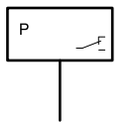
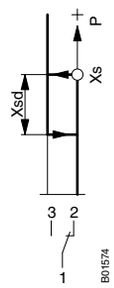
DSA: Pressure switch

DSA14*F002





How energy efficiency is improved

Control and monitoring according to needs and with no auxiliary energy.

Features

- For regulating and monitoring pressure in liquids, gases and vapours
- Especially suitable for applications in compact installations
- Upper switching point can be adjusted
- Fixed switching difference, no hysteresis setting is necessary
- Sealable
- Pressure sensor made of brass for non-aggressive media

Technical data

Power supply		
	Maximum load with gold-plated contacts[1]	400 mA, 24 V, 10 VA
	Minimum load with gold-plated contacts	4 mA, 5 V
	Maximum load with silver-plated contacts	10(4) A, 250 VAC, 50 W, 250 VDC
	Minimum load with silver-plated contacts	100 mA, 24 V
Parameters		
	Pressure connection	G½" A
Ambient conditions		
	Admissible sensor temperature	70 °C
	Ambient temperature	−20...70 °C
Construction		
	Fitting	Pipe and wall mounting
	Housing	Transparent cover
	Housing material	Impact-proof thermoplastic
	Device plug	Standard female connector for Ø 6...10 mm cable
Standards, directives		
	Type of protection[2]	IP65 (EN 60529)
	Protection class	I (IEC 60730)
CE/UKCA conformity[3]	LV-D 2014/35/EU (CE)	EN 60730-1, EN 60730-2-6
	EESR-2016 (UKCA)	EN 60730-1, EN 60730-2-6
	EMC-D 2014/30/EU (CE)	EN 61000-6-1, EN 61000-6-2 EN 61000-6-3, EN 61000-6-4
	EMC-2016 (UKCA)	EN 61000-6-1, EN 61000-6-2 EN 61000-6-3, EN 61000-6-4
	Machinery-D 2006/42/EC (CE)	EN ISO12100: Annex II B of the Reg.
	SMSR-2008 (UKCA)	EN ISO12100: Annex II B of the Reg. (Partly Completed Machinery)
	RoHS-D 2011/65/EU & 2015/863/EU (CE)	EN IEC 63000
	RoHS-2012 (UKCA)	EN IEC 63000

[1] *If the contacts are subjected to a load greater than specified, the gold plating will be destroyed. They are then classed merely as silver contacts and lose the properties of gold-plated contacts.*

[2] *Depending on the fitting position, see the fitting instructions. The devices are not suitable for outdoor applications.*

[3] *Use as a pressure limiter is not permitted. The use of an electrical interlock is not permitted.*

PED 2014/68/EU (CE)	Article 4.3 and Annex A of the Reg.
PESR-2016 (UKCA)	Article 8.3 and Essential Safety Requirements of the Reg.

Overview of types

Type	Setting range	Switching difference	Maximum pressure	Admissible vacuum loading	Weight
DSA140F002	0.5...2.5 bar	0.25 bar	12 bar	-0.7 bar	0.5 kg
DSA143F002	0.5...6 bar	0.3 bar	16 bar	-0.7 bar	0.5 kg
DSA146F002	1...10 bar	0.4 bar	20 bar	-1.0 bar	0.4 kg

DSA: Pressure sensor made of brass for non-aggressive media; X_s = upper switching point

Accessories

Type	Description
0035465000	Throttle screw for absorbing pressure surges, brass
0214120000	Throttle screw for absorbing pressure surges, stainless steel
0259239000	Reduction nipple G½" on 7/16" 20-UNF-2A for copper tubes of Ø 6 mm, brass
0292001000	Setpoint adjuster according to customer's wishes (setting accuracy: ±3% of the setting range, but a minimum of ±0.2 bar)
0292004000	Setpoint adjuster sealed (with accessory 0292001000 only)
0292018001	Damping screw for absorbing pressure surges in low viscosity media
0292150001	Fixing bracket for wall mounting
0296936000	Fixing brackets for rail: top-hat rail EN 60715, 35 × 7.5 mm and 35 × 15 mm
0300360007	Capillary throttle, stainless steel, length 1 m, G½"-G½"
0311572000	Screw fitting for copper tubes of Ø 6 mm, brass
0381141001	Profile sealing ring, copper, for G½"

0296936000: With accessory 0292150001 only

Description of operation

When the pressure exceeds the upper change-over point (adjustable setpoint X_S), the contacts switch from 1-2 to 1-3. When the pressure falls below the upper change-over point by the amount of the fixed switching difference Xsd, the contacts switch from 1-3 to 1-2.

