



Assembly and Operating  
Instructions

**Pressure Switches**

Basic models	Additional functions	
DCM...	-203	...-574
DNM...	-205	...-575
DNS...	-206	...-576
VCM..., VNM...	-307	...-577
VNS...	-213	...-513
DDCM...	-217	...-563
Ex-...		
Special Model	-301	...-361-S

**Important safety information!**

Please read this before installation and  
commissioning!

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MU2B-0238GE51 R0220F

Type code

**Type code**

<b>Basic version</b> <b>ABC XXX</b>	<b>Version with additional function</b> <b>ABC XXX-YYY</b>	<b>Ex version</b> <b>Ex-ABC XXX</b>
ABC	Identification for series	
XXX	Identification for pressure range	
YYY	Identification for additional function	
Ex-	Identification for Ex version	

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**Switching Housings**

ABC XXX Plug connection housing (200)  
ABC XXX-2 ... (Plug connection to DIN EN 175301)



ABC XXX-3... Terminal connection housing (300 or 500)



Ex-ABC Ex-housing (700)  
ABC XXX-5 Housing 500 + cover 700

**Important Note**

Pressure switches are precision instruments, set and adjusted at the factory. **Do not open the device or reset the varnished adjustment screw.** This would alter the switching points, thus necessitating resetting.

**Important safety information**

Please read this before installation and commissioning

**Installation and Commissioning**

- ▶ Pressure switches must be installed only by personnel trained in this application area (electric/hydraulic/ mechanical) in accordance with the installation instructions and local legal requirements.
- ▶ The devices must be installed (mechanical, pressure-side connection) only on electro-chemically matched materials, otherwise there is risk of damage to base metals through contact corrosion which can result in loss of stability and leakage.
- ▶ Caution when touching device – risk of burns. Device can reach a medium temperature of up to 70 °C. Risk of freezing when working with media up to -20 °C.
- ▶ Do not open wiring-box or plug and do not remove terminal screws before the device is de-energized.
- ▶ Ex versions are limited to an operating range of -20 ... +60 °C.

**Safety Instructions**

- ▶ The device must only be used within the electric, hydraulic and thermal limits specified in the data sheet.
- ▶ Inductive loads can cause contact burns or fuse the contacts. Preventative measures must be implemented by the customer, e.g., through use of suitable RC elements.
- ▶ When using the version with ZF 1979 (oil and grease-free), take care to avoid recontamination of surfaces that are in contact with media, right through from opening the packaging to completed installation. Generally, no liability will be assumed for oil and grease-free version.
- ▶ High quality stainless-steel sensor parts in contact with media enable the devices to be used with a variety of media. However, a **chemical resistance test** MUST be carried out before selection.
- ▶ Use with acids and other aggressive media – such as hydrofluoric acid, copper chloride, aqua regia, or hydrogen peroxide – is not permitted.
- ▶ Use in systems with unstable gases and liquids – such as hydrogen cyanide, dissolved acetylene, or NOx – is not permitted.
- ▶ Devices must be protected from solar radiation and rain.

Safety Instructions

- ▶ Pressure switches are precision devices which are calibrated in the factory. For this reason, never open the device and do not change the adjustment of the varnished calibration screws.
- ▶ Prevent excessive vibrations from reaching the pressure switch, e.g., with mechanical isolation or other vibration damping measures.
- ▶ Heavily contaminated media can clog the sensor and cause errors and/or malfunction. If the equipment is to be used for this purpose, suitable chemical seals must be connected.
- ▶ Pressure switches and chemical seals form a functional unit and must not be disconnected from each other in the field.
- ▶ Before disassembly (removing the pressure switch from the system), the device must be disconnected from the power supply and the system must be emptied. Observe the Accident Prevention Regulations.
- ▶ Never use the pressure switches as a climbing aid.

- ▶ Honeywell GmbH accepts no liability for non-compliance.

