20D (ATEX)
Electro-mechanical allfluid pressure switches

- **-1 ... 63 bar (-14 ... 913 psi)**
- **For Ex zones 1 and 2 (gases) category II2G type of protection Ex db eb IIC T6 Gb**
- **For Ex zones 21 and 22 (dusts) category II2D type of protection Ex tc IIIC 80°C Db**
- **Microswitch with gold plated contacts**
- **Robust metal housing in weather-resisting version**

Technical features

Medium:
For neutral, non-inflammable gases and fluids
Operating pressure:
-1 ... 63 bar
Operation:
Softseal piston, stainless steel bellow
Repeatability:
±1% of final value (depending on regulating pressure)
Port size:
G1/2

Sealing:
≤10-7 mbar • l • s^{-1}
Pulsation:
Not permitted
Switching pressure difference:
Optional: fixed or adjustable
Switching element:
Microswitch with gold plated contacts
Mounting position:
Optional
Degree of protection:
IP65

Electrical connection:
Cable gland M20x1,5
Shock-/vibrationproof:
4 g max. (sinusoidal)/5 Hz max
Switching cycles:
20/min. maximum
Ambient/Media temperature:
-10° ... +70°C (+14° ... +158°F)
Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F)

Material:
Housing: Aluminium diecast
Sensor: Brass or stainless steel
Sealing: Stainless steel-bellows

Technical data - fixed switching pressure difference

Symbol	Operating pressure *1) (bar)	Over pressure *2) (bar)	Switching pressure difference (typical) Lower range (bar)	Upper range (bar)	Pressure sensor material	Weight (kg)	Sensor	Model
	-1 ... 0	10	0,20	0,23	1.4404	1,1	B	1840115
	-1 ... 1	10	0,20	0,25	1.4404	1,1	B	1840215
	-1 ... 2,5	10	0,22	0,26	1.4404	1,1	B	1840415
	0,05 ... 1	10	0,16	0,18	1.4404	1,1	B	1841115
	0 ... 1,6	10	0,16	0,20	1.4404	1,1	B	1841215
	0,1 ... 2,5	10	0,18	0,22	1.4404	1,1	B	1841315
	0,5 ... 4	20	0,50	0,55	1.4404	1,1	B	1841415
	0,5 ... 6	20	0,60	0,70	1.4404	1,1	B	1841515
	0,5 ... 10	20	0,70	0,90	1.4404	1,1	B	1841615
	1 ... 16	50	1,00	1,40	1.4404	1,1	F	1841715
	1 ... 25	50	1,30	1,80	1.4404	1,1	F	1841815
	5 ... 63	150	2,00	5,00	1.4404	1,1	H	1841915

Technical data - adjustable switching pressure difference

Symbol	Operating pressure *1) (bar)	Over pressure *2) (bar)	Switching pressure difference (typical) Lower range (bar)	Upper range minimal (bar)	Upper range maximal (bar)	Pressure sensor material	Weight (kg)	Sensor	Model
	-1 ... 0	10	0,19	0,25	0,80	1.4404	1,1	B	1850115
	-1 ... 1	10	0,20	0,30	1,00	1.4404	1,1	B	1850215
	-1 ... 2,5	10	0,20	0,28	2,50	1.4404	1,1	B	1850415
	0,05 ... 1	10	0,16	0,18	0,80	1.4404	1,1	B	1851115
	0 ... 1,6	10	0,10	0,16	1,00	1.4404	1,1	B	1851215
	0,1 ... 2,5	10	0,18	0,22	2,00	1.4404	1,1	B	1851315
	0,5 ... 4	20	0,50	0,60	2,50	1.4404	1,1	B	1851415
	0,5 ... 6	20	0,60	0,70	5,00	1.4404	1,1	B	1851515
	0,5 ... 10	20	0,70	0,90	8,00	1.4404	1,1	B	1851615
	1 ... 16	50	1,60	1,90	12,00	1.4404	1,1	F	1851715
	1 ... 25	50	1,60	2,20	20,00	1.4404	1,1	F	1851815
	5 ... 63	150	2,00	5,00	20,00	1.4404	1,1	H	1851915

*1) Atmospheric air pressure.
*2) Short-term pressure peaks are not allowed to exceed this limit value during operation. Operative utilization of the limit value is not permitted. The limit value corresponds to the maximum testing pressure

Option selector

18 ★ ★★ 15

Switching pressure difference	Substitute
Fixed	**4**
Adjustable	**5**

Switching pressure range (bar)	Substitute
-1 ... 0	**01**
-1 ... 1	**02**
-1 ... 2,5	**04**
0,05 ... 1	**11**
0 ... 1,6	**12**
0,1 ... 2,5	**13***
0,5 ... 4	**14**
0,5 ... 6	**15**
0,5 ... 10	**16**
1 ... 16	**17**
1 ... 25	**18**
5 ... 63	**19**

