

Operating Instructions



1 General Information.....	2
1.1 General Safety Notes.....	2
1.2 Intended Use.....	2
1.3 Conformity with EU Regulations.....	2
1.4 ATEX Approval.....	2
2 Transportation and Storage.....	2
3 Installation and Commissioning	2
3.1 Mechanical Installation	3
3.2 Electrical Connection	3
3.3 Switch function and terminal connection	4
3.4 Inductive contact	5
4 Operation.....	5
4.1 Adjusting of contacts	6
4.2 Zero-point correction	6
4.3 Maintenance / Service.....	6
5 Disassembly.....	6

1 General Information

This document contains necessary information for the proper installation and use of this device. In addition to this instruction, be sure to observe all statutory requirements, applicable standards, the additional technical specifications on the accompanying data sheet (see www.labom.com) as well as the specifications indicated on the type plate.

1.1 General Safety Notes

The installation, set up, service or disassembly of this device must only be done by trained, qualified personnel using suitable equipment and authorized to do so.



Warning

Media can escape if unsuitable devices are used or if the installation is not correct.

Danger of severe injury or damage

- Ensure that the device is suitable for the process and undamaged.

1.2 Intended Use

The device is intended to measure pressure of gases, vapors and liquids as specified in the data sheet.

1.3 Conformity with EU Regulations

The CE-marking on the device certifies its compliance with the applicable EU Directives for placing products on the market within the European Union.

The following guidelines apply to these devices:

ATEX Directive	94/9/EC
PED Directive	97/23/EC
EMC Directive	2004/108/EC

You find the complete EC Declaration of Conformity (document no. KE_001) at www.labom.com.

1.4 ATEX Approval

If you purchased a device with ATEX approval, please refer to the accompanying document XA_013 for ATEX-relevant information.

2 Transportation and Storage

Store and transport the device only under clean and dry conditions preferably in the original packaging. Avoid exposure to shocks and excessive vibrations.

Permissible storage temperature: 0...70 °C

3 Installation and Commissioning

Ensure that the device is suitable for the intended application with respect to pressure range, overpressure limit, media compatibility, temperature range and process connection.

3.1 Mechanical Installation

Before starting operation, check the process connection carefully for leaks under pressure.

Use gaskets, if required, that are suitable for the process connection and resistant to the media.

Use new gaskets for each installation. We recommend the use of aluminium gaskets (A 27 x 32 as per DIN 7603), which you can order directly from us as an accessory.

Fit the pressure transmitter using four flange screws, as shown on the drilling diagram, and tighten them gradually crosswise. Max. tightening torque: 60 Nm (slightly oiled).

During installation of the device, attention has to be paid to the diaphragms not being damaged by the medium being measured. This is particularly important in the case of coagulating media that can have deforming influence on the diaphragms when they get cold.

Do not insulate the temperature coupler (tubular shank under the transmitter), as this would reduce its decoupling effect.

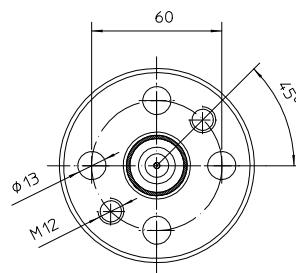


Figure 1: Drilling diagram

Use the vent valve (balance to atmospheric pressure, see figure 2) to vent the case after installation of measuring gauges filled with liquid with a display range ≤ 10 bar.



Figure 2: Vent valve

Vent the device in line with the instructions stated on the case:

Either: Pull the vent valve as far as it will go before operation (see figure 3).

Or: Cut the vent valve before operation (see figure 4).



Figure 3: Pull valve



Figure 4: Cut valve

3.2 Electrical Connection

Complete the mechanical installation before you connect the device electrically. Set up all electrical connections while the voltage supply is switched off.

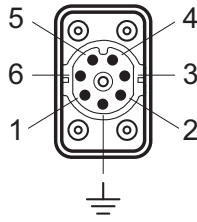


Figure 5: Connection plug

3.3 Switch function and terminal connection

Switch function and direction of effect:

switching element	Inductive contact device	direction of effect	function code
makers	makes contact; control current on	increasing pressure	1
		decreasing pressure	4
breakers	breaks contact; control current off	increasing pressure	2
		decreasing pressure	5

Identification of the switch functions:

The switch functions are clearly identified by a three-digit number key. The key must be specified in the order details. The unused positions in the number code for the single and double contact devices are marked with a zero.

