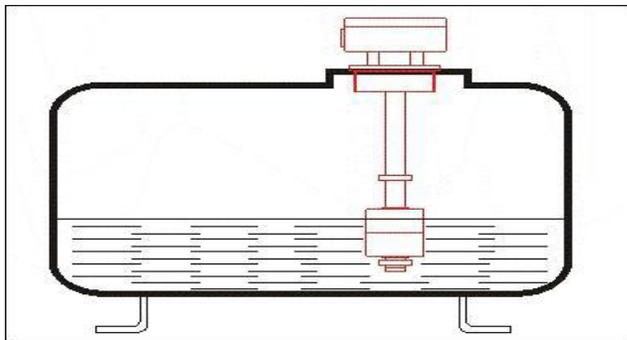
*Due to the magnetic field of the magnet, which is located in the interior of the buoyancy body (float), the reed contacts arranged in the sliding or guide tube are actuated in accordance with the desired fill level. As a result, depending on the type of contact, the circuit is opened or closed, which is used for control. Combined, the device can also be equipped with a temperature switch, by reaching its set temperature, a normally open or normally closed function is triggered.*

### Measurement in the container:

When mounted on a tank, the sliding or guide tube must be protected against impermissible mechanical forces that may occur during filling and emptying processes or agitators.

### Measurement in the displacement or

bypass vessel: *If the device is not installed from above, e.g. because there is a stirrer in the container, a bypass vessel is available for lateral mounting.*



## Assembly, commissioning and operation

The ENGLER EX-proof devices are built in accordance with the state of the art and guarantee the relevant regulations and EC directives. However, if used improperly, hazards associated with the application of this equipment may be present, e.g. Product overflow due to incorrect installation or adjustment. Therefore, installation, electrical connection, commissioning, operation and maintenance of the measuring equipment may only be carried out by trained and instructed specialist personnel authorized by the plant operator. The qualified personnel must have read and understood these operating instructions and follow the instructions. Modifications and repairs to the device may only be made if the operating instructions expressly permit this.

## Operational safety

During parameterization, testing and maintenance work on the device, alternative monitoring measures must be taken to ensure operational safety and process reliability

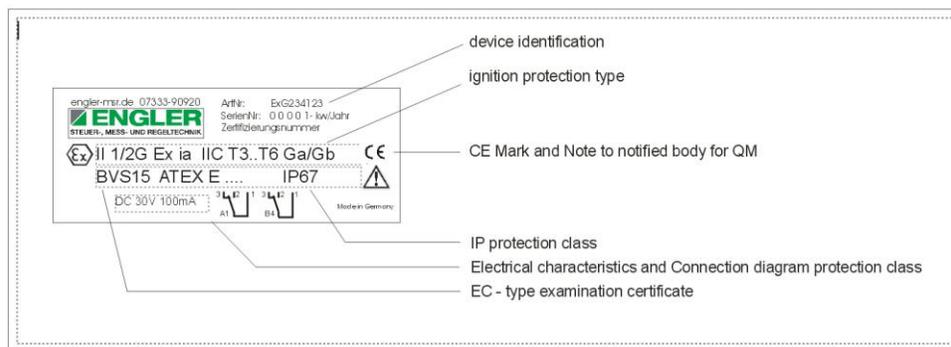
## Hazardous area

When using the float switches in potentially explosive atmospheres, the relevant national standards and regulations must be observed. The ENGLER Ex devices include separate ex-documentation, which is an integral part of this documentation. The installation instructions, connection values and safety instructions listed in there have to be observed

- The qualified personnel must be adequately trained
- The metrological and safety requirements for the measuring points must be observed

## Type plate

The following technical data can be taken from the device type plate:



Information on the type plate of a float switch

## Product overview

The product overview serves to identify the alphanumeric order number

(see type plate: Order Code).