Accessories

Surge damper	Pressure port – reducing nipple	Brackets
		
Page 4	**Page 4**	**Page 4**
0551894 (stainless steel G1/2)	0553831 (stainless steel G1/2 » 1/2 NPT)	0574772 (steel)
		0553908 (stainless steel)

Cable gland in scope of delivery

Cable gland
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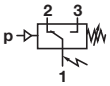
Thread	Cable Ø	Material	Protection class (ATEX)	Model
M 20x1,5	6 ... 14 mm	Nickel plated brass	II2GD Ex e	0589654

Switching function



Connector
DIN EN 175301-803, form A
Microswitch SPDT
Terminals 1 - 3: Contacts close on rising pressure.
Terminals 1 - 2: Contacts open on rising pressure.

Switching capacity
Commutator with gold plated contacts

Load level	Current type	Load type *2)	Max. permissible persistent current Imax [A] at U *1) M20 x 1,5 30 V	250 V	Electrical life-time
Standard *3) (contractors, sole-noids)	a.c.	Ohmic	7	5	≥ 2 x 10^5 Switching cycles
	a.c.	Inductive, cos ϕ ≈ 0,6	3	0,03	
	d.c.	Ohmic	7	0,4	
	d.c.	Inductive, L/R ≈ 3 µs	3	0,03	

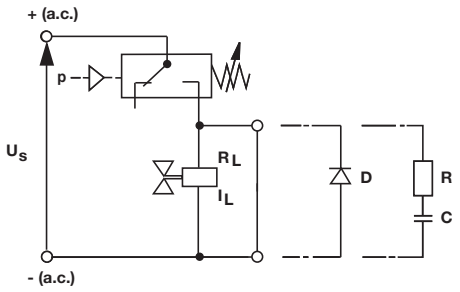
Reference number: 20/min, Reference temperature: +20°C.
Spark quenching with diode with DC and inductive load:
I min = 1 mA; I max = 1,5 x I max of table
Creepage and air paths correspond to insulation group B according to VDE Reg. 0110 (except contact clearance of microswitch).

*1) Higher currents (5 A max) will cause a reduction of the durability of the micro-switch contacts. Futhermore additional measures has to be taken to fulfil the EMV regulation 2004/108/EG by the manufacturer
*2) Spark quenching/overload protection will be necessary using inductive loads.
*3) Gold-plating not required as it would decay.
Max. perm. in-rush current (appr. 30 ms) I AC = max. 15 A

Recommended circuit
Spark quenching and EMV intrinsically safe

1. Diode D in parallel to inductive load.
   Observance of correct polarity (positive pole to cathode).
   Dimensioning specifications for quenching diode:
   Rated voltage at diode: $U_D \geq 1{,}4 \times U_S$
   Rated current at diode: $I_N \geq I_{Load}$
   Selection of a quick switching diode (recovery time trr ≤ 200 ms)

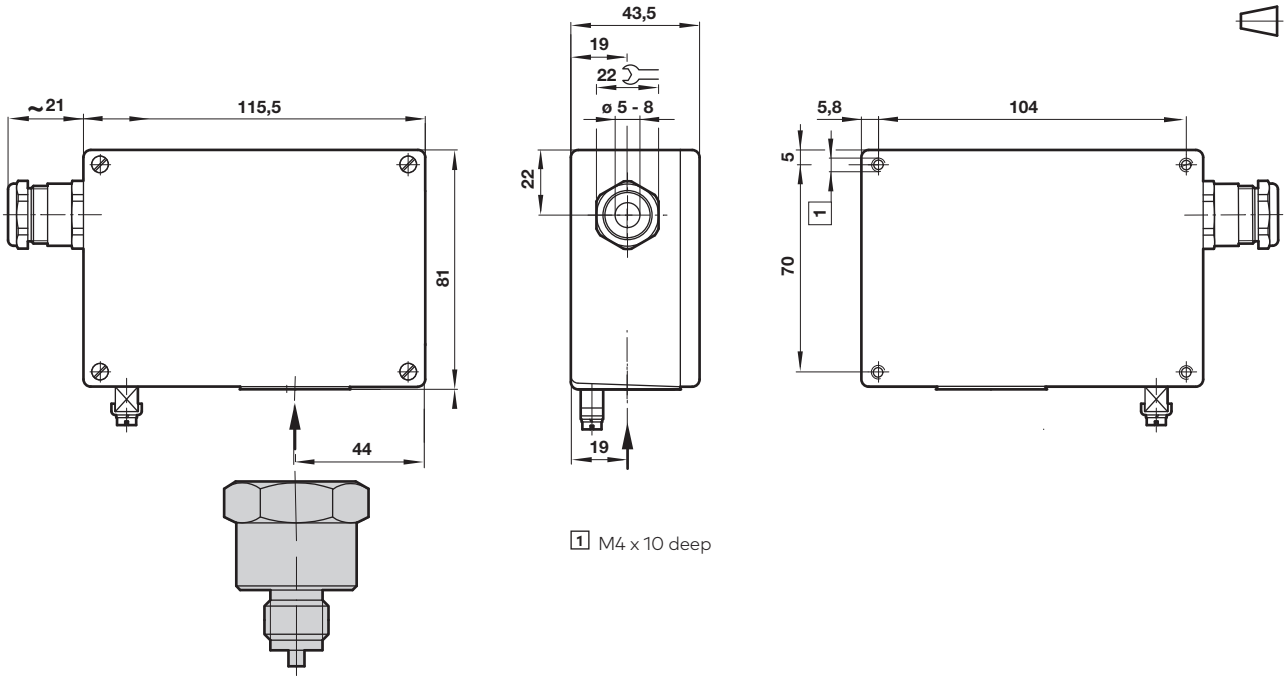
2. RC link in parallel to load in parallel to switching contact.
   Dimensioning principles:
   R_L in Ω ≈ 0,2 x R_{Load} in Ω
   C in [µF] ≈ I_{Load} in [A]



