

Alfa Laval Level Switch

TE67Oxxxxxxxxx

Safety instructions

This instrument is built and tested according to the current EU-directives and packed in technically safe condition. In order to maintain this condition and to ensure safe operation, the user must follow the hints and warnings given in this instruction.

During the installation the valid national rules have to be observed. Ignoring the warnings may lead to severe personal injury or substantial damage to property.

The product must be operated by trained staff. Correct and safe operation of this equipment is dependent on proper transport, storage, installation and operation.

All electrical wiring must conform to local standards. In order to prevent stray electrical radiation, we recommend twisted and shielded input cables, as also to keep power supply cables separated from the input cables. The connection must be made according to the connecting diagrams.

Before switching on the power supply take care that other equipment is not affected. Ensure that the supply voltage and the conditions in the environment comply with the specification of the device.

Before switching off the supply voltage check the possible effects on other equipment and the processing system.



When the top cover is removed do not look directly at LED with unshielded eyes or damage to retina may occur !!

Description

The Alfa Laval Level Switch is excellent to distinguish between media, level detection and dry run protection.

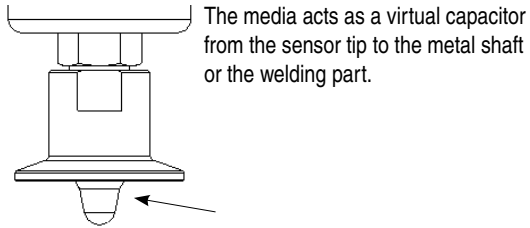
A high frequency signal sweep is radiated from the sensor tip into the tank. The media will act as a virtual capacitor, which together with a coil in the sensor head, will form a circuit creating the switch point signal. This virtual capacity will depend of the di-electric value of the media and it is well defined for most medias.

Please refer to the equivalent drawing at page 2.

The measurement is precise and unaffected by the mounting position in the tank.

The Level Switch is resistant against CIP and SIP agents.

Measuring principle



Mechanical Installation

Mounting

Use only the authorised special designed accessories.
The product warranty is void when installed with other adapters.

Do not use teflon, paper or other gaskets. The PEEK tip against the stainless steel welding part will perform a hygienic tightening provided that the guidelines have been followed.

Due to the measuring principle it is essential that the sensor tip can "see" an ample amount of the metal shaft or welding part.

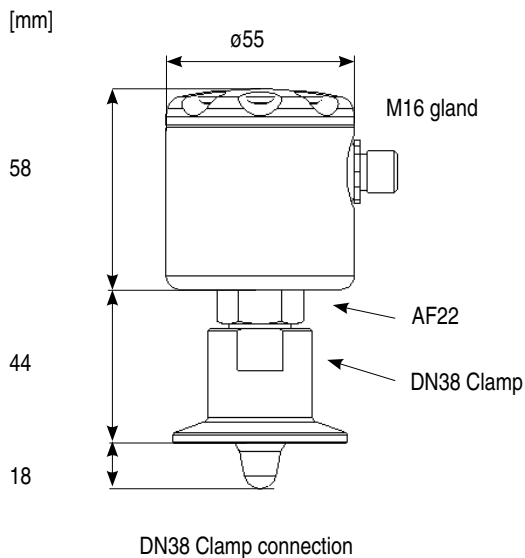
After Installation and Configuration

Check the leak tightness of the sleeve.

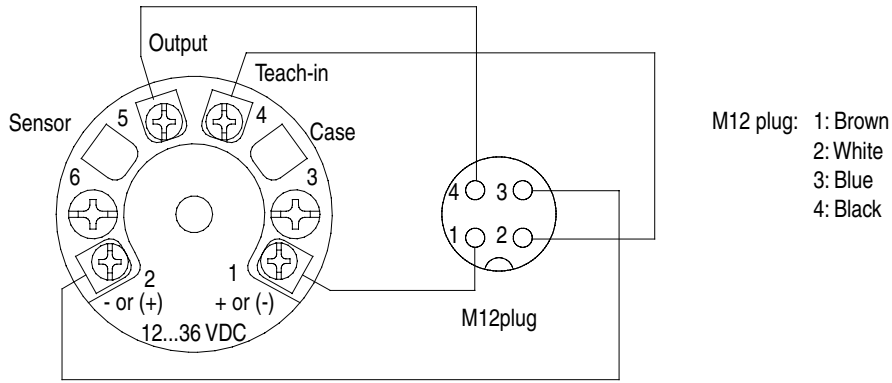
Check the tightness of glands or M12 plugs.