**Float-switch Type: UniExSS**

|               |                 |   |                 |   |   |   |   |   |                 |   |   |
|---------------|-----------------|---|-----------------|---|---|---|---|---|-----------------|---|---|
| Type UniEx.SS | x               | * | x               | x | x | x | x | x | *               | x | * |
|               | not Ex-relevant | a | not Ex-relevant |   |   |   |   | b | not Ex-relevant | c |   |

**a Diameter of the sliding tube**

12 = 12mm

**b Execution process connection**

AK = version with cable

AS = version with plug

AGU = version with terminals + unpainted connection housing

AGN = version with terminals + painted connection housing

**c Temperature switch / Temperature sensor**

T60O = normally closed (60 ° C)

T60S = normally open (60 ° C)

T65O = normally closed (65 ° C)

T65S = normally open (65 ° C)

T70O = normally closed (70 ° C)

T70S = normally open (70 ° C)

T75O = normally closed (75 ° C)

T75S = normally open (75 ° C)

T85O = normally closed (85 ° C)

T85S = normally open (85 ° C)

Pt102 = PT100 2-wire

Pt103 = PT100 3 wire

Pt104 = PT100 4-wire

Pt1002 = PT1000 2-wire

Pt1003 = PT1000 3 wire

Pt1004 = PT1000 4-wire

**Float-switch Type: UniExM**

|              |                 |   |                 |   |   |   |   |   |                 |   |   |
|--------------|-----------------|---|-----------------|---|---|---|---|---|-----------------|---|---|
| Type UniEx.M | x               | * | x               | x | x | x | x | * | x               | x | * |
|              | not Ex relevant | a | not Ex relevant |   |   |   |   | b | not Ex relevant | c |   |

**a Diameter of the sliding tube**

8 = 8mm

**b Electrical connection**

AK = version with cable

AS = version with plug

AGU = version with terminals + unpainted connection housing



AGN = version with terminals + painted connection housing

**c Temperature switch / Temperature sensor**

T60O = normally closed (60 ° C)

T60S = normally open (60 ° C)

T65O = normally closed (65 ° C)

T65S = normally open (65 ° C)

T70O = normally closed (70 ° C)

T70S = normally open (70 ° C)

T75O = normally closed (75 ° C)

T75S = normally open (75 ° C)

T85O = normally closed (85 ° C)

T85S = normally open (85 ° C)

Pt102 = PT100 2-wire

Pt103 = PT100 3- wire

Pt104 = PT100 4-wire

Pt1002 = PT1000 2-wire

Pt1003 = PT1000 3- wire

Pt1004 = PT1000 4-wire

**Float-switch Type: UniExANM**

|                |                 |   |                 |   |   |                 |   |   |
|----------------|-----------------|---|-----------------|---|---|-----------------|---|---|
| Type UniEx.ANM | x               | * | x               | x | * | x               | x | * |
|                | not Ex relevant | a | not Ex relevant |   | b | not Ex relevant |   | c |

**a Diameter of the sliding tube**

8 = 8mm; 12 = 12mm;

**b Electrical connection**

AK = version with cable

AS = version with plug

AGU = version with terminals + unpainted connection housing

AGN = version with terminals + painted connection housing

**Temperature sensor**

Pt102 = PT100 2-wire

Pt103 = PT100 3- wire

Pt104 = PT100 4-wire

Pt1002 = PT1000 2-wire

Pt1003 = PT1000 3-wire

Pt1004 = PT1000 4-wire



**Float-switch type: UniExT**

|              |                 |   |                 |   |                 |   |
|--------------|-----------------|---|-----------------|---|-----------------|---|
| Type UniEx.T | x               | * | x               | * | x               | * |
|              | not Ex relevant | a | not Ex relevant | b | not Ex relevant | c |

**a Diameter of the sliding tube**

8 = 8mm; 12 = 12mm

**b Electrical connection**

AK = version with cable

AS = version with plug

AGU = version with terminals + unpainted connection housing

AGN = version with terminals + painted connection housing

**Temperature switch / Temperature sensor**

T60O = normally closed (60 ° C)