Intended use

This product is only allowed to be used in HVAC building systems for control and regulation purposes. Other uses require the prior consent of the manufacturer.
The section “Description of operation” and all product instructions in this data sheet must be observed.
Modifying or converting the product is not permitted.

Improper use

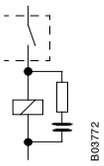
The pressure switch is not suitable for:
- Safety applications
- Transport applications and at altitudes above 2000 metres
- Use outdoors and in areas where there is a risk of condensation

Electrical and mechanical serviceable life

- The electrical switching elements are tested as per ENEC-00144 certificate 6(6) A, 250 VAC, 5E4 electrical switching cycles; the temperature of the pressure switch applies
- Mechanical serviceable life of the pressure bellows according to VdTÜV pressure information sheet 100 > 2 × 10^6 switch strokes
- Typically

cos φ = 1	cos φ = 0.6	cos φ = 0.3[4)]
10 A, 250,000 switchings 5 A, 400,000 switchings 2 A, approx. 10^6 switchings	3 A, 400,000 switchings	3 A, 250,000 switchings 2 A, 400,000 switchings 1 A, 700,000 switchings

Technical appendix



RC circuitry for inductive load
For the optimum RC circuitry, see the information from manufacturers of gates, relays, etc.
If this is not available, the inductive load can be reduced by applying the following rule of thumb:
- Capacity of the RC circuitry (µF) equal to or greater than the operating current (A)
- Resistance of the RC circuitry (Ω) approx. the same as the resistance of the coil (Ω)

Effect on switching difference
The switching difference depends slightly on the setpoint applied. The switching differences specified in the PDS sheet are typical values for the start of the range. The effect of the setpoint on the switching difference increases the switching difference by: ΔX_{sd} = (setpoint X_S – start of the range) × 0.04

Abbreviations used

CE	Manufacturer's Declaration of Conformity for the European Union (EU)
EESR-2016	Electrical Equipment (Safety) Regulations 2016 (UK)
EMC-D	Electromagnetic Compatibility Directive 2014/30/EU
EMC-2016	Electromagnetic Compatibility Regulations 2016 (UK)
LV-D	Low-Voltage Directive 2014/35/EU
Machinery-D	Machinery Directive 2006/42/EC
PED	Pressure Equipment Directive 2014/68/EU
PESR-2016	Pressure Equipment (Safety) Regulations 2016 (UK)
RoHS-D	Restriction of Hazardous Substances in Electrical and Electronic Equipment Directives 2011/65/EU & 2015/863/EU
RoHS-2012	Restriction of Hazardous Substances (RoHS) Regulations 2012 (UK)
SMSR-2008	Supply of Machinery (Safety) Regulations 2008 (UK)
UKCA	Manufacturer’s Declaration of Conformity for the United Kingdom of Great Britain and Northern Ireland (UK)

Materials

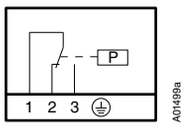
Materials that come into contact with the medium:
Pressure sensor made of brass (DSA): brass, stainless steel, nitrile rubber.
Admissible fluids for pressure switches with a safety function:
- Fluid group I, danger potential categories IV or V as per article 13 of PED 2014/68/EU
- Fluid group II

