Instructions in accordance with directive 2014/34/EU TÜV 00 ATEX 1656 X

Overfill Prevention Sensor type 81 D-Ex ... and 83 UV-...
Level Detector type LS 300 ...
High-Level Sensor type SEPARIX-T ... Stand: 09.2018

I Range of application

The sensors are intrinsically safe operating equipment for use in explosion hazardous area and serve for detecting the limit level. The overfill prevention sensors serve as part of a overfill prevention device. The level detector is used as part of an overfill protection device, dry run protection or filling control. The high-level sensor is used to detect a fluid back pressure within a light liquid separator.

II Standards

The sensors are designed in accordance with the following European standards

EN 60079-0:2012 + A11:2013	Equipment – General requirements
EN 60079-11:2012	Equipment protection by intrinsic safety "i"
EN 60079-26:2015	Equipment with Equipment Protection Level (EPL) Ga

III Instructions for safe ...

III.a ... use

The sensors are designed as intrinsically safe equipment and are suitable for use in potentially explosive areas. The level detectors LS 300 ... C (coated with plastic) are suitable for the gas groups IIA and IIB. All other level detectors are suitable for all gas groups (IIA, IIB and IIC).

The approval applies to device versions 81 D-Ex ..., 83 UV-..., LS 300 ... and SEPARIX-T ...

III.b ... assembling and dismantling

Assembling and dismantling must solely be carried out with the power disconnected!

For sensors with connection housing the cover of the connection housing may be removed for the electrical installation. After installation, the connection housing must be locked again.

III.c ... installation

The wiring must be carried out only with the power disconnected. Special rules and regulations, including EN 60079-14 and local installation regulations, must be observed.

The sensors can be installed completely inside Zone 0. If the integrated overvoltage protection is used, e.g. LS 300 U, the terminal compartment with overvoltage protection must be installed outside Zone 0.

General information (see also EN 60079-14:2014, Clause 16.3 or EN 60079-25:2010, Clause 12):

> The overvoltage protection device must be installed outside, but as close to the border of Zone 0 as technically possible, preferably at a distance of up to 1 m.

If a screw-in unit is used, it must be provided with a suitable sealing material and screwed into the tank coupling. If the sensor tube is permanently connected with a flange, the installation length cannot be changed. The flange shall be provided with a suitable seal and fixed with flange bolts or nuts.

By the process connection, there may be an opening in the boundary wall to the area requiring EPL "Ga". Then, there is the risk of flammable gases release and flame entrance.

If the sensor is supplied without process connection, the installer is responsible for compliance with the EX requirements.

General information (see also EN 60079-26, Clause 4.3):

> Attention must be paid, if the sensor is installed in the separating wall between Zone 0 and Zone 1. Then a protection class of at least IP66 or IP67 must be achieved after installation.

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When wiring the sensor to the measuring transducer (preferably blue coloured cable), the approved inductance and capacitance of the measuring transducer must not be exceeded.

The sensors have a two-pole screw or plug connection or cable tail. Attention does not need to be paid to polarity.

The integration of the sensors without overvoltage protection into the equipotential bonding is not required. For integration of the sensors with overvoltage protection into the equipotential bonding, a PA terminal is provided.

III.d … adjustment

No Ex-relevant adjustments are required for operation of the sensors.

III.e … putting into service

Before putting into service, all devices must be checked for correct connection and installation. The electrical supply, including the connected devices, must be checked.

III.f … maintenance (servicing and emergency repair)

The sensors are generally maintenance-free. In the case of a defect, this must be returned to the manufacturer or one of its representatives.

The sensors, in particular the probe tip, may be cleaned. Grease-dissolving cleansing agents can be used to remove any firmly clinging grease or oil residues. Sharp-edged objects are unsuitable for cleaning since they could damage the sensor.

When performing an insulation test of the intrinsically safe circuit with 500 V under well-controlled conditions, according to EN 60079-25, Clause 12 it is necessary to disconnect sensors with overvoltage protection since there is no compliance with the requirements for dielectric strength according to EN 60079-11, Clause 6.3.13. For all other sensors, there is compliance between the intrinsically safe circuit and the chassis or, if present, other intrinsically safe circuits with 500 V_{AC}.

IV Equipment marking

1	Manufacturer:	FAFNIR GmbH, 22525 Hamburg		
2	Type designation:	81 D-Ex … or 83 UV-… or LS 300 … or SEPARIX-T …		
3	Certificate number:	TÜV 00 ATEX 1656 X		
4	Ex-Kennzeichnung:			
	81 D-Ex / 83 UV-… / LS 300 … / SEPARIX-T …			
			II 1 G II 1/2 G	Ex ia IIC T4 Ga Ex ia IIC T4 Ga/Gb
	81 D-Ex U / LS 300 …U…			
			II 1/2 G	Ex ia IIC T4 Ga/Gb
	LS 300 … C			
			II 1 G II 1/2 G	Ex ia IIB T4 Ga Ex ia IIB T4 Ga/Gb
5	CE marking:	CE 0044		
6	Technical data:	U_i ≤ 30 V I_i ≤ 200 mA P_i ≤ 1 W		

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V Technical data

The following electrical input values apply to the sensors:

$U_i \leq 30$ V
$I_i \leq 200$ mA
$P_i \leq 1$ W

The effective internal capacitance and inductance that are externally effective, are negligibly small. If the sensors are supplied with integrated cable, then the electrical characteristics are:

$C_c = 200\ ^{pF}/_{m}$
$L_c = 1\ ^{\mu H}/_{m}$
$L_c/R_c = 30\ ^{\mu H}/_{\Omega}$

The sensors may be used in the following ambient temperature range:

T_a = -40 °C … +110 °C

When using a sensor with overvoltage protection, the maximum temperature is +90 °C for the sensor head.

General remark (see also EN 60079-0, Clause 1):

Zone 0 is given only under atmospheric conditions:

Temperature range:	-20 °C … +60 °C
Pressure range:	0,8 bar … 1,1 bar
Oxidant:	Air (oxygen content approx. 21 %)

The sensors achieves a degree of protection of:

degree of protection: IP68

The following technical data apply to sensors with overvoltage protection:

The nominal DC spark-over voltage amounts to:

U = 350 V ± 20 %

The nominal impulse discharge current amounts to:

I = 20 kA (10 × Wave 8/20 µs)

The nominal alternating discharge current amounts to:

I = 20 A (10 × @ 50 Hz, 1 s)

The insulation resistance of an overvoltage arrester amounts to:

R > 10 GΩ

VI Special conditions of use

1. Overfill Prevention Sensor and Level detectors with overvoltage protection do not comply with the dielectric strength requirements according to EN 60079-11, Clause 6.3.13. When performing an insulation test of the intrinsically safe circuit it is therefore necessary to disconnect the device.
2. When using the integrated overvoltage protection, integration into the equipotential bonding is required.

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