T60S = normally open (60 ° C)

T65O = normally closed (65 ° C)

T65S = normally open (65 ° C)

T70O = normally closed (70 ° C)

T70S = normally open (70 ° C)

T75O = normally closed (75 ° C)

T75S = normally open (75 ° C)

T85O = normally closed (85 ° C)

T85S = normally open (85 ° C)

Pt102 = Pt100 2-wire

Pt103 = PT100 3- wire

Pt104 = PT100 4-wire

Pt1002 = PT1000 2-wire

Pt1003 = PT1000 3- wire

Pt1004 = PT1000 4-wire



## Application in Ex-zone



The Ex devices fall acc. EN 60079-0: 2012 para. 12.2 under the category of "simple" electrical equipment, as they have no energy sources of their own and no energy stores, and have a clear knowledge of the pressure and heating limit data ( $-20^{\circ}\text{C} \leq T_a \leq +60^{\circ}\text{C}$  and 80 kPa to 110 kPa or 0.8 bar to 1.1 bar).

These explosion-proof devices must be made of a certified intrinsically safe circuit, e.g. from an associated electrical equipment, which is installed in the "safe area", interconnected and operated.

Only explosion-proof devices that are explicitly marked as  may be used in the potentially explosive area in the corresponding Ex zones.

ENGLER devices of the UniExSS ... UniExM ... UniExANM ... UniExT .. series are suitable for use in potentially explosive atmospheres

## Without electrical accessories (zone 2)

- In the basic version, the measuring instruments are a simple electrical equipment without own ignition sources and energy storage and comply with the requirements of DIN EN 13463-1 and can be used in zone 2 potentially explosive atmospheres.

- Since the device does not have its own energy sources which would lead to an increase in temperature the medium temperature determines the max. surface temperature.

- When used in potentially dust-explosive atmospheres, regular cleaning is required to prevent deposits.

## In Ex- Area of zone 1 and 0

identification:

Type:

*UniEx.SS x.\*.x.x.x.x.x.AK.x.\**

*UniEx.M x.\*.x.x.x.x.x.AK.x.x.\**

*UniEx.ANM x.\*.x.x.AK.x.x.\**

*UniEx.T x.\*.x.AK.x.\**

*UniEx.SS x.\*.x.x.x.x.x.AS.x.\**

*UniEx.M x.\*.x.x.x.x.x.AS.x.x.\**

*UniEx.ANM x.\*.x.x.AS.x.x.\**

*UniEx.T x.\*.x.AS.x.\**



*II 1/2 G Ex ia IIC T3...T6 Ga/Gb*  
*II 1/- D Ex ia IIIC T\* °C Da*

Type:

*UniEx.SS x.\*.x.x.x.x.x.AGN.x.\**



UniEx.M x.\*.x.x.x.x.AGN.x.x.\*  
 UniEx.ANM x.\*.x.x.AGN.x.x.\*  
 UniEx.T x.\*.x.AGN.x.\*  
 Ⓢ II 1/2 G Ex ia IIC T3...T6 Ga/Gb

Type:

UniEx.SS x.\*.\*.x.x.x.x.AGU.x.\*  
 UniEx.M x.\*.\*.x.x.x.x.AGU.x.x.\*  
 UniEx.ANM x.\*.\*.x.x.AGU.x.x.\*  
 UniEx.T x.\*.\*.AGU.x.\*  
 Ⓢ II 1 D Ex ia IIIC T\* °C Da

Parameter:

Versions: Type UniEx.SS x.\*.\*.x.x.x.x.AGU.x.\*,  
 Type UniEx.M x.\*.\*.x.x.x.x.AGU.x.x.\*  
 Type UniEx.ANM x.\*.\*.x.x.AGU.x.x.\* and  
 Type UniEx.T x.\*.\*.AGU.x.\*  
 for use in areas with category 1D requirements.

