

20D

Electro-mechanical allfluid pressure switches

- -1 ... 100 bar
Port size: G1/2
- Microswitch with gold plated contacts
- Intrinsically safe operation
- Electrical connection:
connector acc. to DIN EN 175301-803 (form A) or cable gland



Technical features

Medium:
For neutral, aggressive, non-flammable gases and fluids

Operating pressure:
-1 ... 100 bar (-14 ... ??? psi)

Repeatability:
±1% of final value
(depending on regulating pressure)

Port size:
G1/2

Media viscosity:
Up to 1000 mm²/s

Sealing:
≤10⁻⁷ mbar · l · s⁻¹

Pulsations:
Not permitted

Switching pressure difference/hysteresis:
Fixed or adjustable

Switching cycles:
20/min maximum
Life cycle of mechanical parts:
107 switching cycles

Switching element:
Microswitch with gold plated contacts

Shock-/vibrations (to avoid if possible):
4 g max. (sinusoidal) / 5 Hz max.

Mounting position:
Optional

Degree of protection:
IP65 for DIN EN 175301-803 (DIN 43650) form A connection
IP66 with cable gland

Electrical connection:
DIN EN 175301-803 (DIN 43650) form A or cable gland

Weight:
See table below

Ambient/Media temperature:
Ambient:
-25 ... +80°C (-13 ... +176°F)
Media:
-10 ... +100°C (14 ... +212°F)
Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F)

Materials:
Housing: aluminium diecast
Sensor: stainless steel
Sealing: stainless steel-bellows

Technical data

Standard models — 181xxxx (fixed switching pressure difference)

Electrical connection: cable gland M20 x 1,5

Symbol	Pressure range *1)		Over pressure *2)		Switching pressure difference				Weight		Model
	(bar)	(psi)	(bar)	(psi)	Lower range minimum (bar)	(psi)	Upper range maximum (bar)	(psi)	(kg)	(lbs)	
	-1 ... 0	-14 ... 0	10	145	0,06	0,87	0,07	1,01	0,8	1,7	1810115
	-1 ... 1	-14 ... 14,5	10	145	0,08	1,16	0,9	13,0	0,8	1,7	1810215
	-1 ... 2,5	-14 ... 36,2	10	145	0,9	13,0	0,12	1,74	1,1	2,4	1810415
	0,05 ... 1	0,72 ... 14,5	10	145	0,07	1,01	0,08	1,16	0,8	1,7	1811115
	0,5 ... 4	7,2 ... 58	20	290	0,3	4,35	0,33	4,78	0,8	1,7	1811415
	0,5 ... 6	7,2 ... 87	20	290	0,3	4,35	0,35	5,07	0,8	1,7	1811515
	0,5 ... 10	7,2 ... 145	20	290	0,3	4,35	0,4	5,80	0,8	1,7	1811615
	1 ... 16	14,5 ... 232	50	725	0,7	10,1	0,8	11,6	0,8	1,7	1811715
	1 ... 25	14,5 ... 362	50	725	0,9	13,0	0,9	13,0	0,8	1,7	1811815
	5 ... 63	72 ... 913	85	1232	1,0	14,5	2,0	29,0	1,1	2,4	1811915

Connector is not in scope of delivery; special pressure ranges on request

*1) Setpoints should be ideally in the middle of the switching pressure range. Reference pressure = atmospheric pressure. Switching pressure must not exceed the indicated values.