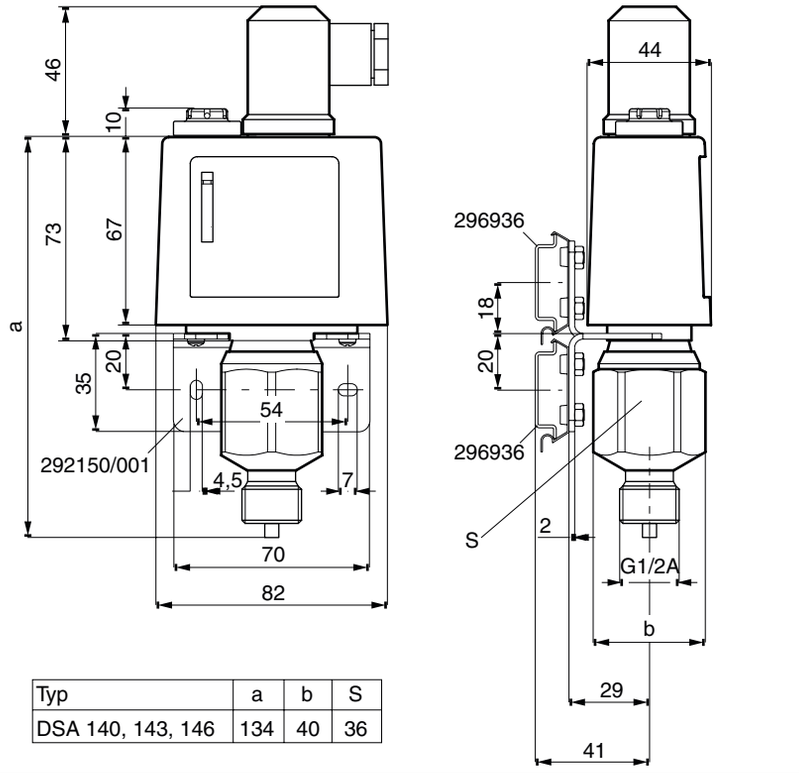
Disposal

When disposing of the product, observe the currently applicable local laws.
More information on materials can be found in the Declaration on materials and the environment for this product.

[4)] *cos φ < 0.3: significant reduction in serviceable life. With RC circuitry, serviceable life as with cos φ > 0.3 (also see technical appendix)*

Connection diagram	Dimension drawing





Typ	a	b	S
DSA 140, 143, 146	134	40	36

Accessories

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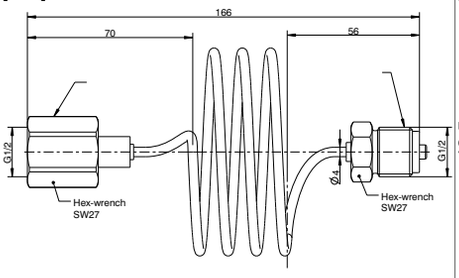
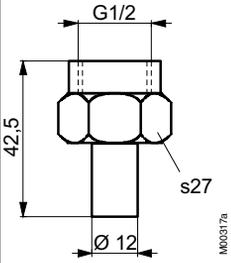
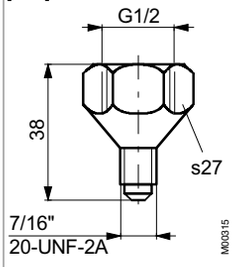
[mm]	[mm]	[mm]







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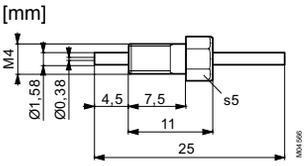

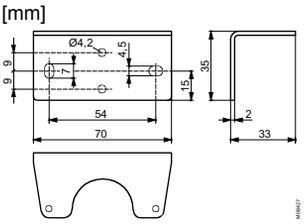

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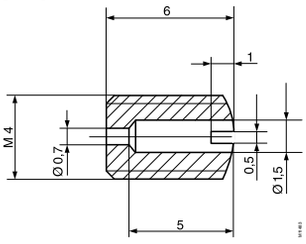

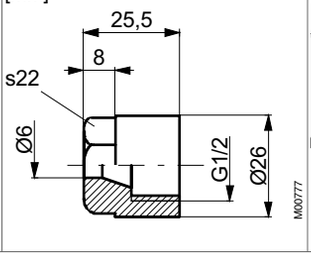

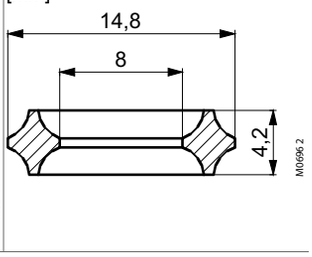

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