Versions with a PT100 or a PT1000 resistor 2-wire, 3-wire, 4-wire measuring circuit:

|                               |       |                              |
|-------------------------------|-------|------------------------------|
| Maximum input voltage         | $U_i$ | DC 30 V                      |
| Maximum input current         | $I_i$ | 100 mA                       |
| Maximum input power           | $P_i$ | according to the table below |
| Inner effective capacity      | $C_i$ | negligible                   |
| Internal effective inductance | $L_i$ | negligible                   |

| Power $P_i$ | Ambient temperature range $T_a$ at the connection head | Max. Surface temperature $T$ at the connection head | Max. Surface temperature $T$ at the measuring tip) ** |
|-------------|--|---|---|
| 750 mW)*    | - 20 °C to + 40 °C                                     | 45 °C   | process temperature + 27 K                            |
| 650 mW)*    | - 20 °C to + 70 °C                                     | 75 °C   | process temperature + 23 K                            |
| 550 mW)*    | - 20 °C to + 100 °C                                    | 105 °C  | process temperature + 20 K                            |

) \* Total value for two PT100 or two PT1000 resistors

) \*\*: Max. Surface temperature  $T$  at the measuring tip must not exceed the operating temperature of the resistor PT100 / PT1000 type TO92 (up to 150 °C).



Versions with a temperature switch:

|                               |       |                              |
|-------------------------------|-------|------------------------------|
| Maximum input voltage         | $U_i$ | DC 30 V                      |
| Maximum input current         | $I_i$ | 100 mA                       |
| Maximum input power           | $P_i$ | according to the table below |
| Inner effective capacity      | $C_i$ | negligible                   |
| Internal effective inductance | $L_i$ | negligible                   |

| Power $P_i$ | Ambient temperature range $T_a$ at the connection head | Max. Surface temperature $T$ at the connection head | Max. Surface temperature $T$ at the measuring tip) ** |
|-------------|--|---|---|
| 750 mW      | - 20 °C to + 40 °C                                     | 45 °C   | process temperature + 10 K                            |
| 650 mW      | - 20 °C to + 70 °C                                     | 75 °C   | process temperature + 10 K                            |
| 550 mW      | - 20 °C to + 100 °C                                    | 105 °C  | process temperature + 10 K                            |

) \*\*: Max. Surface temperature  $T$  at the measuring tip must not exceed the operating temperature of the resistor PT100 / PT1000 type TO92 (150 °C).

Versions  
 Typ UniEx.SS x.\*.x.x.x.x.x.AK.x.\*,  
 Typ UniEx.M x.\*.x.x.x.x.x.AK.x.x.\*,  
 Typ UniEx.ANM x.\*.x.x.AK.x.x.\*,  
 Typ UniEx.T x.\*.x.AK.x.\*,  
 Typ UniEx.SS x.\*.x.x.x.x.x.AS.x.\*,  
 Typ UniEx.M x.\*.x.x.x.x.x.AS.x.x.\*,  
 Typ UniEx.ANM x.\*.x.x.AS.x.x.\*,  
 Typ UniEx.T x.\*.x.AS.x.\*,  
 Typ UniEx.SS x.\*.x.x.x.x.x.AGN.x.\*,  
 Typ UniEx.M x.\*.x.x.x.x.x.AGN.x.x.\*,  
 Typ UniEx.ANM x.\*.x.x.AGN.x.x.\* und  
 Typ UniEx.T x.\*.x.AGN.x.\*

for use in areas with category 1 / 2G requirements

Versions with a PT100 or a PT1000 resistor

2-wire, 3-wire, 4-wire or 2x2-wire, 2x3-wire, 2x4-wire measuring circuit

|                            |       |  |
|----------------------------|-------|--|
| Maximum input voltage      | $U_i$ | DC 30 V                                  |
| Maximum input current      | $I_i$ | 100 mA                                   |
| Maximum input power        | $P_i$ | according to the table below             |
| Inner effective capacity   | $C_i$ | Capacity of permanently connected line   |
| Inner effective Inductance | $L_i$ | Inductance of permanently connected line |



