

## Technical overview pressure switches

Valid for all pressure switch with microswitches of the DCM, VCM, DNM, DNS, DDC series. The technical data of the component tested units deviate in part slightly. (Please refer to type sheet)

### Normal version Plug connection



...200

### Terminal connection

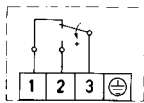
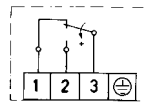


...300

### Ex-version



...700

<b>Switching device</b>	Aluminium diecast GD Al Si 12	Aluminium diecast GD Al Si 12
<b>Pressure connection</b>	G 1/2" external thread (pressure gauge connection) and G 1/4" internal thread. Internal thread G 1/4" at differential pressure switches DDCM.	G 1/2" external thread (pressure gauge connection) and G 1/4" internal thread. Internal thread G 1/4" at differential pressure switches DDCM.
<b>Switching function and connection drawing</b> (applies only for version with microswitch)	Floating change-over contact. With rising pressure switching over single-pole from 3-1 to 3-2 	Floating change-over contact. With rising pressure switching over single-pole from 3-1 to 3-2 
<b>Switching capacity</b> (applies only for version with microswitch)	8 A at 250 VAC 5 A at 250 VAC inductive 8 A at 24 VDC 0.3 A at 250 VDC	3 A at 250 VAC 2 A at 250 VAC inductive 3 A at 24 VDC 0.03 A at 250 VDC
<b>Fitting position</b>	arbitrary, preferably vertical (see data sheet)	vertical
<b>Degree of protection</b> (in vertical position)	IP 54, Terminal connection IP 65	IP 65
<b>Ex degree of protection</b>	–	Ex II 2 G/D EEx de IIC T6 IP65 T80°C
<b>PTB approval</b>	–	PTB 02 ATEX 1121
<b>Electrical connection</b>	200 series: Plug connection 300 series: Terminal connection	Terminal connection
<b>Cable entry plug</b>	Pg 11	
<b>Cable entry terminal connection</b>	M 16 x 1,5	M 16 x 1,5
<b>Ambient temperature</b>	-25 to +70 °C. (with the exception of DA-series -20...+70 °C and DCM 4016, 4025, 1000, VCM 4156)	-15 to +60 °C
<b>Switching point</b>	Adjustable on the spindle. In switching mechanism 300, the terminal box lid must be removed.	Adjustable on the spindle after the terminal box lid is removed.
<b>Switching difference</b>	Adjustable or not adjustable (see type overview)	Not adjustable
<b>Medium temperature</b>	Max. 70 °C, briefly 85 °C Higher medium temperatures are possible if the above limit values at the switching mechanism are ensured by suitable measures (e.g. siphon).	Max. 60 °C

<b>Vacuum</b>	All pressure switches can operate under vacuum, the device is not damaged by this.
<b>Repetition accuracy of the switching points</b>	< 1 % of the working range (for pressure ranges > 1 bar)
<b>Vibration strength</b>	Up to 4 g no noteworthy deviations.
<b>Mechanical life</b>	With sinusoidal pressure application and room temperature, 10 x 10 <sup>6</sup> switching cycles. The expected life time depends strongly upon the type of pressure application, therefore this figure can serve only as rough estimate. With pulsating pressure or pressure impacts in hydraulic systems, pressure surge reduction is recommended.
<b>Isolation values</b>	Overvoltage category III, contamination class 3, reference surge voltage 4000 V. The conformity to DIN VDE 0110 (01.89) will be confirmed.
<b>Oil and grease-free</b>	The parts of all pressure switches in contact with the medium are oil and grease-free (with the exception of series HCD... und DPS...). The sensors are hermetically encapsulated, they contain no seals (see also additional function ZF 1979, special packing).