**NOTE:** For further safety information pertaining to the use of these devices in Ex atmospheres, see pg. 27 ff.

**E.U. Directives**

Up to July 19, 2016	From July 20, 2016
RL 97/23/EC	2014/68/EU

Up to April 19, 2016	From April 20, 2016
RL 94/9/EC	2014/34/EU
2006/95/EC	2014/35/EU

### RoHS Conformity for China

部件名称 Component Name	有害物质 Hazardous Substances					
	铅 (Pb) Lead (Pb)	汞 (Hg) Mercury (Hg)	镉 (Cd) Cadmium (Cd)	六价铬 (Cr6+) Chromium VI Compounds (Cr6+)	多溴联苯 (PBB) Polybrominated Biphenyls (PBB)	多溴二苯醚 (PBDE) Polybrominated Diphenyl Ethers (PBDE)
ELECTRIAL COMPONENTS 电气元件	○	○	×	○	○	○
FASTENERS AND SEALING PARTS 紧固件和密封件	×	○	○	○	○	○

本表格依据 SJ/T 11364 的规定编制。

This table is prepared in accordance with the provisions of SJ/T 11364.

O：表示该有害物质在该部件所有均质材料中的含量均在 GB/T 26572 规定的限量要求以下。

O：Indicates that said hazardous substance contained in all of the homogeneous materials for this part is below the limit requirement of GB/T 26572.

X：表示该有害物质至少在该部件的某一均质材料中的含量超出 GB/T 26572 规定的限量要求。

X：Indicates that said hazardous substance contained in all of the homogeneous materials for this part is above the limit requirement of GB/T 26572.

未列入表内的其他部件，皆不含任何超出限量要求的限制使用物质。

All other components not listed in the table do not contain restricted substances above the threshold level.

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## 1. Basic Equipment of the Pressure Switches

Chapter 1 describes the basic equipment and the installation of the pressure switches (without any additional function). Chapters 2-8 deal with versions and additional functions.

### 1.1 Technical Data (not for Ex versions)

#### Switch

Single-pole changeover

#### Switching capacity

8 (5) A, 250V AC

#### Installation position

Vertical and horizontal

Exceptions: DCM 4016, DCM 4025, VCM 4156, and DDCM are to be installed vertically, only (with the device facing upwards)!

#### Max. ambient temperature

-25 to +70 °C

#### Max. medium temperature

70 °C, higher medium temperatures are possible if the above limiting values at the switching device are not exceeded through the use of suitable measures (e.g., the installation of a water pocket tube). At ambient temperatures below 0 °C, ensure that no water condensation can arise in the sensor and in the switching device.

#### Switching differential

For values see data sheet

#### Pressure connection

External thread G ½ A (pressure gauge connection) according to DIN 16 288 and internal thread G ¼ according to ISO 228, Part 1. (For gas applications internal

thread permissible only up to 4 bar. Use flat gasket ring for pressure > 4 bar).

**Switch housing**

Sturdy housing made of seawater-resistant aluminum die casting with plug connection (200) or terminal connection (300 and 301-361-S).

**Degree of protection acc. to EN 60529**

IP 54 (housing 200)

IP 65 (housing 300 and 301-361-S)

**Materials**

See data-sheet

**NOTE:** All pressure switches of the DCM, DNM, DNS, VCM, VNM, VNS and DDCM series – as well as their Ex versions – are calibrated by the manufacturer for falling pressure.

**This means that for switching with rising pressure:**

**(lower range limit)**

The smallest switching point that can be set is higher than the start of the scale by the value of the switching differential. The device then switches back to the start of the scale in case of dropping pressure.

**(upper range limit)**

The highest switching pressure that can be set is the end point of the scale. The device switches back as soon as the pressure dropped by the value of the switching differential.

**This means also that for switching with falling pressure:**

**(lower range limit)**

The lowest switching point that can be set is the start point of the scale. The device switches back as soon as the pressure has risen by the value of the switching differential.

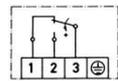
**(upper range limit)**

The highest switching point that can be set is lower than the end of the scale by the value of the switching differential. The device switches back as soon as the pressure has again risen to the scale end value.

**NOTE:** For all devices: All switching and reset points must be within the specified setting range given in the technical data sheet.

**1.2 Electrical Connection**

**Connection layout**



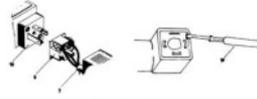
**Fig. 1. Connection layout**

**With rising pressure**  
3-1 opens, 3-2 closes

**With falling pressure**  
3-2 opens, 3-1 closes

**Wiring**  
Wiring is on the angled plug. The cable outlet can be in any of 4 positions, which are at 90° in relation to each other.

- ▶ Remove screw.
- ▶ Insert the screwdriver in the slot and press downwards.



**Fig. 2. Wiring**

In the case of devices featuring a terminal connection housing (300 and 500), the terminal board is accessible after removing the terminal box lid.

