

Pressure differential monitor EMDD-ATEX

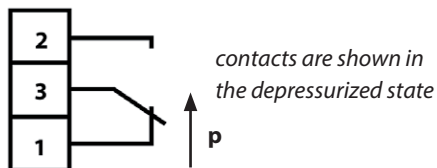


- Atex Zone 1, 2 and 21, 22 | ATEX type examination certification BVS 06 ATEX E 141X for gases and dusts | equipment category II 2G and II 2D | ignition protection type EX ia IIB T4 Gb and Ex ia IIB T135°C Db.
- Large scale for adjusting switching pressure
- Metric cable threads
- Mounting angle bracket with screw-on or clip-on fastener
- Duct connection fitting length 60 mm
- Vertical and horizontal installation orientation

Technical Data

Membrane material: silicone (others on request)
Permissible ambient conditions: -20 °C – +85 °C
Max. positive operating pressure: 10 kPa
Pressure ports: P1 + P2 at 6.0 mm diameter
Electrical switch rating: 24 V DC / 100 mA; 30 V DC / 60 mA
Electrical connections: Terminal connector 6.3 x 0.8 DIN 46244 with screw-on terminals up to 2.5 mm²

Contact arrangement:



Protection type: with protective cover IP 54
Housing material: switch housing: PA 6.6; mounting bracket: POM
Service life: > 10⁶ switching cycles

Applications: Pressure differential monitor for monitoring combustible, non-aggressive gases / vapors.
Compressed media: air and combustible, non-aggressive gases / vapors

Pressure range

Type	Adjustment range for upper switching pressure		Switching differential setting	Tolerance
	from	To		
EMDD-20-ATEX	20 Pa	200 Pa	10 Pa	±15 %
EMDD-30-ATEX	30 Pa	400 Pa	15 Pa	±15 %
EMDD-50-ATEX	50 Pa	500 Pa	20 Pa	±15 %
EMDD-200-ATEX	200 Pa	1,000 Pa	100 Pa	±15 %
EMDD-500-ATEX	500 Pa	2,500 Pa	150 Pa	±15 %
EMDD-1000ATEX	1,000 Pa	5,000 Pa	250 Pa	±15 %

Details for the setpoint in vertical installation orientation.

The target value (setpoint) can be adjusted with an adjustable potentiometer using a reference value scale without manometer. The switching differential can be adjusted with a screwdriver.

Function / installation / electrical connection / startup

All work (such as installation, electrical connection, startup, operation, and maintenance) must only be performed by sufficiently qualified tradesmen. The respectively applicable local rules and regulations (e.g. national building codes, electrical/VDE regulations, etc.) must be observed. Installers and operating entities are required to sufficiently familiarize themselves before startup. Read the product description before operating the equipment. Verify that the product can be used for the relevant application without restrictions. We

are not liable for printing errors and changes after printing. Approved uses also include compliance with operating and installation instructions. We are not liable for losses due to not approved uses. Unauthorized or inappropriate manipulations or modifications of the device render the operating permit, the product warranty and warranty claims null and void. Modifying the equipment is not authorized and can result in an explosion hazard (ignition). The contents of the EC type examination certification are binding and must be observed. Special requirements or variances from standard conditions are indicated by an „X“ following the EC type examination certification. Only appropriately qualified staff (iaw. TRBS 1203; qualified person - „befähigte Person“) are authorized to perform installations, startups, and recurring inspections.

Approved uses: Pressure monitors are used in explosive areas that qualify as zone 1 or 2 (gases and vapors) as well as 21 and 22 (dusts). Adjustable pressure differential monitors have the following primary purposes:

- Monitoring positive, negative pressures or pressure differentials of air and other non-aggressive, combustible gases / vapors (e.g. natural gas, biogas)
- Monitoring air filters and blowers, as well as airflow in ventilation ducts, air-conditioning loops, air heaters etc.
- Function is monitored by monitoring airflow (e.g for [air] filters, air and fire dampers, blowers, ventilators or closed system leakage)
- Level monitoring of liquids