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

Standard models — 180xxxx (adjustable switching pressure difference)

Electrical connection: cable gland M20 x 1,5

Symbol	Pressure range *1)		Over pressure *2)		Switching pressure difference						Weight		Model
	(bar)	(psi)	(bar)	(psi)	Lower range		Upper range minimum		maximum		(kg)	(lbs)	
	-1 ... 0	-14 ... 0	10	145	0,12	1,74	0,13	1,88	0,7	10,1	1,1	2,4	1800115
	-1 ... 1	-14 ... 14,5	10	145	0,13	1,88	0,14	2,03	1,0	14,5	1,1	2,4	1800215
	-1 ... 2,5	-14 ... 36,2	10	145	0,17	2,46	0,2	2,9	2,5	36,2	1,1	2,4	1800415
	0,05 ... 1	0,72 ... 14,5	10	145	0,08	1,16	0,11	1,59	0,7	10,1	1,1	2,4	1801115
	0,1 ... 2,5	1,45 ... 36,2	10	145	0,11	1,59	0,15	2,17	2,0	29,0	1,1	2,4	1801315
	0,5 ... 4	7,2 ... 58	20	290	0,3	4,35	0,4	5,8	2,5	36,2	1,1	2,4	1801415
	0,5 ... 6	7,2 ... 87	20	290	0,35	5,07	0,5	7,25	5,0	72,5	1,1	2,4	1801515
	0,5 ... 10	7,2 ... 145	20	290	0,4	5,8	0,8	11,6	8,0	116	0,8	1,7	1801615
	1 ... 16	14,5 ... 232	50	725	0,8	11,6	1,1	15,9	12,0	174	0,8	1,7	1801715
	1 ... 25	14,5 ... 362	50	725	1,0	14,5	1,5	21,7	20,0	290	1,1	2,4	1801815
	5 ... 63	72,5 ... 913	85	1232	3,5	50,7	4,5	65,2	20,0	290	1,1	2,4	1801915
	5 ... 100	72,5 ... 1450	150	2175	4,0	58,0	9,0	130,5	55,0	797	1,1	2,4	1801015

Connector is not in scope of delivery; special pressure ranges on request

*1) Setpoints should be ideally in the middle of the switching pressure range. Reference pressure = atmospheric pressure. Switching pressure must not exceed the indicated values.

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

Option selector

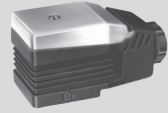
Switching pressure difference Adjustable 0 Fixed 1		Pressure range (bar) -1 ... 0 01 -1 ... 1 02 -1 ... 2,5 04 0,05 ... 1 11 0,1 ... 2,5 13 0,5 ... 4 14 0,5 ... 6 15 0,5 ... 10 16 1 ... 16 17 1 ... 25 18 5 ... 63 19 5 ... 100 10*	Electrical connection Interface for DIN EN 175301-803 form A connector *1) 10 Cable gland 15	
			18★★★★★	

*1) Connector is not in scope of delivery

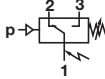
*only for adjustable switching pressure difference

Accessories

Surge damper  Page 4 0553258 (stainless steel G1/4) 0574773 (brass/steel G1/4)	Pressure port – reducing nipple  Page 4 0550083 (G1/4 » G1/2) 0574765 (G1/4 » 1/4 NPT)	Brackets  Page 4 0574772 (steel) 0553908 (stainless steel)
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Connector DIN EN 175301-803  0570110 (Form A)	Connector with LED  Page 4 0585418
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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.
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Switching capacity

Commutator with gold plated contacts

Load level	Current type	Load type *2)	U min [V]	Max. permissible persistent current I _{max} [A] at U *1) M20 x 1,5 DIN EN 175301-803, form A					Electrical life-time
				30 V	48 V	60 V	125 V	250 V	
Standard *3) (contractors, solenoids)	a.c.	Ohmic	12	0,1	0,1	0,1	0,1	0,1	≥ 2 x 10 ⁵ Switching cycles
	a.c.	Inductive, cos φ = 0,7	12	3	3	3	3	3	
	d.c.	Ohmic	12	5	1,2	0,8	0,4	-	
	d.c.	Inductive, L/R ≈ 10 ms	12	3	0,5	0,35	0,05		
Minor *4) (electronic circuits)	a.c.	Ohmic	5 *5)	0,1					
	d.c.	Inductive, L/R ≈ 10 ms	5 *5)	0,1	0,01				

Reference number: 20/min, Reference temperature: +20°C.