**⚠ CAUTION:**

To prevent electrical shocks and accidents, legal requirements and rules for accident prevention must be observed!

### 1.3 Pressure Connection

**Installation:** Directly on the pipeline (pressure gauge connection G ½" or G ¾" internal thread).

**NOTE:** Tighten the device only at the hexagon which is located closest to the pressure gauge connection. Never tighten the device at the housing or other areas of sensor parts. Never use the housing or plug as a lever arm.

Alternative mounting is possible with 2 screws Ø 4 mm on a flat surface area.

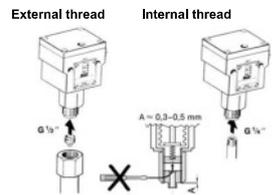


Fig. 3. Pressure switch

**External thread G 1/4"**  
 (Pressure gauge connection)  
 When using flat seals, turn in the centering screw (depth A approx. 0.3 – 0.5 mm)

**Internal thread G 1/4"**  
 In gas applications, only internal thread up to 4 bar permissible. Use flat gasket ring for pressure > 4 bar.

**Differential Pressure Switch**

**Pressure connection:**  
 2 x G 1/4" internal thread.  
 Connect the high and the low pressure according marks. Incorrect pressure connections may lead to malfunctioning.

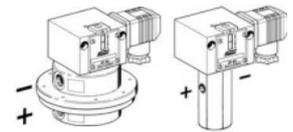


Fig. 4. Pressure connection

+ = High Pressure P  
 - = Low Pressure S

#### 1.4 Setting the Switching Pressure

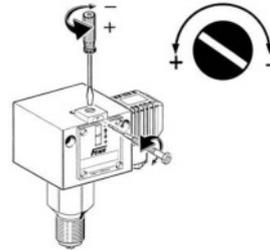


Fig. 5. Setting the switching pressure

**CAUTION:** Switch off voltage.

The switching pressure is set using the setting spindle. Before setting loosen the setscrew located above the scale by **approx. 2 turns** and tighten it again after setting.

The scale value corresponds to the switching point (for rising pressure). The reset point is lower by the switching differential.

The scale provides only an estimated value; a pressure gauge is required for accurate settings.

On terminal connection housings, the setting screw is accessible after removing the cover.

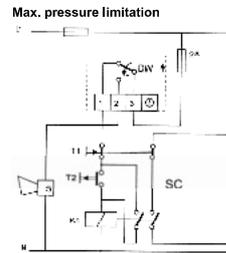
### **1.5 External Electrical Interlock in the Switchgear Cabinet**

A pressure switch can also be used as limiter if an electrical interlock is connected in series. In pressure limitation for steam and hot water boilers, the external interlock is permissible only if it is assured that the pressure switch is of "special construction".

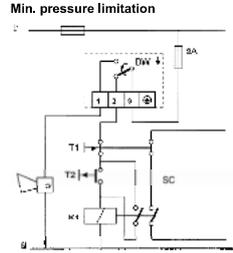
**NOTE:** Because of special permits, in these installations, the use of the DWR, DWAM, and SDBAM is recommended!

For electrical interlock, design circuits according to DIN EN 50156 / VDE 0116-1 or apply valid local standards!

For examples for switching circuits serving electrical interlock function, see next page.



**Fig. 6. Maximal pressure limitation**  
 DW = pressure switch  
 T1 = STOP  
 T2 = START



**Fig. 7. Minimal pressure limitation**  
 S = signal (as required)  
 K1 = relay with self-hold  
 SC = safety circuit

## 2. Pressure Switches with Adjustable Switching Difference ...V...-203

### 2.1 Technical Data as for 1.1

### 2.2 Electrical Connection as for 1.2

### 2.3 Pressure Connection as for 1.3

### 2.4 Setting

One spindle each is available for setting the switch pressure and the switching differential. The two spindles are arranged concentrically. The outer, larger-diameter spindle influences the upper switching point. The switching differential – and thus also the lower switching point – is changed with the smaller, inside screw.

The action direction is indicated by the arrow.

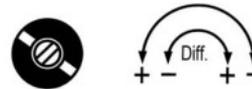


Fig. 8. Action direction

#### Setting sequence

- ▶ Using the outer spindle, first set the switching point (at increasing pressure) according to the scale or pressure gauge.
- ▶ Using the smaller, inside screw, then set the switching differential ( $x_{\Delta}$ ) and thus also the reset point.

