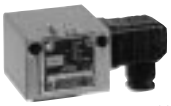
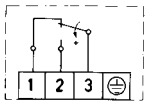
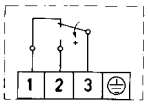
Technical overview pressure switches

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)

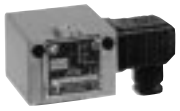
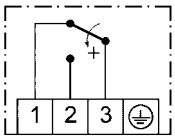
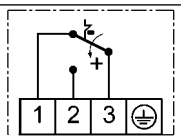
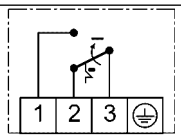
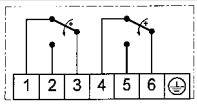
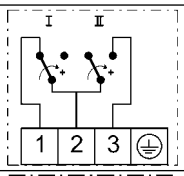
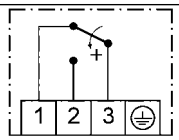
	Normal version **Plug connection**	**Terminal connection**	**Ex -version**
	 …200	 …300	 …700
Switching device	Aluminium diecast GD Al Si 12		Aluminium diecast GD Al Si 12
Pressure connection	G ½″ external thread (pressure gauge connection) and G ¼″ internal thread. Internal thread G ¼ at differential pressure switches DDCM.		G ½″ external thread (pressure gauge connection) and G ¼″ internal thread. Internal thread G ¼″ at differential pressure switches DDCM.
Switching function and connection drawing (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 
Switching capacity (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
Fitting position	arbitrary, preferably vertical (see data sheet)		vertical
Degree of protection (in vertical position)	IP 54, Terminal connection IP 65		IP 65
Ex degree of protection	–		Ex II 2 G/D EEx de IIC T6 IP65 T80°C
PTB approval	–		PTB 02 ATEX 1121
Electrical connection	200 series: Plug connection 300 series: Terminal connection		Terminal connection
Cable entry plug	Pg 11		
Cable entry terminal connection	M 16 x 1,5		M 16 x 1,5
Ambient temperature	-25 to +70 °C. (with the exception of DA-series –20…+70 °C and DCM 4016, 4025, 1000, VCM 4156)		-15 to +60 °C
Switching point	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.
Switching difference	Adjustable or not adjustable (see type overview)		Not adjustable
Medium temperature	Max. 70 °C, briefly 85 °C		Max. 60 °C
	Higher medium temperatures are possible if the above limit values at the switching mechanism are ensured by suitable measures (e. g. siphon).		

Vacuum	All pressure switches can operate under vacuum, the device is not damaged by this.
Repetition accuracy of the switching points	< 1 % of the working range (for pressure ranges > 1 bar)
Vibration strength	Up to 4 g no noteworthy deviations.
Mechanical life	With sinusoidal pressure application and room temperature, 10 x 10^6 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.
Isolation values	Overvoltage category III, contamination class 3, reference surge voltage 4000 V. The conformity to DIN VDE 0110 (01.89) will be confirmed.
Oil and grease-free	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).

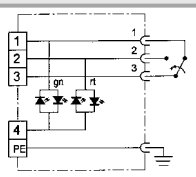
Optional function ZF

Pressure Switches and Pressure Monitors

Optional function / connection diagrams

	Plug connection Series 200 (IP 54)	*Terminal connection Series 300 (IP 65)*	*Connection diagrams*	*Explanation*
Normal version (plug connection) microswitch, single pole switching over, switching differential not adjustable.				
Terminal connection housing (Series 300)		**…301**		
Adjustment of switching difference	**…V or …203**			**see following pages**
Maximum limiter with reclosing lock-out. **Interlocking with increasing pressure.** see DWR-series	**…205**			**see DWR-series 29**
Minimum limiter with reclosing lock-out. **Interlocking with falling pressure.** see DWR-series	**…206**			**see DWR-series 29**
Two microswitches, switching in parallel or in succession. Fixed switching interval. Terminal connection case. **Please state circuit diagram.** (not possible on every pressure switch)		**…307**		
Two microswitches, 1 plug switching in succession, adjustable switching interval. **Please state circuit diagram.** (not possible on every pressure switch)	**…217**			
Gold-plated contacts 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*
			