R_L = Load resistance
I_L = Load current

Dimensions

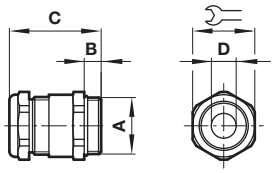
Dimensions in mm
Projection/First angle



1 M4 x 10 deep

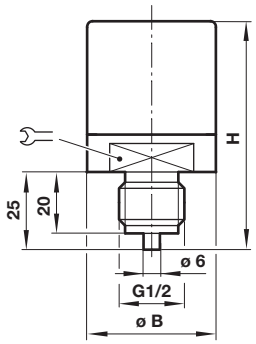
Cable gland

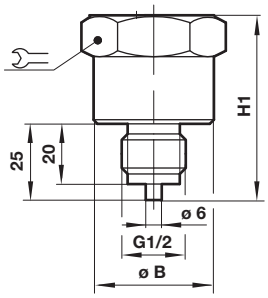
Dimensions in mm
Projection/First angle



A	B	C	ø D		Model
M20 x 1,5	6,5	35,5	6 ... 14	24	0589654

Fluid port

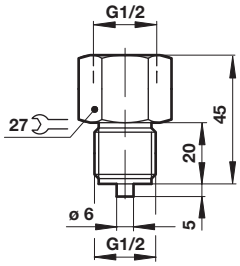




Operating pressure (bar)	øB	H	H1	
-1 ... 0; -1 ... 1; -1 ... 2,5; 0,05 ... 1; 0 ... 1,6; 0,1 ... 2,5	75	42	–	32
0,5 ... 4; 0,5 ... 6; 0,5 ... 10	75	42	–	32
1 ... 16; 1 ... 25	43	–	37	32
5 ... 63	53	–	37	32

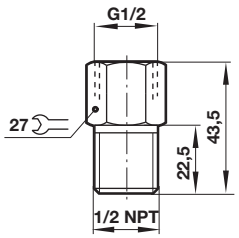
Surge damper

Model: 0551894



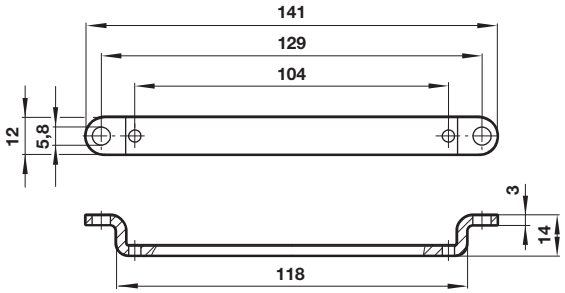
Pressure port reducing nipple

Model: 0553831



Brackets (2 brackets and 4 screws)

Model:
0574772 (steel)
0553908 (stainless steel 1.4301 AISI 304)



Warning

These products are intended for use in industrial compressed air systems only. Do not use these products where pressures and temperatures can exceed those listed under **»Technical features/ data«**.
Before using these products with fluids other than those specified, for non-industrial applications, life-support systems or other applications not within published specifications, consult Norgren.
Through misuse, age, or malfunction, components used in fluid power systems can fail in various modes.

The system designer is warned to consider the failure modes of all component parts used in fluid power systems and to provide adequate safeguards to prevent personal injury or damage to equipment in the event of such failure.
System designers must provide a warning to end users in the system instructional manual if protection against a failure mode cannot be adequately provided.
System designers and end users are cautioned to review specific warnings found in instruction sheets packed and shipped with these products.