For the versions type UniEx.SS x.\*.x.x.x.x.x.AK.x.\*, Typ UniEx.M x.\*.x.x.x.x.x.AK.x.x.\*, type UniEx.ANM x.\*.x.x.AK.x.x.\* and type UniEx.T x.\*.x.AK.x.\*applies

|             |       |     |      |
|-------------|-------|-----|------|
| Capacitance | $C_c$ | 160 | pF/m |
| Inductance  | $L_c$ | 0,7 | μH/m |

Ambient temperature range of the connection head or connecting cable

- 20 °C bis / up to +70°C for temperature class
- 20 °C bis / up to +55°C for temperature class
- 20 °C bis / up to +40°C for temperature class

Permissible process temperatures in °C depending on the maximum input power

$P_i$  and the temperature class:

| temperature class | $P_i = 750 \text{ mW}^*)$ |
|-------------------|---------------------------|
| T3**              | 118                       |
| T4                | 103                       |
| T5                | 73                        |
| T6                | 53                        |

) \* Total value for two PT100 or two PT1000 resistors

) \*\*: Operating temperature of the resistor PT100 / PT1000 type TO92 (up to 150 °C)

By appropriate measures, e.g. by appropriate choice of the tube length, a decoupling of the temperature of the connection head and the connecting line is to ensure the process temperature

Versions with a temperature switch:

|                               |          |  |
|-------------------------------|----------|--|
| Maximum input voltage         | $U_i$ DC | 30 V                                     |
| Maximum input current         | $I_i$    | 100 mA                                   |
| Maximum input power           | $P_i$    | according to the table below             |
| Inner effective capacity      | $C_i$    | Capacity of permanently connected line   |
| Internal effective inductance | $L_i$    | Inductance of permanently connected line |

For the versions type UniEx.SS x.\*.x.x.x.x.x.AK.x.\*, type UniEx.M x.\*.x.x.x.x.x.AK.x.x.\*, type UniEx.ANM x.\*.x.x.AK.x.x.\* and type UniEx.T x.\*.x.AK.x.\*applies/

|             |       |     |      |
|-------------|-------|-----|------|
| Capacitance | $C_c$ | 160 | pF/m |
| Inductance  | $L_c$ | 0,7 | μH/m |

Ambient temperature range of the connection head or connecting cable:

- 20 °C to + 70 °C for temperature class
- 20 °C to + 55 °C for temperature class
- 20 °C to + 40 °C for temperature class



Permissible process temperatures in °C depending on the maximum input power  $P_i$  and the temperature class:

| temperature class | $P_i = 800 \text{ mW}$ |
|-------------------|------------------------|
| T3**              | 116                    |
| T4                | 102                    |
| T5                | 72                     |
| T6                | 52                     |

)\*\*): Operating temperature of the resistor PT100 / PT1000 type TO92 (up to 150 °C)

Versions type UniEx.SS x.\*.x.x.x.x.x.AK.x.x.\*, type UniEx.M x.\*.x.x.x.x.x.AK.x.x.\*, type UniEx.ANM x.\*.x.x.AK.x.x.\*, type UniEx.T x.\*.x.AK.x.x.\*, type UniEx.SS x.\*.x.x.x.x.x.AS.x.x.\*, type UniEx.M x.\*.x.x.x.x.x.AS.x.x.\* ,type UniEx.ANM x.\*.x.x.AS.x.x.\* und type UniEx.T x.\*.x.AS.x.x.\* , for use in areas with category 1 / - D requirements.

