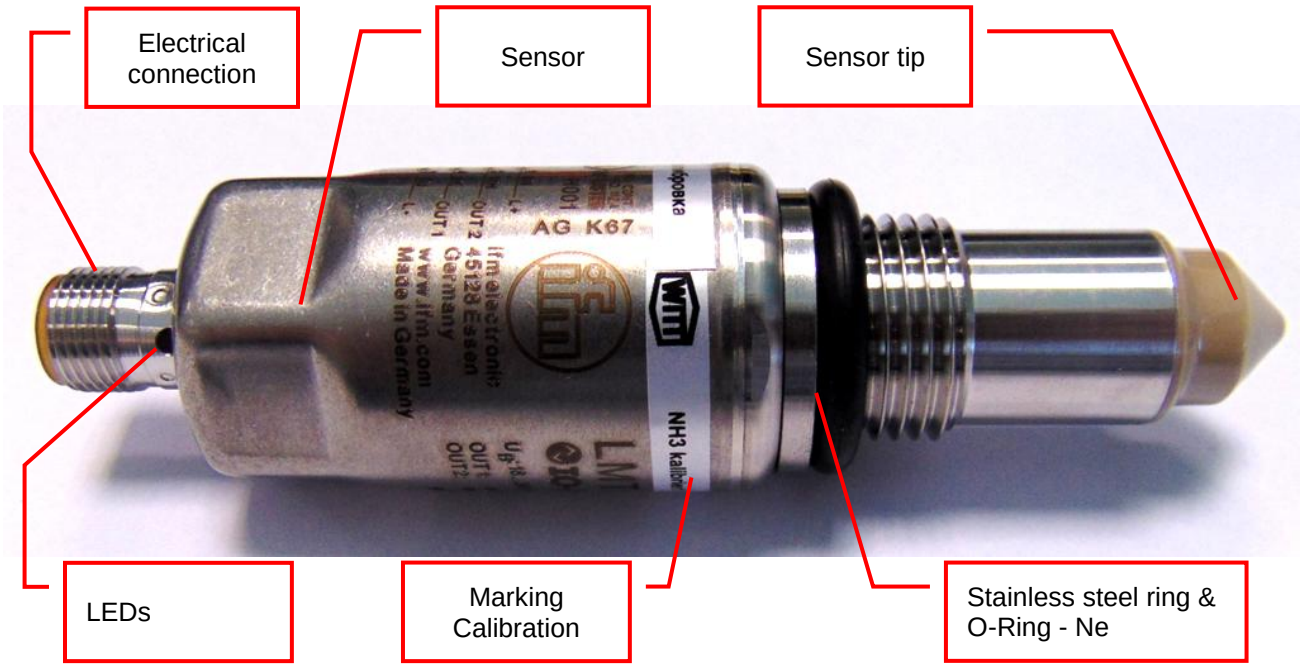
Please read the operating manual carefully in full before installing and commissioning the sensor. These operating instructions are only valid in conjunction with the operating and maintenance manual of the sensor manufacturer.



1 Safety regulations

1.1 Electrical components

The unit may only be installed and connected to the electrical power supply by qualified personnel when in a voltage-free state in accordance with the applicable regulations. For installation purposes, the machines and devices must be secured or switched off. The operator of the larger overall system is responsible for ensuring compliance with the national and international labour, safety and accident prevention regulations applicable to the specific application, e.g.:

- EN292 Safety of machinery, general design principles
- EN60204 Electrical equipment of machines
- DIN57100 part 410 Protection against dangerous electric shock
- EN50178, SELV, PELV Power supply

1.2 Refrigeration systems

Only trained personnel who are qualified in dealing with refrigeration systems are permitted to carry out any work on the refrigeration systems. The safety regulations / EC safety data sheets and accident prevention measures must be complied with when dealing with refrigerants.
The temperature and pressure values indicated on the rating plate and the drawings must not be exceeded under any circumstances.
The applicable standards and regulations for the installation and operation of refrigeration systems, e.g. EN 378, must be respected.

2 Intended use

The sensor monitors the filling level of the liquid, paste and powdered media in the containers and pipelines. It can also be used for limit level detection and as protection against dry runs.

2.1 Area of use

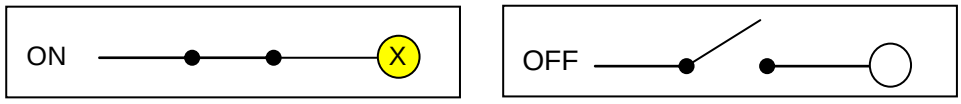
The sensor was calibrated by TH.WITT **to liquid NH_3**, i.e. it detects whether or not NH_3 is in the container or pipeline.

