

LSM Level Switch

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.

WARNING

For electrical installation and commissioning of explosion protected devices, the data given in the conformity certificate as also the local regulations for installation of electrical apparatus within explosion protected areas must be considered. The intrinsically safe versions can be mounted in the explosion hazardous area according to its specification only connected to a certified intrinsically safe supply loop with the corresponding electrical values.



WARNING

This product contains no replaceable parts. In case of malfunction the product must be shipped to Baumer for repair.

Description

The LSM limit switch is used for 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 capacitor, which together with the coil in the sensor head, will form a circuit creating the switch point signal. This capacitor will depend of the di-electric value of the media and it is well defined for most medias.

The measurement is precise and unaffected by the mounting position, formation, foam, turbulence, bubbles and condensate.

Excessive foam, however, or other adhesive parts of the media will form a permanent capacitor, which might disturb the measurement. Setting the jumper according to the table will compensate for this influence. Further a damping can be activated in case of a fluctuating media level, e.g. during tank filling.

For non-aqueous (low di-electric value) medias a special model is available.

The LSM measures liquids such as water and beer as well as viscous, sticky fluids, such as honey, youghurt and toothpaste. Even some dry medias can be measured.

The LSM is ideal for CIP and SIP measurements.

An updated detailed applications list is available at www.baumerprocess.com.

Hygienic installation is possible with the comprehensive range of accessories. Please refer to the specific data sheet "Accessories".

Mechanical Installation

Welding part

Please refer to "Accessories" data sheet. The welding part has an engraved mark. When the product has been mounted and correctly tightened the gland or M12 plug will align with this mark. Make sure that the gland/plug is pointing downwards to prevent fluids from penetrating into the instrument.



Cautions

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

The sensor can not be shortened.

Do not use teflon, paper or other gaskets.

The process connection must have electrical contact with the tank. If not, a separate grounding cable must be installed.

If the tank is non-conductive an additional ground electrode must be installed. This should have electrical connection to the LSM process connection.

Make sure that the rod can not touch the tank wall even with the highest movement of the media.

After carefully insertion of the sensor into the welding part tighten the union with a torque of 10...20 Nm.

After Installation and Configuration

Check the leak tightness of the sleeve.

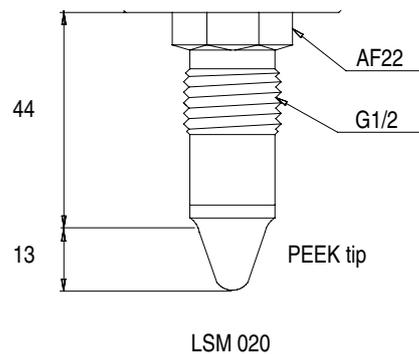
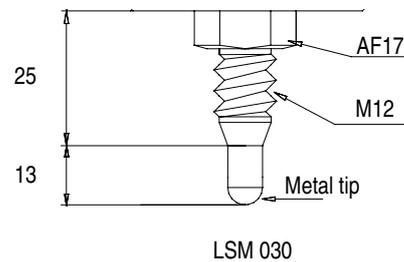
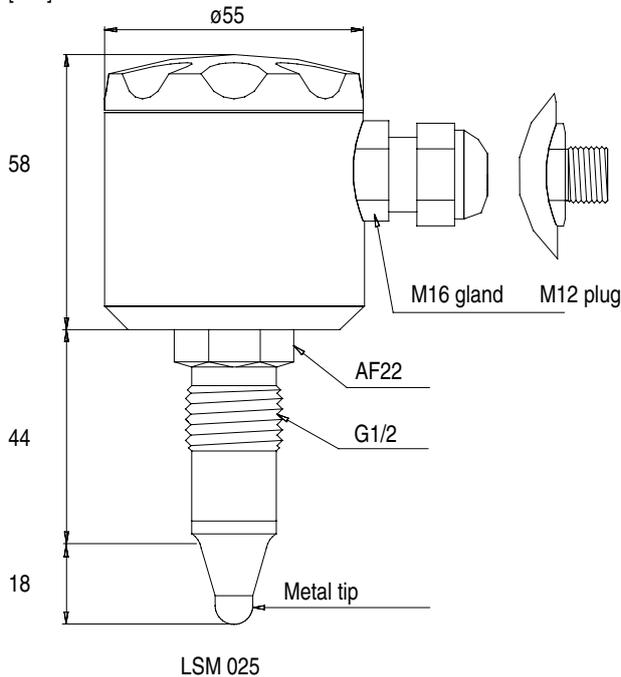
Check the tightness of glands or M12 plugs.

Check the tightness of the cover.

Check that the rod is not touching the tank wall.

