DWR625

DWR

Pressure monitors

Especially suitable as a pressure monitor or pressure limiter for fuel gases (DVGW Worksheet G 260) and liquid fuels (e.g. fuel oil), as well as for steam systems according to TRD 604 and hot water systems to DIN EN12828, systems in accordance to DIN EN12952-11 and DIN EN12953-9. The DWR is used to monitor maximum and minimum pressures. This pressure switch is "of special construction" and has been tested with 2 million operating cycles. TÜV and DVGW tests exists.

SIL 2 according IEC 61508-2

Technical data

Pressure connection
External thread G 1/2 (pressure gauge connection) to DIN 16 288 and internal thread G 1/4 to ISO 228 Part 1 (for gas applications internal thread permissible only up to 4 bar).

Switching device
Rugged housing (200) made of seawater resistant die cast aluminium.

Materials
Pressure bellows: Material no. 1.4571
Sensor housing: Material no. 1.4104
Switch housing: GD Al Si 12 (DIN 1725)

Mounting position
Vertically upright and horizontal.

Ambient temperature at switching device
–25 to +70°C,
Medium temperature –25 to +70°C. The maximum medium temperature at the pressure sensor must not exceed the permitted ambient temperature at the switching device.
Temperatures may reach 85°C for short periods. Higher medium temperatures are possible provided the above limit values for the switching device are ensured by suitable measures (e.g. siphon).

Mounting
Directly on the pressure line (pressure gauge connection) or on a flat surface with two 4 mm Ø screws.

Calibration
The DWR series is calibrated for rising pressure. This means that the adjustable switching pressure on the scale corresponds to the switching point at rising pressure. The reset point is lower by the amount of the switching differential. (See also page 27, 2. Calibration at upper switching point). In version ...-203 the switching differential is adjustable. The basic calibration is maintained.

Bursting pressure
For all types ≥ 100 bar, verified by TÜV test.

Switching differential For values see Product Summary.

Contact arrangement Single pole change over switch.

Switching capacity	250 VAC (ohm)	250 VAC (ind)	250 VDC (ohm)	24 VDC (ohm)
Normal	8 A	5 A	0.3 A	8 A

Protection class IP 54 according to DIN 40 050

Component tested for	**Steam**	Systems according to TRBS
	Hot water	Systems according to DIN EN12828
	Fuel gases	DVGW work sheet G 260
	Pressure tank	DIN EN764-7
Function	Pressure monitor or pressure limiter (with external interlock)	
Direction of action	**For maximum and minimum pressure monitoring (DWFS, SDBFS)**	
Sensor	**"of special construction"** by testing with 2 million cycles.	

Product Summary

Type	Setting range	Switching differential (mean values)	Maximum working pressure	Dimen-sioned drawing
Pressure monitors without differential adjustment				**p. 25 + 26**
DWR06	0.1…0.6 bar	0.04 bar	6 bar	1 + 15
DWR1	0.2…1.6 bar	0.06 bar		
DWR3	0.2…2.5 bar	0.1 bar	16 bar	1 + 18
DWR6	0.5…6 bar	0.2 bar		
DWR625	0.5…6 bar	0.25 bar	25 bar	1 + 17
DWR16	3…16 bar	0.5 bar		
DWR25	4…25 bar	1.0 bar	63 bar	1 + 16
DWR40	8…40 bar	1.3 bar		
Switching differential adjustable				
DWR06–203	0.1…0.6 bar	0.08…0.5 bar	6 bar	1 + 15
DWR1–203	0.2…1.6 bar	0.15…0.6 bar		
DWR3–203	0.2…2.5 bar	0.17…1.2 bar	16 bar	1 + 18
DWR6–203	0.5…6 bar	0.3…1.4 bar		
DWR625–203	0.5…6 bar	0.4…2.5 bar	25 bar	1 + 17
DWR16–203	3…16 bar	0.75…3.15 bar		
DWR25–203	4…25 bar	1.3…6.0 bar	63 bar	1 + 16
DWR40–203	8…40 bar	2.3…6.6 bar		