3 Technical Data

Measuring principle	Impendance spectroscopy (frequency)
Electrical equipment	PNP
Output function	NO[1 2]
Operating voltage	18…30V DC
Power consumption	max. 50mA
Display	4 LEDs[3]
Elec. connection	M12 plug connection (round), 4-pin
Media temperature	-40…85°C[4 5]
Surrounding area temp.	-40…85°C[6]
Material	1.4404 (V4A / 316L); PEEK; PEI; FKM
Process connection	G ½ A
Max. operating pressure	-1…40 bar

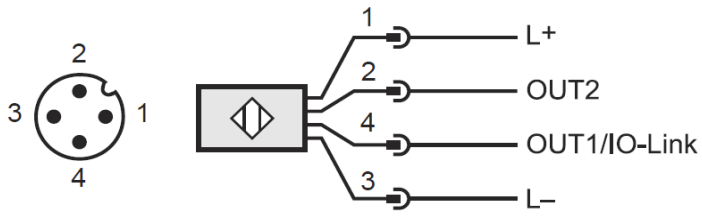
4 Conditions for switching

	LEDs	Standard Output 2	Optional Output 1
Unit is ready, no liquid NH_3 is detected	yellow	OFF	ON
Unit is ready, Liquid NH_3 is detected	green	ON	OFF
Hot gas / vacuum / oil	yellow	OFF	ON
No operating voltage	OFF	OFF	OFF
Short circuit output 1	flashing yellow	acc. to fill level	-
Short circuit output 2	flashing yellow	-	acc. to fill level
Error / Disruption	-	OFF	OFF



5 Electrical Connection

TH.WITT does not accept any liability for the correctness of the connection diagrams. The operating manual of the respective manufacturer is authoritative for the sensor. The operator of the system is responsible for ensuring the connection is correct.



Pin	Assign-ment	Wire colours ifm cable socket
1	Ub+	brown
3	Ub-	blue
2 (OUT2)	pnp- / npn-switch signal	white
4 (OUT1)	pnp- / npn-switch signal	black

[1] Output 2 (Pin 2 + 3)
[2] Optional output 1 (Pin 4 + 3) as NC (normal closed)
[3] No specified medium detected = yellow / specified medium detected = green
[4] Permitted use to -40°C, no heating element required for sensor
[5] -40…85°C (media similar to water) and -40…100°C (Öl), brielfy -40…150°C (1 hour)
[6] At max. 100°C media temperature / -40…60°C, at max. 150°C media temperature