Plug connector with position indication 12 V–240 VAC / DC	**ST 218**		
Protection type IP 65 and switching **housing with surface protection** (Chemical version)		**…351**	

Example:

DCM 6 – 205

- 205 — Code of switching unit (e. g. maximum limiter)
- 6 — Code of pressure range
- DCM — Sensor system

Ordering text:
Pressure switch
DCM 6 – 205
or DCM 6 with ZF 205

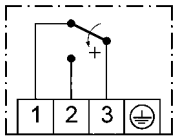
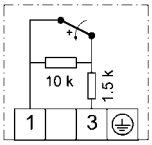
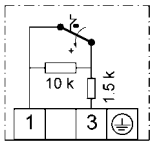
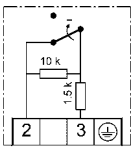
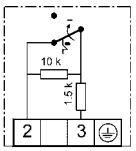
Optional function ZF

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*
Gold-plated contacts, single-pole switch-over. Switching differential permanent (not adjustable). **Switching capacity:** max. 24 VDC, 100 mA, min. 5 VDC, 2 mA	**…513**		**EX 011**
Normally closed contact with resistance combination, for **maximum pressure monitoring.** Gold-plated contacts. **Housing with surface protection.** (Chemical version)	**…576**		**EX 041**
Normally closed contact with reclosing lock-out and resistance combination, for **maximum pressure monitoring.** **Housing with surface protection.** (Chemical version)	**…577**		**EX 041**
Normally closed contact with resistant combination for **minimum pressure monitoring.** Gold-plated contacts. **Housing with surface protection.** (Chemical version)	**…574**		**EX 041**
Normally closed contact with reclosing lock-out and resistance combination, for **minimum pressure monitoring.** **Housing with surface protection.** (Chemical version)	**…575**		**EX 041**

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

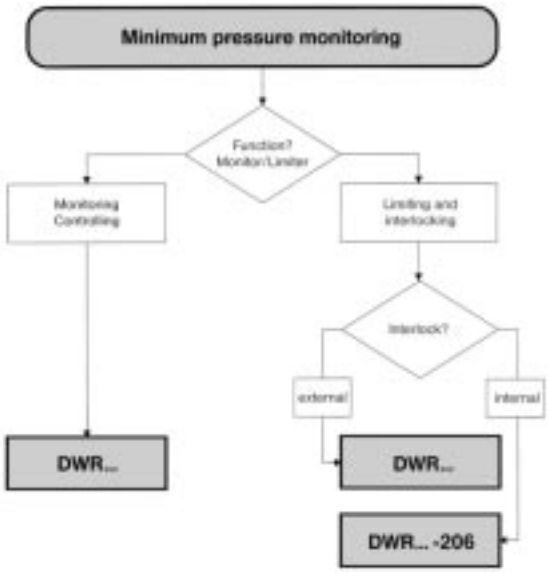
* Switching point adjustment: please specify switching point **and** direction of action (rising or falling pressure).

Info

Selection of the pressure monitors / pressure limiters

for steam and hot water systems according to TRD 604, DIN 4751, P. 2

Selection diagrams



Minimum pressure monitors (DRW series) can also be used as **protection against running dry** for installations up to 350 kW.

Application sample

Equipment of a boiler with pressure monitor and pressure limiter

Pressure monitor for burner control

DWAM… or DWR…
(without adjustable switching differential)
or
DWAMV… or DWR…–203
(with adjustable switching difference for controlling function)

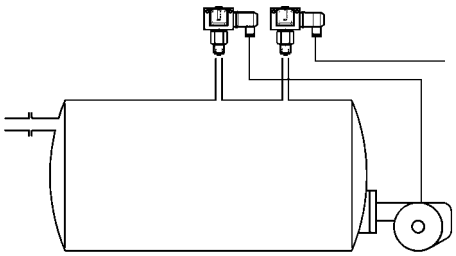
Maximum / minimum pressure limiter for safety monitoring:

SDBAM… or DWR…–205
(with internal interlock, unlocking button on the pressure limiter) or
DWAM… or DWR…
(with external interlock in the control cabinet).