Dimensional Drawings

[mm]

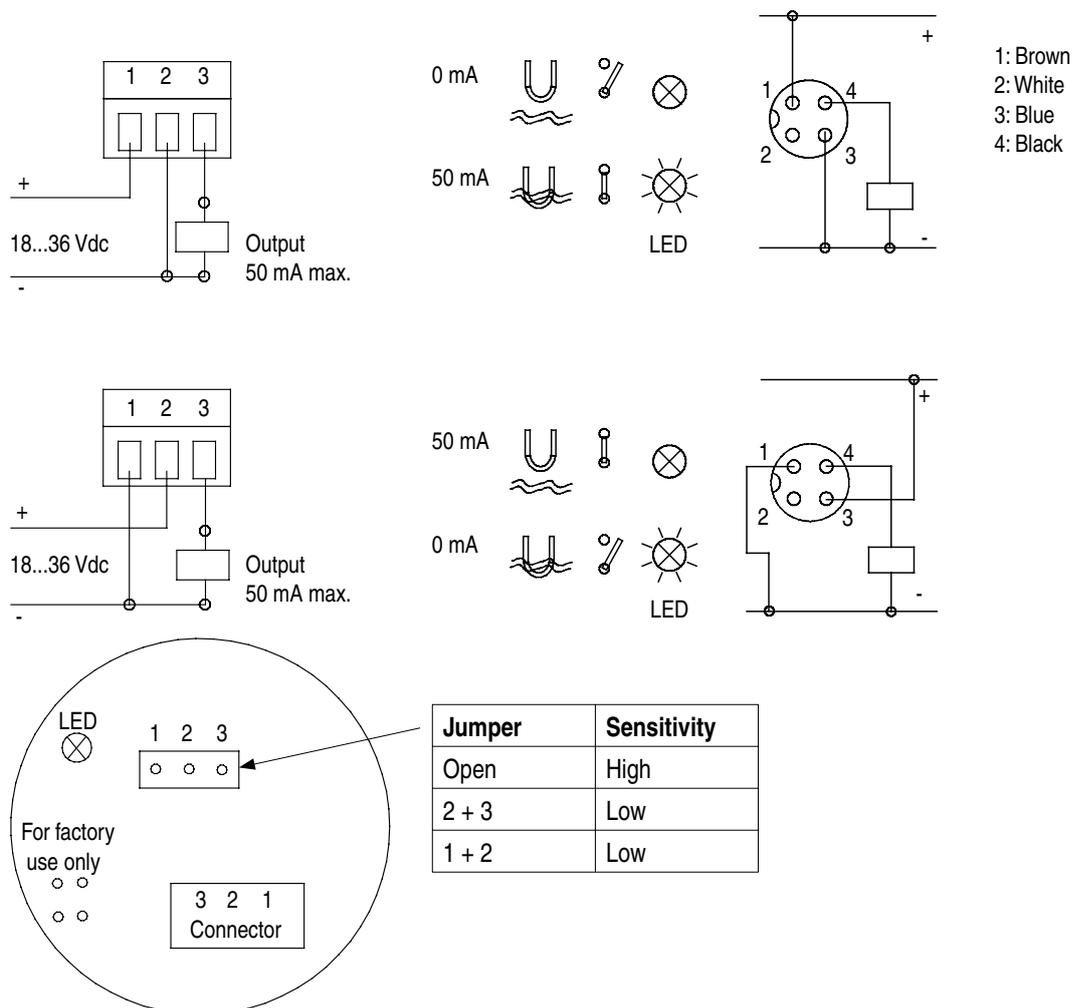


Jumper Settings and Recommended Applications

Type	Jumper Setting	DK Value	Foam Immunity	Response Time [s]	Recommended Application Media Type
LSM020	1-2	>22	Yes	1	Aqueous, fat content <10%
	2-3	>22	Yes	0.1	Aqueous, fat content <10%
	Open	>22	No	0,1	Aqueous, fat content <85%
LSM025	1-2	>30	Yes	1	Aqueous, fat content <1% or carbohydrate >10%
	2-3	>30	Yes	0.1	Aqueous, fat content <1% or carbohydrate >10%
	Open	>22	No	0.1	Aqueous, fat content <20% or carbohydrate >10%
LSM025xS	1-2	<10	Yes	1	Organic solvent, fat and oil. Dry media.
	2-3	<10	Yes	0.1	Organic solvent, fat and oil. Dry media.
	Open	<27	No	0.1	Organic solvent, fat and oil. Dry media.
LSM030	1-2	>28	Yes	1	Aqueous, fat content <10%
	2-3	>28	Yes	0.1	Aqueous, fat content <10%
	Open	>22	No	0.1	Aqueous, fat content <20%
LSM030xS	1-2	<12	Yes	1	Organic solvent, fat and oil. Dry media.
	2-3	<12	Yes	0.1	Organic solvent, fat and oil. Dry media.
	Open	<21	No	0.1	Organic solvent, fat and oil. Dry media.

The DK values in the above table are valid for liquid medias only.
Please refer to the applications list at www.baumerprocess.com.