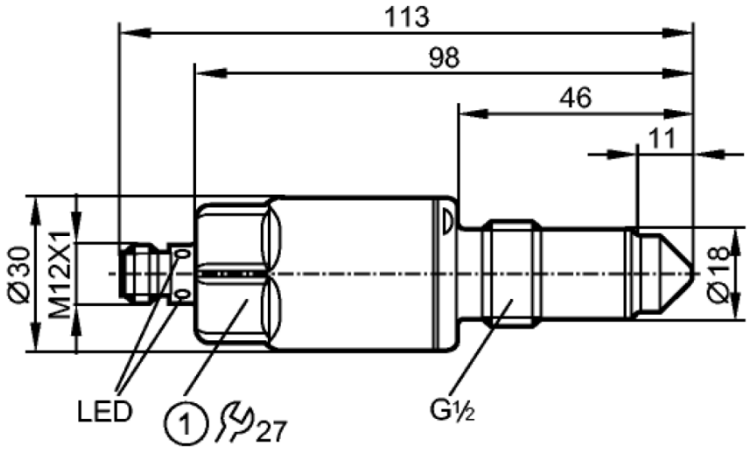
6 Mechanical installation

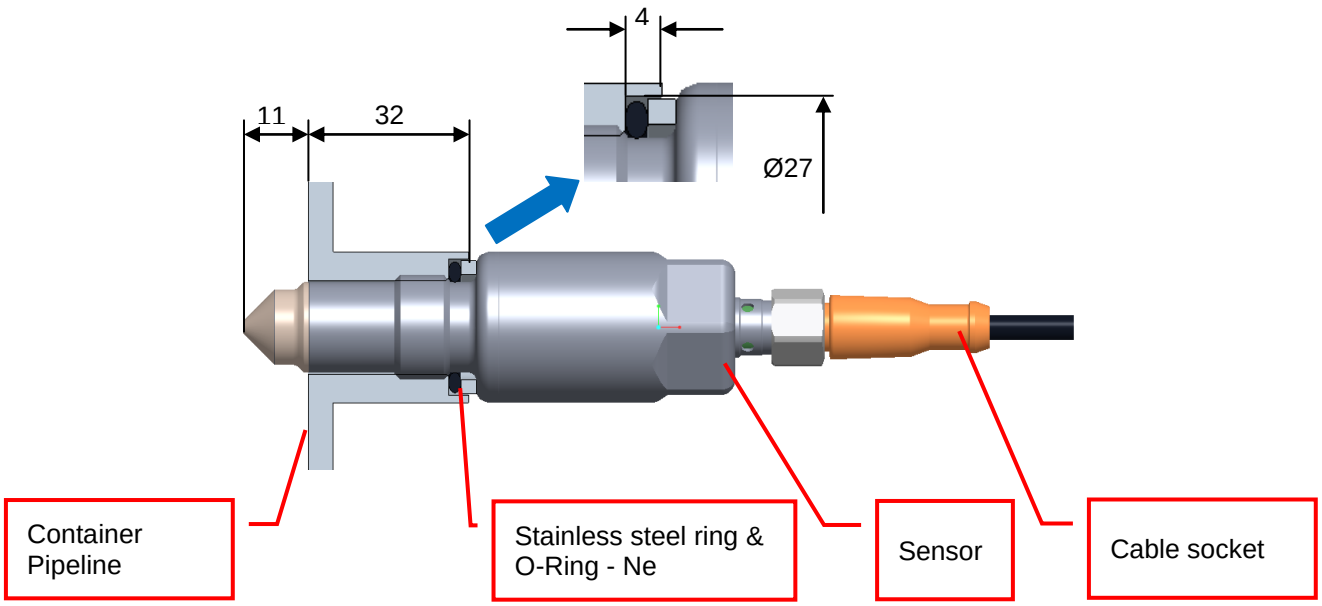
- Do not use any additional sealing material (e.g. PTFE tape). The sensor must have electrical contact with the metallic process connection.
- Lightly grease the thread of the sensor with a suitable lubricant that is approved for the respective area of use.
- The sensor is supplied with sealing system already installed. In order to chamber the O-Ring, an additional cylindrical recess with a diameter of 27 mm and a depth of 4 mm is required. The process connection itself is a G ½ "thread.
- The max. tightening torque (1) is 20 ... 25 Nm.
- Check the container / pipe for leaks after installing.

The sensor may only be installed and connected to the electrical power supply by qualified personnel when in a voltage-free state in accordance with the applicable regulations.

If work is to be carried out on the container (pipeline), it must be depressurised before the screw connections can be opened!

When screw connections are opened there may be a sudden evaporation of the refrigerant inside! Protective clothing must be worn!





7 Commissioning

The commissioning depends on the particular application. After switching on the supply voltage, the device is in working mode. It carries out its evaluation function and switches the outputs (see "4 Conditions for switching").

8 Scope of delivery / Parts numbers

Level sensor	4651.165102 (including sealing system and 5m cable)
Seal (as a spare part)	5642.ABBL01

9 Approvals / Tests / Certificates

SENSOR	CABLE
• IO-LINK approval • EHEDG approval • 3A authorisation • CRN approval • cRUus, cULus, UL approval • EU 1935/2004 Declaration of Conformity • FDA Declaration of Conformity • EU Declaration of Conformity • MTTFd certificate • EAC certificate	with cable (5m) • cULus,cRUus approval • EU Declaration of Conformity • EAC certificate

10 References for additional documentation

Website	https://www.ifm.com/products/gb/ds/LMT121.htm
Operating manual in German	http://www.ifm.com/mounting/80223649DE.pdf
Operating manual in English	http://www.ifm.com/mounting/80223649UK.pdf
Operating manual in French	http://www.ifm.com/mounting/80223649FR.pdf
Operating manual in Russian	http://www.ifm.com/mounting/80223649RU.pdf

11 ADDRESS

TH. WITT Kältemaschinenfabrik GmbH
Lukasstraße 32, D-52070 Aachen,
Tel. +49-241-18208-0, Fax. +49-241-18208-49
http://www.TH-WITT.com, Info@TH-WITT.com

Issued by:
Johannes Oellig, Head of Product Management