Check the tightness of the cover.

Dimensional Drawings

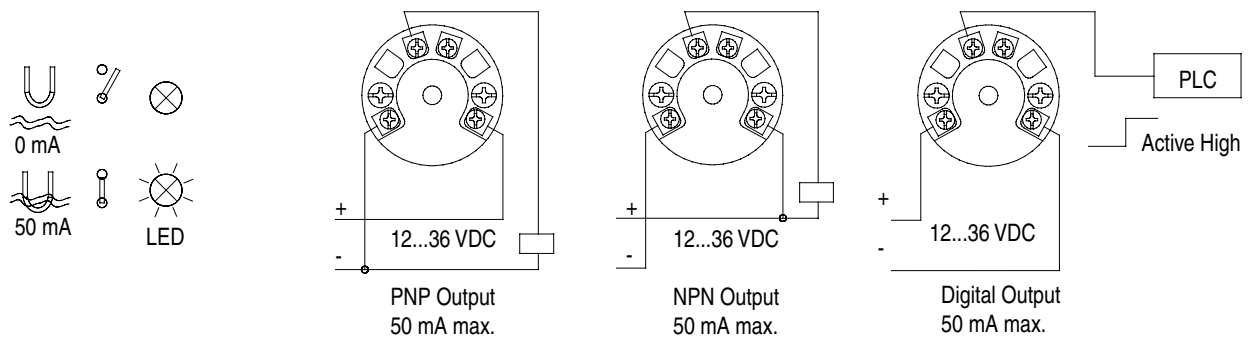


Electrical Connection

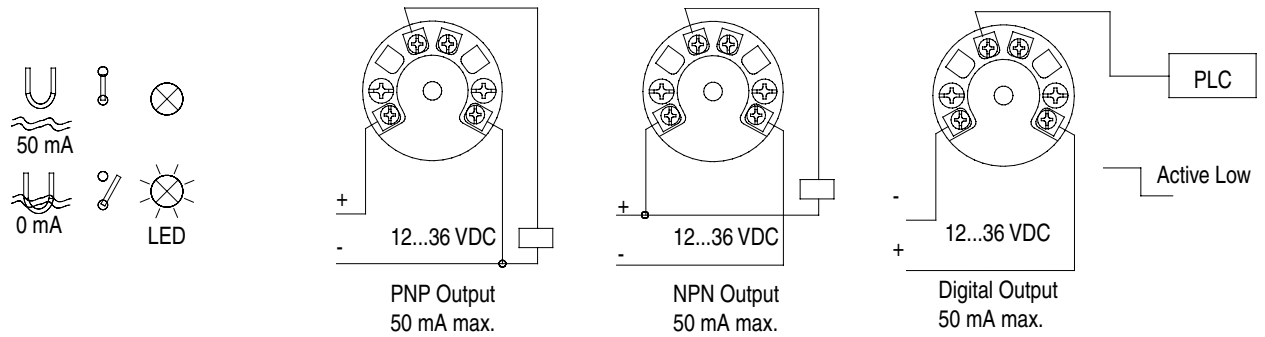


Electrical Installation

Normally Open



Normally Closed



Teach-In Manually

Make sure that power is on before Teach-In.

For best Teach-In it is important the product is fixed in the final application.
During Teach-In mode the light intensity of the LED will decrease to protect your eyes.

Step	To do	LED	Result
1	Connect terminal "Teach-In" to -VDC (T1 or T2) for 3.5 Sec.	Flash 1 time per Sec.	Ready for Teach-In
2	With "no media present" connect "Teach-In" to -VDC shortly	Light for 2 Sec. and then flash	Register "empty" state. Note.
3	With "media present" connect "Teach-In" to -VDC shortly	Light for 2 Sec.	Register "full" state, store and return to normal operation with the new settings
<p>If Teach-In for some reason do not succeed, the Level Switch will enter "Error State" and reload factory settings automatically. The factory settings can always be reloaded by connecting the terminal "Teach-In" to -VDC for more then 6.5 Secs. A reloaded factory settings will be confirmed by pulsing light intensity 3 times.</p>			

Note.