Application sample for external interlock see.

Pressure monitor
DWAM…
or DWR…

Pressure limiter
SDBAM… or
DWR…-205



Type series DA

Maximum pressure monitors and limiters

with selfmonitoring sensor for steam and hot water

Component tested for: **Steam** Systems according to TRD 604
Hot water Systems according to DIN 4751, P.2

TÜV TESTED

Testing basis: VdTÜV-Memorandum "Druck 100/1"

TÜV-Registration No.:
TÜV · DW 04–132 for series DWAM…
TÜV · DW 04–133 for series DWAMV…
TÜV · SDB 04–134 for series SDBAM…
CE-0035BN0005 for DWAM
CE-0035BN0006 for DWAMV
CE-0035BN0007 for SDBAM

Function: Pressure monitor / Pressure limiter

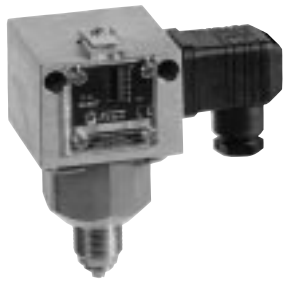
Direction of action: For max. pressure monitoring

Sensor: **"Of special construction" due to selfmonitoring**

Type overview

DWAM 1

Range of adjustment (bar)	*Switching diff. (Mean value) (bar)*	*Max. operating pressure (bar)*	*TÜV-Registration-No.*	*Type*
Pressure monitors without differential adjustment for max. pressure monitoring*				
0.1 – 0.6	0.04	5	TÜV.DW.04–132	**DWAM 06**
0.2 – 1.6	0.05	5	TÜV.DW.04–132	**DWAM 1**
1.2 – 6	0.2	10	TÜV.DW.04–132	**DWAM 6**
1.2 – 6	0.25	20	TÜV.DW.04–132	**DWAM 625**
3 – 16	0.4	20	TÜV.DW.04–132	**DWAM 16**
6 – 32	1.2	45	TÜV.DW.04–132	**DWAM 32**



SDBAM 2.5

Pressure monitors with differential adjustment for max. pressure monitoring				
0.2 – 1.6	0.12 – 0.6	5	TÜV.DW.04–133	**DWAMV 1**
1.2 – 6	0.4 – 1.5	10	TÜV.DW.04–133	**DWAMV 6**
3 – 16	0.8 – 2.5	20	TÜV.DW.04–133	**DWAMV 16**
6 – 32	2.5 – 6.0	45	TÜV.DW.04–133	**DWAMV 32**

Range of adjustment (bar)	*Switching diff. (Mean value) (bar)*	*Max. operating pressure (bar)*	*TÜV-Registr.-No.*	*Type*
Pressure limiters without differential adjustment for max. pressure monitoring*				
0.2 – 1.6	0.12	5	TÜV.SDB.04–134	**SDBAM 1**
0.4 – 2.5	0.15	5	TÜV.SDB.04–134	**SDBAM 2.5**
1.2 – 6	0.4	10	TÜV.SDB.04–134	**SDBAM 6**
1.2 – 6	0.6	20	TÜV.SDB.04–134	**SDBAM 625**
3 – 16	0.8	20	TÜV.SDB.04–134	**SDBAM 16**
6 – 32	3.0	45	TÜV.SDB.04–134	**SDBAM 32**

Special features

- **"Of special construction"** due to selfmonitoring
- **Sealing**
  Generally available for safety pressure limiting devices SDBAM. For pressure monitor switches upon request.
- **Welded sensor**
  completely made of stainless steel
- Available in EEx-i version (see also DBS-series)
- Medium and ambient temperature
  –20 to +70 °C

*The pressure monitors DWAM… can also be used for maximum pressure limitation, by using an external interlock.

For **Minimum Pressure monitoring** see series DWR…
– Minimum Pressure Monitor: DWR… (also available as a Maximum Pressure Monitor).
– Minimum Pressure Limiter: DWR with extension …-206

In case of Minimum Pressure Limitation the sensor bellows are from "self monitoring" construction.