Spark quenching with diode with DC and inductive load:

$I_{\min} = 1 \text{ mA}$; $I_{\max} = 1,5 \times I_{\max} \text{ of table}$

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. Furthermore 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

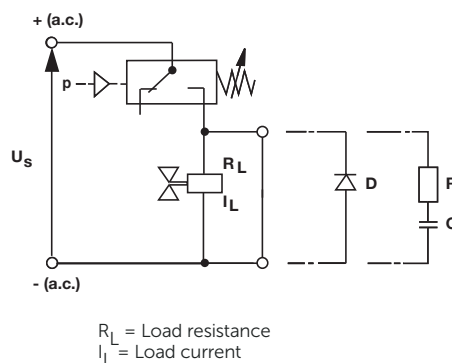
*4) Gold-plating required (will not decay).

*5) Lower value of critical voltage guarantees sufficient contact safety.
Lower voltages permissible under favourable conditions.

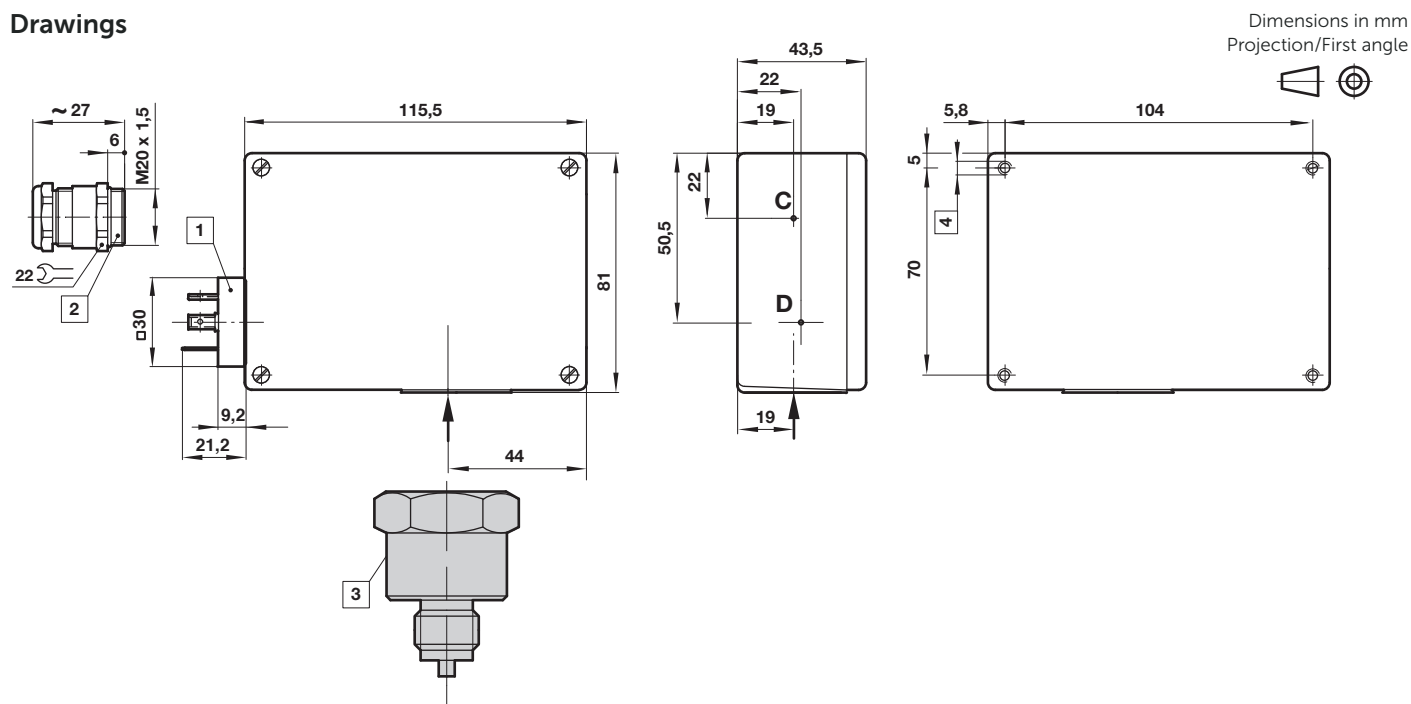
Recommended circuit

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 $t_{rr} \leq 200 \text{ ns}$)
2. RC link in parallel to load in parallel to switching contact.
 - Dimensioning principles:
 - $R_L \text{ in } \Omega \approx 0,2 \times R_{Load} \text{ in } \Omega$
 - $C \text{ in } [\mu F] \approx I_{Load} \text{ in } [A]$



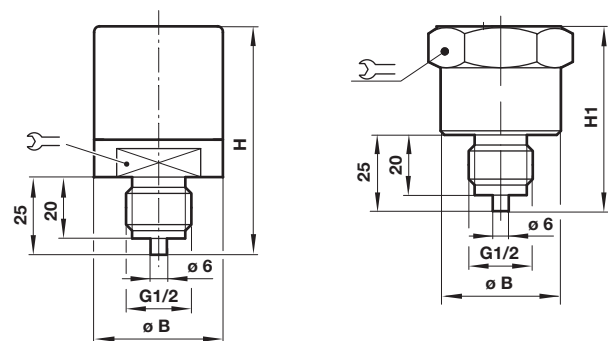
Drawings



- 1 Electric standard interface, DIN EN 175301-803