When the switching differential is changed, the switching point remains unchanged. The reset point is shifted by the value of the switching differential.

**CAUTION:**

When approaching the max. switching differential value, take care that the differential spindle not be turned so far as to hit the stop and possibly jam, as this could interfere with switching back. In the event that this nonetheless accidentally happens, loosen the screw by a half or full rotation.

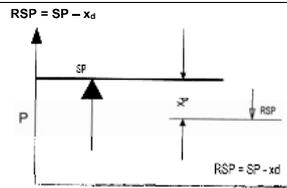


Fig. 9. Rising pressure

- RSP = SP - x<sub>d</sub>
- SP = switching point
- RSP = switch back point
- x<sub>d</sub> = switching differential (hysteresis)
- p = pressure

### 3. Pressure Switches with Mechanical Interlock of the Switching State

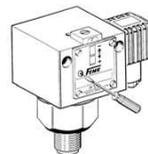


Fig. 10. Mechanical interlock

Max. pressure switch ABC\*...-205

Min. pressure switch ABC\*...-206

Instead of the microswitch with automatic reset, the limiters feature a "bistable" microswitch.

When the pressure reaches the value set on the scale, the microswitch switches over and remains in this position. The catch can be released by pressing in the

unlocking button (marked on the scale side of the switching device by a red dot). The limiter cannot be unlocked until the pressure has decreased by a certain amount or, in the case of interlocking at the lower switching point, is increased again. Depending upon the version, the interlock can be effective for a rising value (ABC\*...-205) or for a falling value (ABC\*...-206).

\*stands for DCM, DNM, DNS, VCM, VNM, VNS, and DDCM

**3.1 Technical Data as for 1.1**

**3.2 Electrical Connection**

Max. pressure limitation

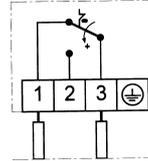


Fig. 11. ABC\*...-205

Switching over and interlocking on rising pressure (...-205).  
Connection of control circuit to terminal 1 and 3 (NC contact).

Minimum pressure limitation

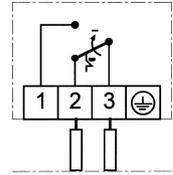


Fig. 12. ABC\*...-206

Switching over and interlocking on falling pressure (...-206).  
Connection of control circuit to terminal 2 and 3 (NC contact).

\* stands for DCM, DNM, DNS, VCM, VNM, VNS, and DDCM

**3.3 Pressure Connection as for 1.3**

**3.4 Setting as for 1.4**

**NOTE:** In the case of pressure switches acting as max. pressure limiters (...-205), the scale value corresponds to the upper switching point; in the case of pressure switches acting as min. pressure limiters (...-206), the scale value corresponds to the lower switching point.

#### **4. Pressure Limiters with Gold-Plated Contact ...-213**

Gold-plated contacts are preferred in the low-voltage range; this is because their good anti-corrosion properties keep the transit resistance at the contacts low over a longer period.

##### **4.1 Technical Data as for 1.1**

**Switching capacity**  
max. 24 V DC, max. 100 mA  
min. 5 V DC, min. 2 mA

At higher voltages and currents, the gold layer on the contacts will be damaged.  
All other data correspond to the basic equipment.

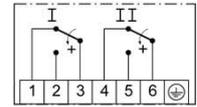
**5. Two-Stage Pressure Switches ...-307, ...-217**

A switch unit with two microswitches, both with single-poled changeover, is part of the basic equipment for each two-stage pressure switch.

Switch I monitors lower pressure, switch II monitors higher pressure.

**NOTE:** The switching differential of the individual microswitches is the interval (in bar or mbar) between the switching points of the two microswitches.

**5.1 Model ...-307 and Adjustment**



*Fig. 13. Connection layout*

The switching interval between the two switches is set according to customer requirements.

With increasing pressure, first microswitch I (terminal connection 1-3) and then microswitch II (terminal connection 4-6) is activated.

**The following applies for all models:**

Changes of the setpoint spindle to the set the switching pressure do not lead to changes in the switching intervals; however, the switching points will translate in parallel correspondingly.

The switching differential of the individual microswitches corresponds to the switching differences listed under basic equipment.

**The switching differential cannot be set for individual microswitches in two-stage pressure switches.**

The switching points can be moved parallel to the setting spindle.