If the media is sticky, foamy, powdery or in other ways leaving parts of the media at the sensor tip this situation has to be established also during the Teach-In process.

Otherwise a faulty calibration can be the result.

Error State Description	LED	Result
Error State	Blinking, 3 short and 1 long blink	Can normally be fixed by powering off and on. Alternatively remake the "Teach-In" procedure.

Note.

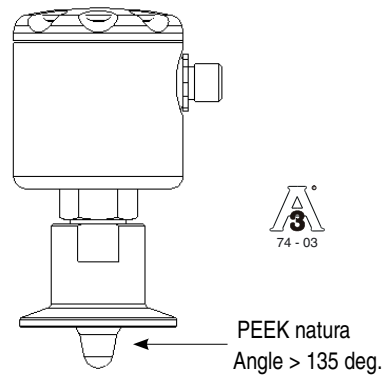
Please observe that the Alfa Laval Level Switch has been factory adjusted to measure liquids with DK-values > 2, such as oil. In case the media has a lower DK-value e.g. powder, a Teach-In procedure must be carried out for the media. The adjustment must be made at the medias working temperature to avoid faulty measurements due to temperature drift.

3-A Marked

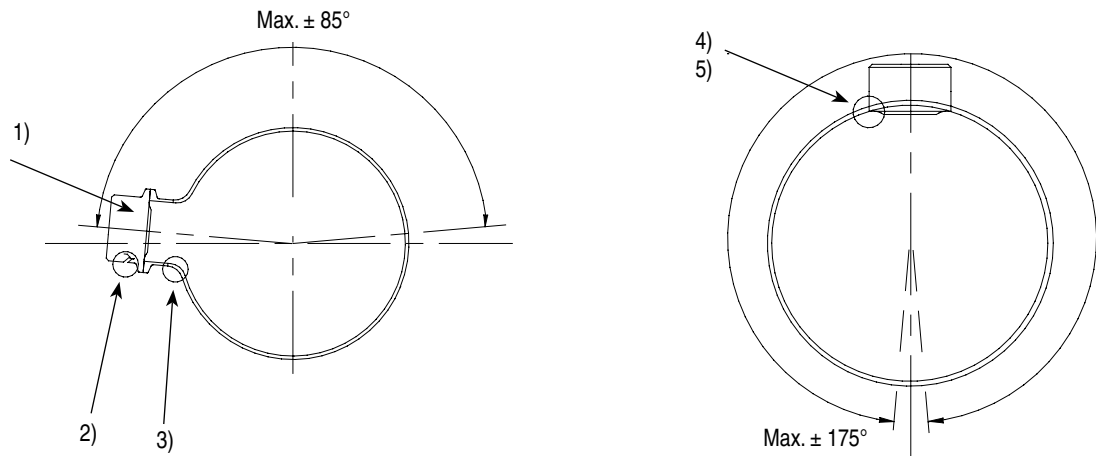
The 3-A mark is valid only when the product is mounted in a 3-A marked counter part and installed according to the installation manual. Use also a 3-A marked O-ring or gasket if relevant. The 3-A marked products conforms to the 3-A Sanitary Standard criteria. Materials and surfaces fulfill the FDA demands and follow the EHEDG guidelines regarding design, materials and finishing.

EPDM gaskets supplied with 3-A marked products are conform to Sanitary Standard Class I (8% milk fat max.)

Level Switch, example



Mounting of 3-A Marked Products



Installation of 3-A marked products:

- 1) Use only a 3-A marked counter part.
- 2) The inspection hole should be visible and drained.
- 3) Mount the instrument in a self drained position.
- 4) Level the inner surface of the pipe with the counter part.
- 5) Weldings should be grinded to $Ra = 0.4 / Ra = 0.8$

Conditions for Ex-Certification (Table 1)

Connection Type	Tamb °C	Media Temp. max. °C	Note
3-A/DN38	-40...85	85	
	-40...60	95	{2}
	-40...40	115	{2}

Note {2}: Provided that the sensor tip at the instrument is the only part in contact with the media.

