Operating manual

Limit-switch-boxes type ALB
with intrinsically safe proximity switches

ROTECH SYSTEMKOMPONENTEN

1. Description

Signal devices are used to report and control the position of valves which are operated by pneumatic actuators. With the enclosed mounting parts the boxes can be easily and quickly mounted on actuators or valves.
This manual is valid for limit switch boxes type ALB with intrinsically safe proximity switches.
These limit switch boxes may only be mounted, wired and installed by qualified personnel. The staff has to be trained in methods of explosion protection and must be well informed about the regulations of equipment in explosive areas.

2. Explosion protection and labeling

The limit switch boxes type ALB are appropriate for the intended use in explosive areas.
The aluminium housing has the protection class type „increased safety" (e), the sensors have the protection class "intrinsic safety" (ia or ib). The configuration of the protection types of the limit switch boxes are conform with the used sensors. The operation manual and the EC type test certificate of the sensors have to be regarded.

- If the aluminium housing should be installed in Ex-Zone 0 the operator has to take appropriate measures to avoid the danger of firing by friction or impact!
- The device may only be installed in areas, where electrostatic charge by manual friction is not expected. You may clean it with a damp cloth only!
- The device must be grounded!

Labeling, depending on used type of sensor

Ex II2G	Ex e ia IIC T6 Gb	or	Ex II2D	Ex ia tb IIIC T80°C Db IP65
Ex II2G	Ex e ib IIC T6 Gb	or	Ex II2D	Ex ib tb IIIC T80°C Db IP65

EC-type examination certificate: PTB 10 ATEX 1061 X

CE 0123

The labeling is located on the type plate of the limit switch box. Before start of operation in explosive area make sure that the limit switch box, the sensors and optionally wired solenoid valves are certified for the intended Ex-zone!

Electrical data

Nominal voltage 8 V DC
Measuring plate not detected: ≥ 3 mA
Measuring plate detected: ≤ 1 mA

Temperature range

Minimal ambient temperature: -25°C
Maximum ambient temperature: +60°C
The maximum allowable ambient temperature can definitely be lower. The coherency between the maximum allowable ambient temperature, the temperature class / max. surface temperature and the electrical supply data of the intrinsic safe sensors has to be taken from the EC type test certificate.

3. Assembling

You have to use appropriate intrinsically safe equipment according to operating instructions when wiring the box.

WARNING	**Risk of injury** The electric components inside the box carry dangerous voltage. Moreover there is a risk of bruise by some rotating parts. → Do not open the housing while operating!

1. Bring the actuator to a completely "Open" or "Close" position.

Close: *Valve is closed, Channel position is abreast the actuators longitudinal axis.*
Open: Valve is open*, Channel position towards actuator axis.*

2. Equate the modules axis with the actuator.

3. Attach the box with bracket on the actuator or valve and fix it.
4. The device must be grounded.

5. Adapt the appropriate intrinsic safe control unit by leading the system cable through the cable gland and wiring the single conductors with the terminal block.

Please note the wiring diagram in the technical data sheet.
The wiring diagram can also be found inside the housing cover of the box.

Make sure that there is a sufficient mains lead cleat.

4. Adjusting switch-points

Ex-factory the modules are adjusted in the following way:

Switch-point close: Position Valve/Actuator at 0° to 3°
Switch-point open: Position Valve/Actuator at 87° to 90°
(Switch-points of other switches optionally)

If readjustment should be necessary proceed as following:

1. Open screws and the housing cover.
2. Depending on the type of sensor the limit-switch-boxes are equipped with different switch cam-systems.

a) Actuation with switch cams or switch plates

Push down the exterior ring of the switch cam of the sensor, which has to be readjusted. Turn the switch cam until the designated position has been reached. By disengaging the switch cam, it snaps into place again.

b) Actuation with damping flag

Loosen the Hexagon socket head cap screw between the sensors. Now turn the switch cam underneath the sensors until the switch flag in its end position damps the sensors.

c) Actuation with switch flag

Unscrew the fastening nuts and move the sensor forward or backward until the designated switch point has been reached. The switch flag may not contact the front side of the sensor!

3. Proceed similarly with other switch-points.
4. Refasten housing cover! (Fastening torque of the screws: 1,4 Nm)

5. Connecting solenoid valves

Depending on their design the switch-boxes offer the possibility to additionally connect up to two solenoid valves on the terminal block. You may only wire solenoid valves with protection type "intrinsic safe".

Consider the instruction manual and the explosion protection labelling of the solenoid valve!

If you want to wire solenoid valves additionally act on the following plan:

1. Remove the sideways blind plug and replace it by a suitable cable gland M16x1,5.
2. Open screws and the housing cover.
3. Lead the system cable through the cable gland and wire it with the terminal block.

Please note the wiring diagram in the technical data sheet.
The wiring diagram can also be found inside the housing cover of the box.

4. Refasten housing cover! (Fastening torque of the screws: 1,4 Nm)

Some types of limit switch boxes don´t offer the possibility to additionally connect solenoid valves.

6. Maintenance

Long-time outdoor usage can cause gaskets to become brittle after some time. Safe operation can only be guaranteed with leak-proof boxes.

Gaskets should be exchanged immidiately when they are damaged, or at least after five years.
Gaskets may be replaced by qualified personell only.
Gaskets can be ordered at Rotech Systemkomponenten anytime.