Versions with a PT100 or a PT1000 resistor

2-wire, 3-wire, 4-wire or 2x2-wire, 2x3-wire, 2x4-wire measuring circuit

|                       |       |    |                              |    |
|-----------------------|-------|----|------------------------------|----|
| Maximum input voltage | $U_i$ | DC | 30                           | V  |
| Maximum input current | $I_i$ |    | 100                          | mA |
| Maximum input power   | $P_i$ |    | according to the table below |    |

| power $P_i$ | Ambient temperature range $T_a$ at the connection head | Max. Surface temperature $T$ at the connection head | Max. Surface temperature $T$ at the measuring tip) ** |
|-------------|--|---|---|
| 750 mW)*    | - 20 °C to + 40 °C                                     | 45 °C   | process temperature+ 27 K                             |
| 650 mW)*    | - 20 °C to + 70 °C                                     | 75 °C   | process temperature + 23 K                            |
| 550 mW)*    | - 20 °C to + 100 °C                                    | 105 °C  | process temperature + 20 K                            |

) \* Sum value for two PT100 or two PT1000 resistors

)\*\*): Max. Surface temperature  $T$  at the measuring tip must not exceed the operating temperature of the resistor PT100 / PT1000 type TO92 (up to 150 °C).

The permanently connected line is outside the potentially explosive area, so no internal effective capacitance  $C_i$  and no internal effective inductance  $L_i$  are to be considered

Variants with one temperature switch

|                       |       |    |                              |    |
|-----------------------|-------|----|------------------------------|----|
| Maximum input voltage | $U_i$ | DC | 30                           | V  |
| Maximum input current | $I_i$ |    | 100                          | mA |
| Maximum input power   | $P_i$ |    | according to the table below |    |



| <i>power <math>P_i</math></i> | <i>Ambient temperature range <math>T_a</math> at the connection head</i> | <i>Max. Surface temperature <math>T</math> at the connection head</i> | <i>Max. Surface temperature <math>T</math> at the measuring tip) **</i> |
|-------------------------------|--|---|---|
| <i>750 mW</i>                 | <i>- 20 °C to + 40 °C</i>  | <i>45 °C</i>  | <i>process temperature + 10 K</i>                                       |
| <i>650 mW</i>                 | <i>- 20 °C to + 70 °C</i>  | <i>75 °C</i>  | <i>process temperature + 10 K</i>                                       |
| <i>550 mW</i>                 | <i>- 20 °C to + 100 °C</i>   | <i>105 °C</i>   | <i>process temperature + 10 K</i>                                       |

)\*\*: Max. Surface temperature  $T$  at the measuring tip must not exceed the operating temperature of the resistor PT100 / PT1000 type TO92 (up to 150 ° C).

*The permanently connected line is outside the potentially explosive area, so no internal effective capacitance  $C_i$  and no internal effective inductance  $L_i$  are to be considered.*

*The dividing wall for zone separation between zone 0 and zone 1 required in DIN EN 60079-26 is realized for the parts of the guide tube and the float, such that the e.g. immersed in a liquid tank of zone 0, float switches for monitoring the level through this partition between the required according to equipment protection level EPL "Ga" (zone 0) required area and the less vulnerable area of the equipment protection level EPL "Gb" (zone 1) can be properly assembled.*

*The permissible temperature ranges and the relationships between the temperature class, the permissible ambient temperature and the permissible temperature of the medium can be found in the device specifications.*



## Assembly

*Installation and / or repair may only be carried out by trained specialist personnel.*

*The Ex device may not be changed in its technical capacity.*

*The float switches from ENGLER must be installed in accordance with their designs via flange and / or thread. The installation location must be suitable for vertical installation max. deviation from the vertical  $\pm 30^\circ$ .*

*The Ex unit should not be installed near tank filler pipes and agitators as incorrect readings may be generated by currents.*

*Please also note the space required for a possible removal of the device. The length of the measuring unit must be taken into account.*

*At the place of installation, the limit values for temperature and humidity must be observed; corrosive atmospheres must be avoided.*