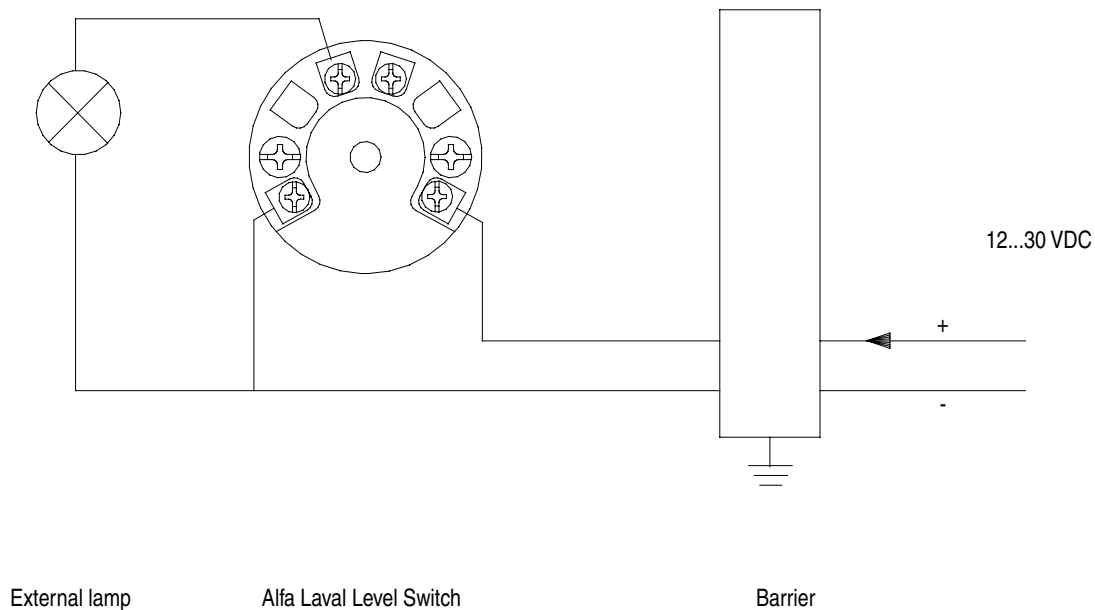
Ex ia IIC T5, ATEX II 1G - Installation

A Alfa Laval Level Switch TE670xxxxxx5,8,9,A is Ex ia IIC T5, ATEX II 1G approved for application in hazardous areas in accordance with the current EU-directives. The product must be installed in accordance with prevailing guidelines for zone 0 with a barrier.

A certified Ex ia or isolation barrier with the maximum values $U_{max} = 30 \text{ VDC}$; $I_{max} = 0.1 \text{ A}$; $P_{max} = 0.75 \text{ W}$ must be used.

Ex-data

Supply range	12...30 VDC
Temperature class	T1...T5: See table 1
Internal inductivity	$L_i \leq 10 \mu\text{H}$
Internal capacity	$C_i \leq 33 \text{ nF}$
Barrier data	$U \leq 30 \text{ VDC}$; $I \leq 0.1 \text{ A}$; $P \leq 0.75 \text{ W}$



External lamp

Alfa Laval Level Switch

Barrier

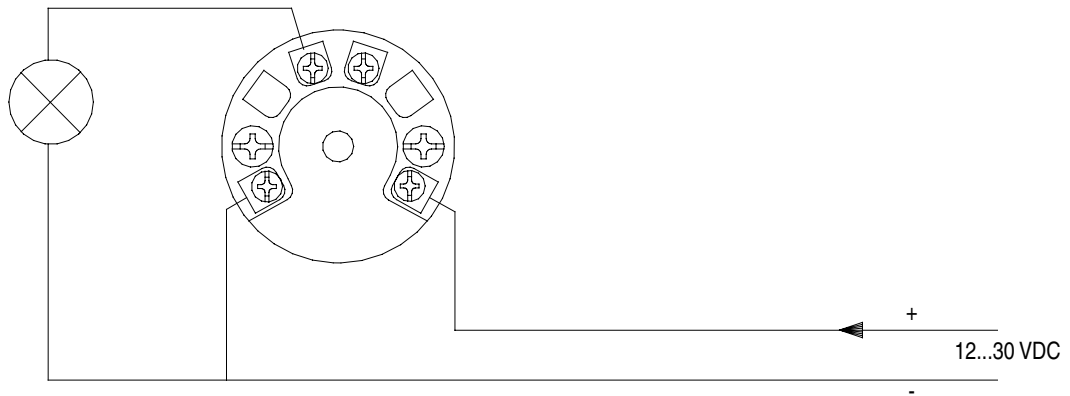
Ex tD A20 IP67 T100, ATEX II 1D - Installation