**5.2 Model ...-217**

Both microswitches are connected internally according to the given wiring diagram (see label next to the plug connection). The switching points can be set with 2 setting spindles within their designed limits.

The switching differential of the individual microswitch corresponds to the switching differentials listed under basic equipment.

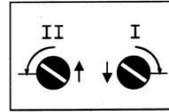


Fig. 14. Setting wheels

**Setting wheel I CW**

– Reduces switching point at microswitch I

**Setting wheel II CCW**

– Raises switching point at microswitch II

Setting wheels I and II have an internal stop to ensure that the microswitches cannot be adjusted past their effective range.

Electrical wiring ...-217

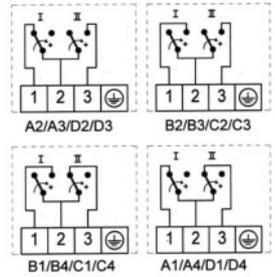


Fig. 15. Electrical wiring ...-217

Note the sticker besides the plug connection of the pressure switch.

### 5.3 Adjustment

Adding together the adjustment values set using setting wheels I and II yields the switching interval between the two microswitches. Changes made at the setpoint spindle **S** do not affect the switching interval; the switching interval remains constant over the entire adjustment range of the spindle, the two switching points being displaced up or down in parallel.

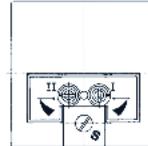
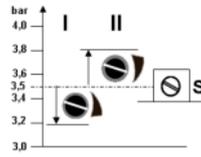


Fig. 16. Setting spindles

- ▶ Step 1: Turn setting spindle I fully CCW until end-stop. Turn setting spindle II fully CW until end-stop. The smallest switching interval has now been set.
- ▶ Step 2: Set setpoint spindle **S** to a value on the scale which is halfway between the desired upper and desired lower switching point.
- ▶ Step 3: With pressure applied, set pressure level for desired lower switchpoint (check with manometer), turn setting spindle I CW until microswitch acts. Switching point I has now been set.
- ▶ Step 4: Set pressure to pressure level for desired upper switchpoint (check with manometer), turn setting spindle II CCW until microswitch II acts. Switching point II has now been set.
- ▶ Step 5: If the required upper and lower switching point cannot be obtained, adjust setpoint spindle **S** in the necessary direction and repeat the setting procedure as described in steps 3 and 4 above.

**Example**



**Fig. 17. Adjustment**

Switching points at: 3.8 and 3.2 bar

- ▶ Adjust setpoint spindle S to 3.5 bar
- ▶ Set bottom switching point (3.2 bar) with setting wheel I (turn CW).
- ▶ Set top switching point (3.8 bar) with setting wheel II (turn CCW).

## 6. Testing Principles and Safety Information for Ex-i, valid for Ch. 6.1 and 7

### According to: EN60079-11

Ex-i intrinsic safety is based upon the principle that devices in systems equipped with an ATEX-certified switching amplifier require only minimal voltage and current. Sparks which might form when the micro-switch's contact is opened are thus minimized, as a result of which the surrounding flammable atmosphere cannot be ignited. FEMA Ex-i pressure switches are equipped with gold contact microswitches (except for those devices featuring internal interlocking for the purpose of min. or max. limitation). A blue cable gland, the Ex-i manufacturer's plate, and the serial number identify those pressure switches suitable for use in intrinsically safe circuits. Generally speaking, Ex-I pressure switches are suitable for use in zones 1 and 2 (gas) as well as 21 and 22 (dust).

When equipped with a category "ia" switching amplifier, such devices can also be employed on the process-side in zone 20 (dust) and zone 0 (gas).

**Devices not equipped with line- and short-circuiting monitoring:**  
DCM, DDCM, DNM, DNS, VCM, VNM, VNS, ending with -513 or -563.

E.g.: DCM6-513, pressure switch 0.5 to 6 bar, conforming to Ex-i, with gold contact.

**Devices equipped with line- and short-circuiting monitoring:**

DCM, DDCM, DNM, DNS, VCM, VNM, VNS, ending with -574, -575, -576, -577.

E.g.: DNS6-576, pressure switch for max. pressure monitoring for max. pressure monitoring, 0.5 to 6 bar, conforming to Ex-I, with line-monitoring.