## Optional function ZF

### Pressure Switches and Pressure Monitors

#### Optional function / connection diagrams

	Plug connection Series 200 (IP 54)	Terminal connection Series 300 (IP 65)	Connection diagrams	Explanation
<b>Normal version (plug connection)</b> microswitch, single pole switching over, switching differential not adjustable.				
<b>Terminal connection housing (Series 300)</b>		...301		
<b>Adjustment of switching difference</b>	...V or ...203			see following pages
<b>Maximum limiter</b> with reclosing lock-out. <b>Interlocking with increasing pressure.</b> see DWR-series	...205			see DWR-series 29
<b>Minimum limiter</b> with reclosing lock-out. <b>Interlocking with falling pressure.</b> see DWR-series	...206			see DWR-series 29
<b>Two microswitches</b> , switching in parallel or in succession. Fixed switching interval. Terminal connection case. <b>Please state circuit diagram.</b> (not possible on every pressure switch)		...307		
<b>Two microswitches, 1 plug</b> switching in succession, adjustable switching interval. <b>Please state circuit diagram.</b> (not possible on every pressure switch)	...217			
<b>Gold-plated contacts</b> Single pole switching over. Cannot be supplied with adjustable switching difference.	...213			Switching capacity: max. 24 VDC, 100 mA min. 5 VDC, 2 mA

#### Switching units / optional functions / Adjustment / Documents

Description	Plug connection Series 200 (IP 54)	Terminal connection Series 300 (IP 65)	Connection diagrams
<b>Plug connector with position indication</b> 12 V–240 VAC/DC			
	ST 218		
<b>Protection type IP 65 and switching housing with surface protection</b> (Chemical version)		...351	

#### Example:

DCM<sub>6</sub>-205

Code of switching unit (e.g. maximum limiter)

Code of pressure range

Sensor system

#### Ordering text:

Pressure switch  
DCM 6 – 205  
or DCM 6 with ZF 205

## Optional function ZF

### Pressure Switches and Pressure Monitors



#### Optional function for EEx-i equipment ZF 5...

- Housing (300) with terminal connection (IP 65), blue cable entry and blue terminals.
- Partially with resistance combination for line breakage and short circuit monitoring (with isolating switching amplifier Ex 041).

#### Important:

All pressure switches with the optional functions listed here can be operated only together with a suitable isolating switch amplifier.

Optional function in EEx-i equipment	Type	Connection diagram	Isolating switching amplifier
<b>Gold-plated contacts</b> , single-pole switch-over. Switching differential permanent (not adjustable). <b>Switching capacity:</b> max. 24 VDC, 100 mA, min. 5 VDC, 2 mA	...513		<b>EX 011</b>
Normally closed contact with resistance combination, for <b>maximum pressure monitoring</b> . Gold-plated contacts. <b>Housing with surface protection.</b> (Chemical version)	...576		<b>EX 041</b>
<b>Normally closed contact</b> with reclosing lock-out and resistance combination, for <b>maximum pressure monitoring</b> . <b>Housing with surface protection.</b> (Chemical version)	...577		<b>EX 041</b>
<b>Normally closed contact</b> with resistant combination for <b>minimum pressure monitoring</b> . Gold-plated contacts. <b>Housing with surface protection.</b> (Chemical version)	...574		<b>EX 041</b>
<b>Normally closed contact</b> with reclosing lock-out and resistance combination, for <b>minimum pressure monitoring</b> . <b>Housing with surface protection.</b> (Chemical version)	...575		<b>EX 041</b>

Additional optional functions	Plug connection Reihe 200	Terminal connection Reihe 300
<b>Adjustment according to customer's instruction:</b> <b>one</b> switching point <b>two</b> switching points or defined switching differential	...1970* ...1972*	...1970* ...1972*
<b>Adjustment and sealing according to customer's instruction:</b> <b>one</b> switching point <b>two</b> switching points or defined switching differential <b>Label of units</b> according to customer's instruction <b>Special packing</b> for oil and grease-free storage	...1971* ...1973* ...1978 ...1979	— — ...1978 ...1979
<b>Documents:</b> additional documents, e. g. data sheets, mounting instructions, TÜV-, DVGW- or PTB-certificate.	<b>DOKU</b>	<b>DOKU</b>
<b>Certificates according to EN 10 204</b> Test report 2.2, type series certificate	<b>WZ 2.2</b>	<b>WZ 2.2</b>
AZ 3.1 B Inspection certificate, specific product test	<b>AZ 3.1 B</b>	<b>AZ 3.1 B</b>
Inspection certificate for separating membranes FV	<b>AZ 3.1 B-V</b>	<b>AZ 3.1 B-V</b>

\* Switching point adjustment: please specify switching point **and** direction of action (rising or falling pressure).