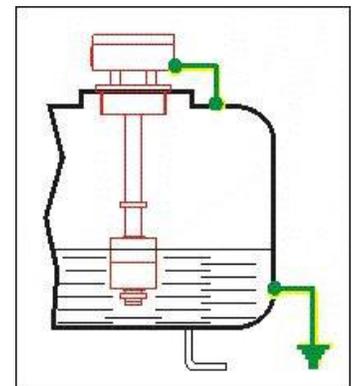
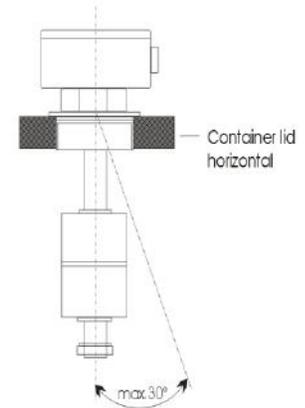
*For flanged versions, use the fasteners (screws and nuts) that match the flange. Only gaskets according to the data for pressure, temperature and corrosion of the medium may be used. The roughness of the flange sealing surfaces must be suitable for the intended seals.*

*For installation openings smaller than the diameter of the float, the float is removed. Before this, the position of the collars and the direction of installation of the float must be marked with TOP. With the ENGLER devices of the type UniEx ... it is absolutely necessary to replace the original plastic disc made of PVDF (polyvinylidene fluoride) on the collars!*

*In order to guarantee correct installation and operational safety, a comprehensive tightness control must be carried out simulating the actual process conditions.*

*The electrical connection must be carried out according to the connection diagram. The technical data must be observed. All loads must be equipped with a suitable protective circuit in accordance with VDE / EN.*

*The PE conductor and equipotential bonding connection must be connected according to regulations.*



## Commissioning / functional test

Switch on the supply voltage, fill the container under observation and check the switching points for function.

The functional test can also be done manually by moving the float. It must be ensured that no inadvertent processes are triggered by the functional test!

(A float switch is de-energized and potential-free.)

The ENGLER Ex device must be included in the test during a pressure test of the container with the complete system.

The electrical as well as the thermal data and the special conditions of the EG type examination certificate of the ENGLER Ex devices must be taken into account

### For dust application with a PT100 or PT1000

| Power $P_i$ | Ambient temperature range $T_a$<br>at the connection head | process temperature | $T^*$ °C<br>(for the type plate) |
|-------------|---|---------------------|----------------------------------|
| 750 mW)*    | - 20 °C to + 40 °C  | 150°C               | 177                              |
| 650 mW)*    | - 20 °C to + 70 °C  | 150°C               | 173                              |
| 550 mW)*    | - 20 °C to + 100 °C                                       | 150°C               | 170                              |

### For dust application with a temperature switch

| Power $P_i$ | Ambient temperature range $T_a$<br>at the connection head | process temperature | $T^*$ °C<br>(for the type plate) |
|-------------|---|---------------------|----------------------------------|
| 750 mW)*    | - 20 °C to + 40 °C  | 150°C               | 160                              |
| 650 mW)*    | - 20 °C to + 70 °C  | 150°C               | 160                              |
| 550 mW)*    | - 20 °C to + 100 °C                                       | 150°C               | 160                              |

## Maintenance

The ENGLER Ex devices are maintenance and wear-free when used as intended.

To safeguard the float switch function, a visual inspection is carried out as part of a system revision. Possibly the Ex device has to be cleaned.

The contacts of the reed relays used in the ENGLER Ex devices type: UniExANM ... have a lifetime of several million circuits and work very reliably. The float is the only moving part in the system. Thanks to this simple construction, the float switches work for years without failures.