Ex-DWR
see page 69

DWAM6-576

DBS

Pressure monitors / pressure limiters

In many aspects, safety engineered pressure limiters offer a higher degree of safety compared with normal pressure switches and are therefore especially suitable for chemical process engineering and thermal installations in which safety is an especially critical factor in pressure monitoring. Pressure switches can also be used in Ex- zones (zone 0, 1, 2 and 20, 21, 22) and, in all cases, require an isolating amplifier.
The isolating amplifier is also responsible for monitoring lines for short circuit and line break and therefore offers an additional safety advantage – even in non Ex-zones. For Ex-applications, the isolating amplifier must be installed outside the Ex-zone. The lines between the isolating amplifier and the pressure switch are monitored for short circuit and line break.

SIL 2 according IEC 61508-2

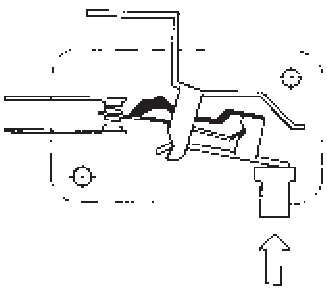
Technical data

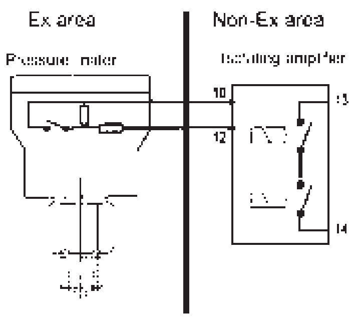
Greater safety
· in process engineering and chemical installations,
· in gas and liquid gas installations

Basic features:
– "Of special construction" according to VdTÜV Memorandum "Pressure 100"
– Line break and short circuit monitoring- between pressure switch and isolating amplifier
– Suitable for Ex-areas (zone 0, 1 & 2 or 20, 21 & 22) (explosion protection Ex-i)
– Protection class IP 65
– Plastic-coated housing (chemical version)

Options:
– Limiter with internal interlock

Type specific features:
– Self-monitoring sensors
– Positive opening microswitches
– Gold plated contacts
– TÜV, DVGW component tests





Safety requirements for pressure limiters

Pressure limiters "of special construction" (DBS) must fulfil additional safety requirements, i.e. breakage or leakage in the mechanical part of the sensor must lead to shutdown to the safe side. The pressure limiter must respond as if the system pressure had already exceeded the maximum limit. The control circuit for the pressure limiter must also be considered from the point of view of safety, as short circuits in the supply lines or other faults in the control current circuit can lead to dangerous conditions.

Switching element with positive opening operation and gold plated contacts

The microswitch is equipped with positive opening operation. Rather than transmitting the plunger force via a spring, which is the usual method with most microswitches, this newly developed microswitch has an additional lever which transmits the movements of the pressure bellows positively to the contact lever. If the spring breaks, the contact lever is moved directly.

Line break and short circuit monitoring in the control circuit

The resistor connected in series with the switching contact limits the current to a defined value with the switch closed. In the event of short circuit in the area between the isolating amplifier and the series resistor, the current rises above the predetermined limit value, the relay of the isolating amplifier drops out, the output current circuit is interrupted and thus the safe condition is achieved. In the event of a line break, the current flow is interrupted, the relay drops to the safe side and interrupts the output current circuit (safety sequence). Furthermore, the isolating amplifier is designed so that, if faults occur in the electronics (conductor interruption, component defect etc.) and in the resulting situations, the safe shutdown condition is assured. These characteristics of the safety engineered isolating amplifier, including line break and short circuit monitoring, satisfy the requirements of DIN/VDE 0660, Part 209.

Connection diagram

For pressure monitoring in Ex-areas, the isolating amplifier must be installed outside the Ex-zone.
The pressure limiter has an intrinsically safe control current circuit (Ex-i). This arrangement is suitable for zones 0, 1 and 2, 20, 21 and 22.