Example:

N4		Double contact device inductive contact (SJ2 - N)	
	1	1. contact device closes on rising pressure	
		2	2. contact device opens on rising pressure
			0
		3. not available	
N4	1	2	0

order code option:	N 4 1 2 0
switch function per DIN 16085 and as shown on type plate:	1 2 0

Pin connection for contact devices:

contact device	switch function	inductive contact device	
contact function			polarity
single	makers or breakers	1/2	- / +
double	1st contact	1/2	-/+
	2nd contact	3/4	-/+

3.4 Inductive contact

The electrical distance sensors (proximity sensors) acc. to EN 50227 or NAMUR respectively, used in inductive contacts are simple two wire DC switches containing only the transistor oscillator. We use proximity sensors type N which are also called slot sensors due to the slot design. The electromagnetic field is concentrated between two axially opposed coils. The switch operates when the aluminium control vane moved by the actual value pointer enters into the space or slot between the two coils. The signal is transmitted without a time lag analogous to the movement of the actual value pointer. If no material is present around the slot, the oscillator will vibrate. In this condition, the impedance of the whole system is very low (approx. 1 k Ω).

The coil system is attenuated as soon as the control vane enters into the air gap, the oscillator stops vibrating and the impedance of the whole system becomes relatively high (approx. 7 k Ω).

Current consumption: > 3 mA (active face uncovered) \leq 1 mA (active face covered)

The difference in the current consumption of vibrating and non-vibrating oscillators is used to drive a switching amplifier which turns the input signal into a binary output signal. This is why the switching operation of inductive contacts is not only governed by the slot proximity sensor, but also by the switching amplifier.

Connection characteristic data for initiators per DIN EN 60947-5-6 (NAMUR):

nominal voltage:	8 V= (Ri \approx 1K Ω)
operating voltage:	5 - 25 V
current consumption:	> 3 mA (active face uncovered)
switching accuracy:	approx. 0,5% of full scale value
contact setting range:	Can be adjusted across the entire scale range (adjustment made with contact lock)

4 Operation

During operation, take care that the device remains within its intended pressure and temperature ranges. No other monitoring is necessary.

Permissible media temperature: 10...350 $^{\circ}$ C

Permissible ambient temperature: 10...70 $^{\circ}$ C

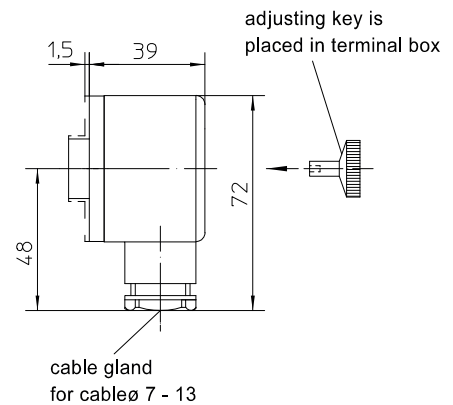
Restricted ambient conditions may apply in explosion protected environments (see XA_013).

4.1 Adjusting of contacts

To adjust the contact, the adjusting lock must be pressed down with a separate adjusting key (see picture 6) until the lock lever riveted to the core of the lock touches the adjustment pin affixed to the set pointer. The key is turned laterally to adjust the set pointers over the entire range of the scale. In its pressed position, the lock lever should not touch the contact itself.

The contacts can be adjusted over the complete indicating range.

The operation of a switching point outside the indicating range is not allowed.



Picture 6: Adjusting key

4.2 Zero-point correction

Small measuring errors or deviations caused by difference in level between pressure gauge and point of measurement can be corrected on measuring devices with micro control position pointers. To do so turn the adjusting screw on the pointer hub (see picture).

Similarly, a displacement of the zero point caused by use and long service life can be corrected if necessary.



Picture 7: Zero-point correction

4.3 Maintenance / Service

When properly installed in accordance with applicable specifications, this device is maintenance-free. However, we recommend an annual recalibration of the device.

In the event of any damage or defect the customer cannot replace or repair any components or assemblies.

5 Disassembly

When measuring hot media, make sure that the device has cooled down prior to any dismounting or wear appropriate protective clothing to avoid burns.

Switch off the power supply to the device before disconnecting the electrical connections. Once this is done, the device may be mechanically removed.

Remove the four flange screws.

The pressure transmitter system may be pulled out only while the process medium is liquid (above melting point).

Use cylinder head screws (M12 x 55 as per DIN 912, A2-70) quality) for the two threaded holes, as shown on the drilling diagram, to push the device out of the process and ensure ease of removal. You can order these screws as an accessory.

**Warning**

Opening pressurized lines might cause severe injuries.

Danger of severe injuries or damage

- Relieve the process pressure before attempting to remove the device. Shut off the pressure supply for all feed lines to the device and relieve the pressure in them.

**Warning**

Hazardous deposits and residues might remain on opened process connections and removed devices.

Danger of injury

- After the device has been removed, seal off the measuring point and mark the open process connection accordingly. Consider a possible danger due to residues when handling the removed device.