## Operation with isolating amplifier

ENGLER Ex devices may only be supplied and operated with certified intrinsically safe circuits by associated electrical equipment. The ATEX-certified isolation switching amplifiers or power supply units, which the ENGLER company offers as an option as a single or multi-channel version, transmit the signals



*of the float switches from the hazardous areas of zone 0/1 for gas explosion protection and zones 20/21 at dust explosion protection.*

*The signalers can be sensors acc. NAMUR guidelines or mechanical contacts.*

*The control circuit is monitored for line break (LP) and line short (LK).*

*The intrinsically safe input circuit of a switching amplifier or power supply (associated electrical equipment), according to RL 94/9 / EC has been certified by a "notified body" (test center), corresponds to DIN EN 60079-11 and has the type of protection "Ex ia IIC" and has to be safely galvanically isolated from the output circuit and from the mains.*

*The devices are designed to simplify installation with screwable and / or removable terminals*

*The company ENGLER offers various isolating amplifiers and / or power supply units for measurement in potentially explosive atmospheres*





### Hazard notes

*- The operating pressure and the operating temperature have to be acc. the information given on the type plate and in the operating instructions.*

*- In the case of Ex devices with connection cable without protective conductor connection, the switch can be energised in the event of a fault.*

*If touched, bodily injury or death may occur.*

*Therefore, these Ex devices have to be assembled in such a way that they are linked and connected to equipotential bonding (PAL).*

*- The max. electrical power to the Ex-device groups must not be exceeded. The allowed values can be found on the type plates and the operation instructions.*

*If this maximum value is exceeded, the reed contacts could be permanently destroyed or thermally overloaded.*

*- If a higher switching capacity is required, a contact protection relay must be installed for safe operation*

*- For inductive loads, the Ex device must be protected by a circuit with an RC element or a freewheeling diode (information only from the company ENGLER).*

*- When connecting to a process control system with capacitive input, a protective resistor must be connected in series to limit the peak current (information only from ENGLER).*

*- Magnetic float switches must not be exposed to "heavy" mechanical loads, vibrations and impacts.*

*- Fire protection devices must be installed on the system side, damage to the Ex device due to external fire makes it impossible to monitor and control the system.*

*- IMPORTANT: Failure to comply with the hazard warnings listed above may result in damage to the Ex device and thus malfunction of the downstream control. This can cause personal injury and property damage*



### **Storage temperature**

*The storage temperatures are identical to the ambient temperature limits*

### **Climate class**

*Weatherproof, and / or non-heated locations, class C according to DIN IEC 654 Part 1*

### **CE-Mark**

The float switches comply with the legal requirements of the EU directives for CE marking:

EC Ex Directive 94/9 / EC,

EC-EMC Directive 89/336 / EEC,

EC Pressure Equipment Directive 97/23 / EC.

ENGLER Steuer- und Messtechnik GmbH & Co. KG. confirms conformity with the guidelines by affixing the CE mark

### **Ex-Mark**

The float switches comply with the legal requirements of the EU directives for Ex marking:

DIN EN 60079-0: 2014-06 (Gas explosion protection, general requirement)

DIN EN 60079-11: 2012-06 (Type of protection: intrinsic safety; Ex i)

DIN EN 60079-26: 2007-10 (category 1G, for zone 0)

DIN EN 61241-0: 2007-08 (dust explosion protection, general requirement)

*ENGLER Steuer- und Messtechnik GmbH & Co. KG confirms conformity of the Ex-guidelines by affixing the -mark.*

### **IP-Protection**

*IP 65 (according to DIN EN 60529)*

### **Shock resistance / vibration resistance**

*Strong shocks and vibrations should be kept away from the device as they can lead to incorrect readings and damage.*



### **Electromagnetic compatibility**

*EN 61000-2-2:1999 Immunity Industrial*

*EN 50 081-1, transient emissions in residential area*

*EN 55011:1998+A1: 1999 Group 1, class B*

*NAMUR- advice NE 21*

### **Medium conditions**

*The surface of the liquid should be as calm as possible. The liquid should not be prone to deposits and sticking. If the liquid evaporates aggressively, the material resistance must be observed. Furthermore, the liquid should be free from turbulences affecting the buoyant body.*

### **Medium temperature limit**

*The maximum permissible medium temperature is indicated on the type plate.*



**EC type examination certificate of DEKRA-EXAM**