Regardless of the device's certification and irrespective of the microswitch, these devices are also equipped with an additional resistor-combination (10kΩ / 1.5kΩ) which – in combination with a suitable (ATEX-certified) switching amplifier – is suitable for monitoring the

line for open-circuit or short-circuiting (NAMUR).

**6.1 Pressure Switches in Intrinsically Safe Circuits (Ex-i)**

according to chapter 5.7 of EN 60079-11, "Simple electrical apparatus".

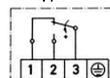


Fig. 18. Connection layout -513, -563

Gold contacts SPDT, switching differential not adjustable.

The wiring diagram applies for max. pressure monitoring. When pressure rises, contact 3-1 opens and 3-2 closes. Generally speaking, it is suitable for installation only in combination with a suitable EC-type tested switching amplifier. This switching amplifier must be installed

outside of the Ex-zone. The wiring diagram accompanying the switching amplifier and the valid installation guidelines for Ex-i circuits must be observed.

For intrinsically safe electrical circuits, the following parameters must be observed:

- U<sub>i</sub> 24 VDC
- I<sub>i</sub> 100 mA
- L<sub>i</sub> 100 μH
- C<sub>i</sub> 1 nF

**Type of Ex-protection**

- Gas: II 1/2G Ex ia IIC T6 Ga/Gb
- Dust: II 1/2D Ex ia IIIC T80°C Da/Db
- Ambient temperature: -20 ... +60 °C

**Approvals**

- ATEX: IBEExU12ATEX1040
- IECEx: IECEx IBE 14.0077

## 7. Pressure Switches in Intrinsically Safe Circuits (Ex-i)

according to chapter 5.7 of EN 60079-11:2012, "Simple electrical apparatus". Wiring monitored applications.



Fig. 19. Connection layouts

The pressure switches correspond in all technical data to the types DCM, DNS, VCM, VNM, VNS, and DDCM. In addition, a resistor-combination is provided in the switching device, which – in combination with a suitable (ATEX-certified) switching amplifier – monitors the wires between the switching amplifier and pressure switch for open-circuit and short-circuiting. In the case of open-circuit or short-circuiting, the system switches off.

Generally speaking: May be used only with a suitable, E.C.-tested switching amplifier. The switching amplifier is separately certified and must be installed outside of the Ex-zone. Pressure switches with resistor-combination require a switching amplifier suitable for monitoring open-circuit and short-circuiting.

Wiring of switching amplifier only according to its mounting and wiring instructions and valid standards and guidelines for intrinsic safe circuitry.

**Electrical data of resistor-combination**  
1.5 k $\Omega$  / 0.35 W, 10.0 k $\Omega$  / 0.35 W

**Wiring parameters for use in intrinsically safe electrical circuits**

$U_i$  14 VDC  
 $R_i$  1.5 kOhm  
 $L_i$  100  $\mu$ H  
 $C_i$  1 nF

**Type of Ex-protection**

Gas:  II 1/2G Ex ia IIC T6 Ga/Gb

Dust:  II 1/2D Ex ia IIIC T80°C Da/Db

**Approvals**

**ATEX:** IBEExU12ATEX1040

**IECEX:** IECEX IBE 14.0077



**CAUTION:**

Never operate pressure switches with resistor-combinations without suitable switching amplifier. Device can overheat and burn caused by overload of resistor combination.

## 8. Testing Principles and Safety Information for Ex-de and Ex-t

General	EN60079-0
Ex-d Pressure-Proof Housing:	EN60079-1
Ex-e Increased Safety:	EN60079-7
Ex-t Protection by Enclosure:	EN60079-31

Ex-d Pressure-Proof Housing is based on equipping the device with a microswitch certified according to Ex-d. A spark which might possibly form when the microswitch's contact is opened then has no effect upon any flammable atmosphere surrounding the switch. As a result of the defined ignition gap and designed leak-tightness, any spark-formation is effectively suppressed in the microswitch, so that a flammable atmosphere (the frequency of which is defined in zones 1, 2, 21, and 22) surrounding the switching device cannot be ignited.

Furthermore, the housing in the connection compartment features Ex-e Increased

Safety. Through the use of a suitable earthing, a certified power terminal, and a certified cable gland, ignitions in the leak-tight connection compartment are prevented.

Ex-t Protection by Enclosure is based upon the housing's IP65 rating, which means that it is effectively protected against the ingress of dust and water in accordance with EN60529. Such devices are thus suitable for use in dusty explosive surroundings (the frequency of which is defined in zones 1, 2, 21, and 22).