Compliance of your application with important explosion protection specifications must be addressed with markings on the product [G = gas; D = dust; equipment category 1, 2, 3 or equipment protection level - EPL in the 3 zones. Gas specifications: temperature class (T1...T6), explosion group (A, B, C)]. Dust: specifications: explosion group (III A, B: non-conductive; IIIC: conductive). Dust accumulations must be avoided to prevent hazardous overheating of surfaces (installation orientation, covers, cleaning, ...). Steps must be taken to ensure that all technical and organizational safety measures are adhered to, and that the function and effectiveness of these are verified. The operating entity must issue a work permit before activities of any kind (installation, ...) are performed in explosive environments. When performing work such as installation, electrical connections, repairs, or opening the housing, particular attention is required to ensure that

- no explosive atmosphere exists
- electrical power has not been connected
- inadvertent switching on is not possible

The device may be used in explosive gas as well as in explosive dust environments. Two separate areas can be connected with the pressure ports P1 and P2 (areas 1 and 2). Zone 1, 2 or zone 21, 22 can be applied on the pressure ports (areas 1 and 2). The environment (area 3) can be zone 1, 2 or zone 21, 22.

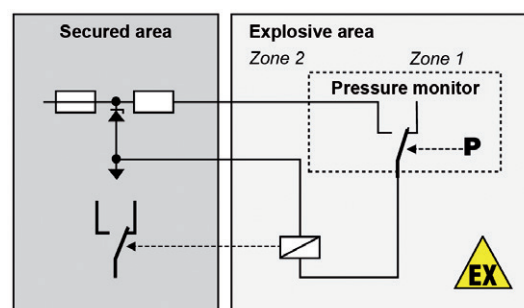
Area 1	Area 2	Area 3 Environment	Equipment category Equipment protection level EPL
Zone 1, 2	Zone 1, 2	Zone 1, 2	2G Gb
Zone 21, 22	Zone 21, 22	Zone 21, 22	2D Db

Area 3 (environment)		Zone		
Equipment category RL 94/9 EG	Equipment protection level-EPL	0	1	2
1 G, D	Ga, Da	Yes	Yes	Yes
2 G, D	Gb, Db	No	Yes	Yes
3 G, D	Gc, Dc	No	No	Yes

An associated i device (safety barrier, switching amplifier) must be installed upstream of the secured area. Compliance with intrinsic safety must then be documented for the entire i electrical circuit. The power supply specifications (P, I, U) of the barrier must be lower than, and the specifications (L, C) must exceed those of the pressure monitor and the power supply cable (color: blue).

Electrical specifications:

for gas 2G: 30 VDC, 60 mA oder 24 VDC, 100 mA
for dust 2D: 30 VDC, 60 mA, 0.6 W
Capacitance - Ci 0 µF (negligible)



Inductance - Li 0 mH (negligible)

Please also note the following instructions (among others):

- Cables of intrinsically safe and not intrinsically safe electrical circuits must be routed separately.
- Intrinsically safe and not intrinsically safe electrical circuits can be routed together for operating voltages below 42 V AC or 60 V AC. This only applies to safety barriers with galvanic isolation.
- Intrinsically safe/not intrinsically safe connected components

- must be segregated by at least 50 mm (clearance)
- Distance between various intrinsically safe electrical circuits: at least 6mm
- Clearance of connected components to uninsulated conducting components: at least 3 mm air gap (housing-terminals-circuitry, earth, ...)
- Select appropriate cable type; note cable specifications (L, C,...), cables must be installed / protected to industry standards

The following inspections/reviews (among others) must be performed before installing the device:

- The unit must be free of damage and have no apparent modifications
- The IP protection type must be appropriate for the application and ambient conditions
- The operating entity must have specified the zones
- The equipment category must correspond to the specified zones
- On intrinsically safe („i”) systems, the „associated device” (barrier) must only be installed outside of the explosive environment.
- Compliance with important explosion protection specifications must be addressed with markings on the product

Select the installation orientation based in the following criteria:

- Convenient access when installing, connecting, and operating
- Protection against weather influences, such as rain and sun
- The IP protection type of the device must be appropriate for the ambient conditions
- Dust accumulations must be avoided to prevent hazardous overheating of surfaces (installation orientation, safety cover, cleaning, ...)
- We recommend vertical installation orientation with the pressure ports pointing down. The setpoints are approx. 20 Pa higher for the horizontal installation orientation with AMP connection lugs pointing up

Note the following issues (among others) when routing cables:

Cables must be appropriately protected (protective sleeve, ...) if a risk of mechanical damage exists. The specified cable diameter must be used to ensure that the cable feed-through is properly sealed. The cable screws and the screws on the housing cover must be tightened properly to maintain the IP protection type. Excessive tightening will damage the housing.