## Type series DCM

### Pressure switches for monitoring and control



DCM 025



DCM 25



DCM 4016

#### for non-aggressive liquid and gaseous media

Range of adjustment	Switching difference (Mean value)	Max. allowable pressure	Materials*	Type
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#### Switching difference not adjustable

1 – 16 mbar	2 mbar	1 bar	NBR	<b>DCM 4016</b>
4 – 25 mbar	2 mbar	1 bar	+ 1.4301	<b>DCM 4025</b>
10 – 100 mbar	12 mbar	10 bar	NBR + Ms	<b>DCM 1000</b>
0.04 – 0.25 bar	0.03 bar	6 bar	Cu + Ms	<b>DCM 025</b>
0.1 – 0.6 bar	0.04 bar	6 bar	Cu + Ms	<b>DCM 06</b>
0.2 – 1.6 bar	0.04 bar	6 bar	Cu + Ms	<b>DCM 1</b>
0.2 – 2.5 bar	0.1 bar	16 bar	Sensor-* housing 1.4104 Pressure bellow 1.4571	<b>DCM 3</b>
0.5 – 6 bar	0.15 bar	16 bar		<b>DCM 6</b>
0.5 – 6 bar	0.25 bar	25 bar		<b>DCM 625</b>
1 – 10 bar	0.3 bar	25 bar		<b>DCM 10</b>
3 – 16 bar	0.5 bar	25 bar		<b>DCM 16</b>
4 – 25 bar	1.0 bar	60 bar		<b>DCM 25</b>
8 – 40 bar	1.3 bar	60 bar		<b>DCM 40</b>
16 – 63 bar	2.0 bar	130 bar		<b>DCM 63</b>

\* Stainless steel 1.4104 ≈ AISI 430 F. High grade stainless steel 1.4571 ≈ AISI 316 Ti.

DCM 1000: NBR membrane + Brass (sensor housing)

Cu + Ms: Copper (bellow) + Brass (sensor housing)

NBR: Buna rubber

#### Switching difference adjustable

0.04 – 0.25 bar	0.03 – 0.4 bar	6 bar	Cu + Ms	<b>DCMV 025</b>
0.1 – 0.6 bar	0.04 – 0.5 bar	6 bar	Cu + Ms	<b>DCMV 06</b>
0.2 – 1.6 bar	0.07 – 0.55 bar	6 bar	Cu + Ms	<b>DCMV 1</b>
0.2 – 2.5 bar	0.15 – 1.5 bar	16 bar	Sensor-housing 1.4104 Pressure bellow 1.4571	<b>DCMV 3</b>
0.5 – 6 bar	0.25 – 2.0 bar	16 bar		<b>DCMV 6</b>
1 – 10 bar	0.5 – 2.8 bar	25 bar		<b>DCMV 10</b>
3 – 16 bar	0.7 – 3.5 bar	25 bar		<b>DCMV 16</b>
4 – 25 bar	1.3 – 6.0 bar	60 bar		<b>DCMV 25</b>
8 – 40 bar	2.6 – 6.6 bar	60 bar		<b>DCMV 40</b>
16 – 63 bar	3.0 – 10 bar	130 bar		<b>DCMV 63</b>

Cu + Ms = Copper (bellow) + Brass (sensor housing)



**-version · Degree of protection II 2 G/D EEx de IIC T6 IP65 T80°C**

Range of adjustment	Switching difference (Mean value)	Max. allowable pressure	Materials*	Type
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#### Switching difference not adjustable

1 – 16 mbar	2 mbar	1 bar	NBR	<b>Ex-DCM 4016</b>
4 – 25 mbar	2 mbar	1 bar	NBR	<b>Ex-DCM 4025</b>

Further pressure ranges in Ex-series see following pages.