A Alfa Laval Level Switch TE67Oxxxxxxx6,B,C,D is Ex tD A20 IP67 T100°C, ATEX II 1D approved for application in hasardous areas in accordance with the current EU-directives. The product must be installed in accordance with prevailing guidelines for zone 20 without a barrier.

Ex-data

Supply range 12...30 VDC, max 100 mA

Temperature class T100: See table 1



External lamp

Alfa Laval Level Switch

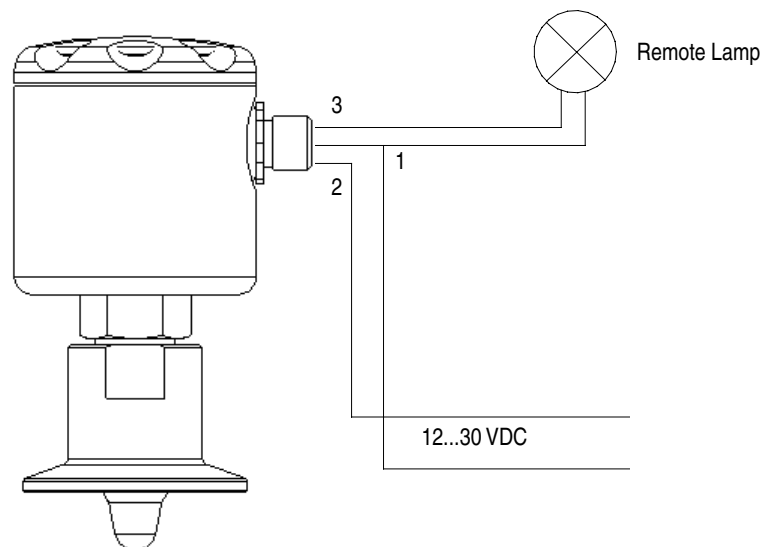
Ex nA II T5, ATEX II 3G - Installation

A Alfa Laval Level Switch TE67Oxxxxxxx7,E,F,G is Ex nA II T5, ATEX II 3G approved for application in hasardous areas in accordance with the current EU-directives. The product must be installed in accordance with prevailing guidelines for zone 2 without a barrier.

Ex-data

Supply range 12...30 VDC, Max. 0.1A

Temperature class T1...T5: See table 1



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Reservation and contact information

Note: The illustrations and specifications contained in this manual were effective at the date of printing. However, as continuous improvements are our policy, we reserve the right to alter or modify any unit specification on any product without prior notice or any obligation.

How to contact Alfa Laval Tank Equipment A/S

For further information please feel free to contact:

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Contact details for all countries are continually updated on our websites.

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Item Number Overview

Item no.	Description
TE67O021111030	Level switch, with DN38 (ISO2852) connection, and M12 electrical output
TE67O021111040	Level switch, with DN38 (ISO2852) connection, and M16 cable gland

TE67Oxxxxxxx2	with 3.1 Certificate
TE67Oxxxxxxx4	with 3-A Documentation
TE67Oxxxxxxx5	with ATEX certificate in accordance with EU directive 94/9/EC Ex ia IIC T5, ATEX II 1G (Gas)
TE67Oxxxxxxx6	with ATEX certificate in accordance with EU directive 94/9/EC Ex tD A20 IP67 T100°C, ATEX II 1D (Dust)
TE67Oxxxxxxx7	with ATEX certificate in accordance with EU directive 94/9/EC Ex nA II T5, ATEX II 3G

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