Generally speaking, pressure switches featuring Ex-de and Ex-t are employed on the switching device side, in zones 1 and 2 (gas) as well as 21 and 22 (dust). In the case of protection in dusty explosive surroundings, the sensors are certified for use on the medium-side in zone 20.

8. Testing Principles and Safety Information for Ex-de and Ex-t

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**Devices certified for Ex-d and Ex-e as well as Ex-t:**

Always begin with the prefix "Ex-":  
Ex-DCM, Ex-DDCM, Ex-DNM, Ex-DNS,  
Ex-VCN, Ex-VNM, Ex-VNS.  
E.g.: Ex-DCM6, pressure switch, 0.5 to 6  
bar, featuring Ex-de and Ex-t.

### 8.1 Pressure Switches in Ex-d (e), Ex-t version (Ex-DCM, Ex-DDCM, Ex-DNM, Ex-DNS, Ex-VCM, Ex-VNM, Ex-VNS)

Ex-proof pressure switches from "flame-proof enclosure" can be supplied only in the form that has been type test approved according to ATEX. Other variants and additional functions are thus not possible.

### 8.2 Technical Data of the Ex Pressure Switches

#### Type of Ex-protection

CE 0035 II 2G Ex d e IIC T6 Gb

CE 0035 II 1/2D Ex ta/tb IIC T80°C Da/Db

#### Approvals

ATEX: IBEU12ATEX1040

IECEX: IECEX IBE 14.0077

#### Ex-Zone

For gases: zones 1 and 2 (at switching device)

For dust: zones 21 and 22 (at switching device), zone 20 (at sensor)

#### Type of protection

IP 65 (vertical installation – sensor facing downwards, switching device facing upwards)

#### Ambient temperature

-20 to +60 °C

#### Max. medium temperature for pressure switches

60 °C. Higher medium temperatures are possible if the appropriate measures (e.g., installed siphon) are taken so that the permissible ranges are not exceeded for the switch.

#### Cable type

M16 x 1.5, for fixed installation, only

**Switching differential**

Not adjustable, approximate values see data sheet

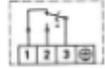
**Fitting position**

Vertically, facing upwards

**8.3 Electrical Data**

**Connection plan**

The terminal board can be accessed after the protective casing has been removed. After connecting the supply lines, the protective casing should always be reattached.



*Fig. 20. Connection layout*

With increasing pressure, 3-1 will be interrupted and 3-2 will be closed.

**Electrical ratings of SPDT microswitch**

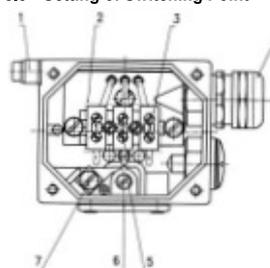
**Voltage rating**  
up to 250 VAC

**Current rating**  
AC 3 A,  $\cos \Phi \leq 0,9$   
DC 0.1 A

**8.4 Pressure Connection as for 1.3**

**Data for screw terminals**  
Tightening torque max. 0.4 Nm  
Wire cross section max. 2,5 mm<sup>2</sup>  
Earth connection max. 4 mm<sup>2</sup>

### 8.5 Setting of Switching Point



1. Potential equalization
2. Protective casing for terminals (removable)
3. Connection terminals
4. Cable inlet M16 x 1.5  
For fixed installation only!
5. Switching point adjustment
6. Locking bolt for setting spindle
7. Connection of conductive protection

Fig. 21. Setting of switching point

The switching point can be set within the range given in the datasheet by using a screwdriver on the setting spindle. Additionally, you should remove the terminal board casing (with four M4 hexagon screws). The affixing screw on the front end (above the scale) has to be removed and should be reattached after setting the switching point.

Turning the setting spindle clockwise yields a lower switching point; turning it counter-clockwise yields a higher switching point. The scale should be used as a guide; for more-exact settings, you should use a manometer.

### **8.6 Serial Numbers**

All switch units and their respective terminal board casings are marked with a serial number.

When installing, you should ensure that the terminal board casings do not get mixed up.

#### **Important notice**

When installing the Ex switch units and setting them up for operation, you should comply with the recognized rules and guidelines for installation in Ex-areas.

9. SCH-VNM301-361-S

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**9. SCH-VNM301-361-S**  
Special customized (OEM) model.



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