Before connecting cables, verify that the cables to be installed are disconnected from power. Otherwise, this may create a risk of igniting an explosive environment. Select the cable material

to ensure that the local requirements for durability (mechanical, chemical) are adhered to

- The outside diameter can be 5 – 9 mm; conductor cross-section as per the electrical power and specification sheet. Minimum cable cross-section: 2 x 1.5 mm² or 1 x 4 mm².

The following issues must be specifically observed when selecting cables for intrinsically safe electrical circuits:

- Diameter of individual cores: greater than 0.1 mm
- Insulation thickness of individual cores: greater than 0.2 mm
- Test voltage of intrinsically safe cables: between cores, shield, and earth: 500 V AC
- Shield: the shield surface must represent 60 % of the surface cover or twisted cores
- Marking of intrinsically safe electrical circuits: preferably in light-blue color
- Cable specifications must be available for L and C (Ci = 110 nF/km; Li = 1 mH/km)

Shield must be discharged uni-directionally (to the non-explosive environment). Connect large surface area of shield mesh to earth. No equipotential compensation current must flow between the explosive environment and the non-explosive environment. In this case, a capacitor can be used as a decoupler for EMC purposes (total max. 10 nF). The exterior earthing clamp on the housing must have a low-resistance connection to the equipotential compensation of the explosive environment (discharging electro-static charges between 0.2 - 1 MOhm does not constitute earthing). No equipotential compensation current must flow between the explosive environment and the non-explosive environment. Intrinsically safe electrical circuits: metal housings do not need to be earthed.

The device is immediately ready to operate following proper installation and connection of the power supply. Adjust the setpoint and differential for the application.

Service / maintenance / repair

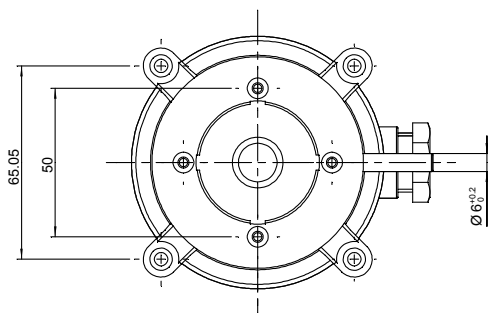
The condition of the device must be inspected regularly. The interval depends greatly on local conditions and the load, and must therefore be adjusted based on requirements. The operating entity must define the interval based on local conditions.

Inspection includes: Visual inspection for mechanical damage, excessive dust accumulations, and other noteworthy observations or equipment error messages. Inspection of parts (wear parts) whose function or purpose is changing and are influencing device functionality. Completed work must be documented. The interval specified in the regulations applicable for the

specific case must be used for recurring maintenance.

German occupational safety regulations (Betriebssicherheitsverordnung) mandate that the interval must not exceed 3 years. As the manufacturer, we recommend a maximum interval of 1 year. **Maintenance includes:** Verification of function (operating states, such as setpoint); verification of adjustment values/calibration (application of known test pressure, alarm trigger test); when required, return to manufacturer for recalibration or repair by manufacturer; completed work must be documented. **Only the manufacturer is authorized to make repairs.** The instructions regarding function / installation / electrical connection / startup must be observed in this case. The operating entity must issue approval before the device is dismantled / taken out of service.

Dimensioned drawings



Accessories

A/C kit type 6555, consisting of:

2 A/C duct connection fitting - plastic type 6551 with screw fasteners and 2 m PVC hose $\varnothing$ 6 mm

A/C kit type 6550, consisting of:

2 A/C duct connection fittings - metal type 6552, 2 rubber bushings type 6553 and 2 m PVC hose $\varnothing$ 6 mm

see Data sheet No. 13101

Switching amplifier EXL-IR-9170

(See Data sheet No. 14203)