Electrical Installation



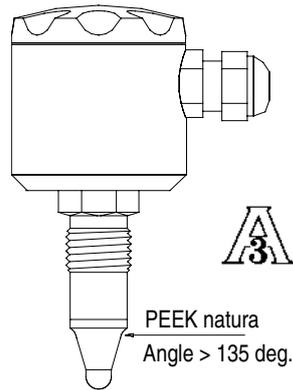
3A Approval

The LSM021, LSM026 and LSM031 are approved by 3A providing it is mounted in a 3A approved counter part and installed according to the guidelines given in the installation manual.

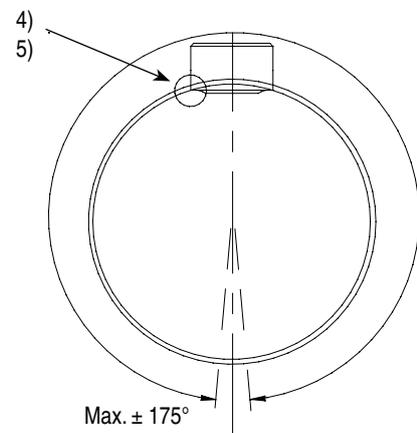
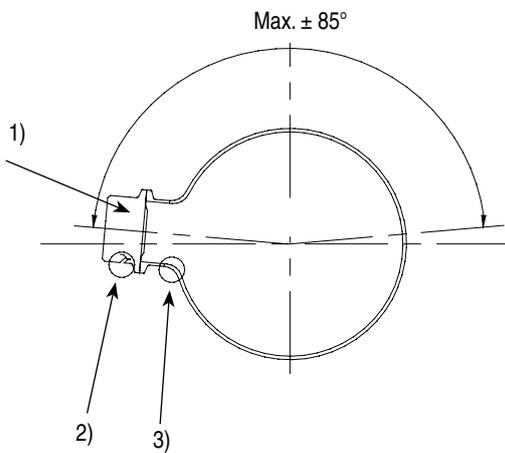
The 3A approved products fulfill the FDA demands and follow the EHEDG guidelines regarding design, materials and finishing.

Refer to the 3A marked counter parts in the data sheet "Accessories".

LSM 026, example



Mounting of 3A Approved Products



Installation of 3A approved products:

- 1) Use only a 3A approved 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 $Ra=0.8$

Refer to the data sheet "Accessories" for O-rings, gaskets and other accessories.

Ex nA II T5, ATEX II 3G

Ex-data

Supply range	18...36 VDC
Temperature class	T5: $-10 < T_{amb} < 60^{\circ}\text{C}$

Opto-relay

Voltage, standard	Max. 230 VAC
Voltage, GL-approved	Max. 60 VAC
DC-voltage	Max. 50 VDC
Current, continuously	Max. 50 mA
Current, pulse	Max. 500 mA
Relay function	Set/reset

Ex nA - Installation

An LSM with the type number LSM022x is Ex nA II T5, ATEX II 3G approved for application in hazardous areas in accordance with the current EU-directives.

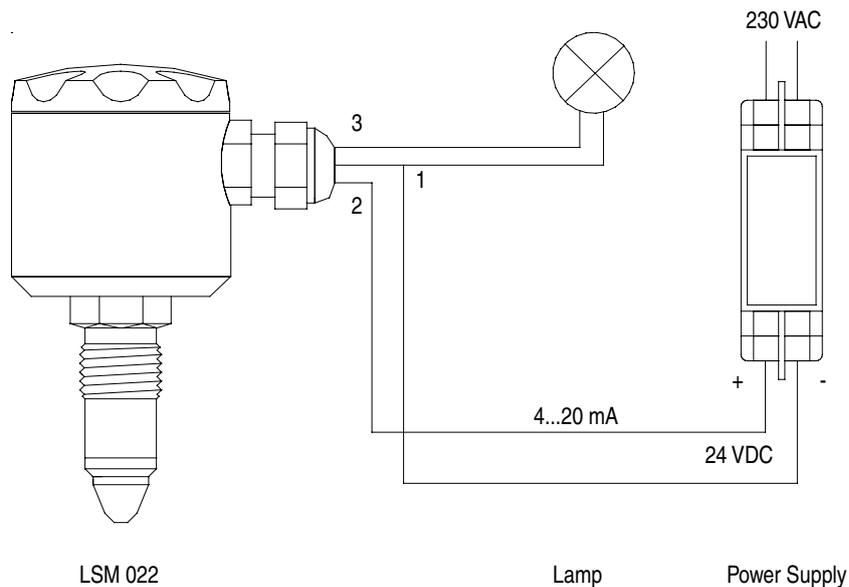
The LSM must be connected to max. 36 V power supply.

The LSM must be installed in accordance with prevailing guidelines for zone 2 without a barrier.

Electrical Connection

Electrical Connection	Cable diameter mm	Torque Nm
Gland M16	5...10	5
Plug M12	-	4

Ex nA - Installation



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