Connector is not in scope of delivery
- 2 Alternative pressure switch range with cable gland
- 3 Fluid port
- 4 M4 x 10 deep

Fluid port

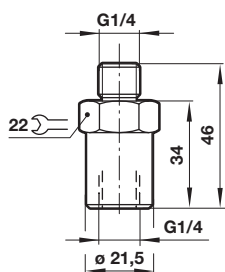
Dimensions in mm
Projection/First angle



Operating pressure (bar)	øB	H	H1	
-1 ... 0/-1 ... 1/-1 ... 2,5/0,05 ... 1/0,1 ... 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
5 ... 100	62	—	37	32

Surge damper

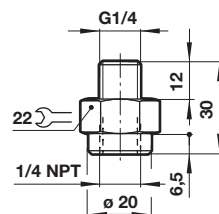
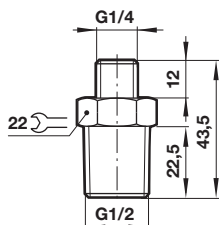
Model: 0574773 (brass)
0553258 (stainless steel
1.4301 AISI 304)



Pressure port/reducing nipple

Model: 0550083
(stainless steel 1.4305
AISI 303/304 S)

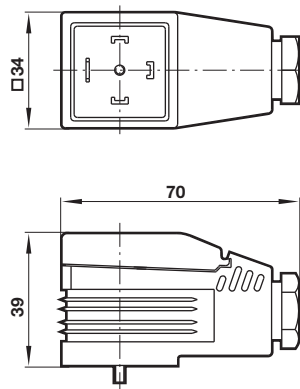
Model: 0574765
(brass)



Connectors (black) with light indicator 3-pin + protective conductor

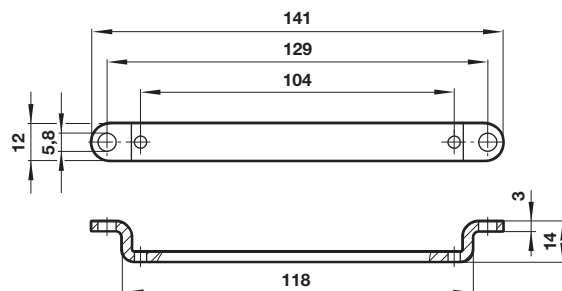
Connection acc. to
DIN EN 175301-803 (form A)
Voltage: 12 ... 28 V d.c./a.c.

Model: 0585418



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.