# 18D according to ATEX

**Pneumatic pressure switch**
**-1 ... 30 bar**

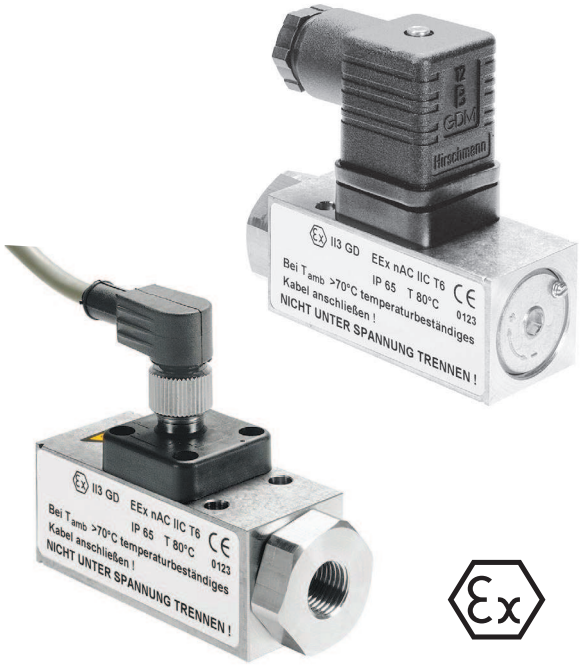
**Hydraulic pressure switch**
**5 ... 420 bar**

**For EX-applications according to ATEX 100 a:**
**Zone 2 category ATEX 3G (gases)**
**Zone 22 category ATEX 3D (dust)**

**TÜV (technical inspection agency) approval:**
**EX 8 03 01 11122 007**

**Microswitch with gold plated contacts**

**Vibration resistant to 15 g**




## Technical data

Medium:
Pneumatic: for neutral, gaseous, and liquid fluids
Hydraulic: for neutral, self-lubricating fluids
e.g. hydraulic oil, lubricating oil, light fuel oil

Fluid port:
G1/4, flange

Operating pressure ranges:
Pneumatic: -1 ... 30 bar
Hydraulic: 5 ... 420 bar

Permission:
TÜV EC cert. no. E 8 03 01 11122 007
Zone 2: E II 3 G EEx NA / C IIC T6
Zone 22: E II 3 D IP 65 T 80°C

Temperature:

| Fluid | Ambient |
|---|---|
| 0 ... + 80°C (FKM) | 0 ... +80°C |

Operating viscosity:
To 1000 mm²/s

Repeatability:
±3%, with vacuum ±4% from the final value of range (referring to pressure regulation)

Degree of protection:
IP65 for DIN 43650, IP67 for M12 x 1

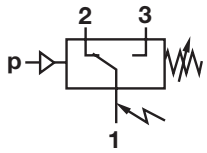
Mounting:
Optional

Electrical connection:
According to DIN EN 175301-803, (DIN 43650) or according to IEC 947-5-2 (M12 x 1)

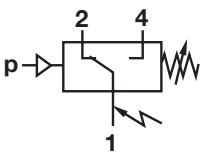
## Material:

Housing: AL/steel with hydraulic AL with pneumatic
Sealing: PTFE / NBR / AL / steel with hydraulic
FKM / AL with pneumatic

**Ordering information**
See page 2 and 3




Switching function:
Microswitch SPDT
Terminals 1 - 2:
Contacts open on rising pressure




Switching function:
M12 x 1:
Microswitch SPDT
Terminals 1 - 4:
Contacts close on rising pressure
Terminals 1 - 2:
Contacts open on rising pressure

## Pneumatic pressure switch

### Characteristics / electrical connection DIN EN 175301-803 (DIN 43650)

The ex-permission refers to the pressure switch in combination with the supplied device plug-in facility

| Model | Pressure range [1] | Pressure difference | | Max. over-pressure [2] | Switching (Cycles per min) | Pressure sensor Material | | Connection | Weight | Drawing no. |
|---|---|---|---|---|---|---|---|---|---|---|
| | (bar) | lower range (bar) | upper range (bar) | (bar) | z (1/min) | Housing | Seal | Size | (kg) | |
| 0880180 | -1 ... 0 | 0,15 | 0,18 | 80 | 100 | AL | FKM/MS | G1/4 | 0,2 | 02 |
| 0880280 | 0,2 ... 2 | 0,15 | 0,27 | 80 | 100 | AL | FKM/MS | G1/4 | 0,2 | 02 |
| 0880380 | 0,5 ... 8 | 0,25 | 0,65 | 80 | 100 | AL | FKM/MS | G1/4 | 0,2 | 01 |
| 0880480 | 1 ... 16 | 0,3 | 0,9 | 80 | 100 | AL | FKM/MS | G1/4 | 0,2 | 01 |
| 0880680 | 1 ... 30 | 1 | 5 | 80 | 100 | AL | FKM/MS | G1/4 | 0,2 | 01 |
| 0881180 | -1 ... 0 | 0,15 | 0,18 | 80 | 100 | AL | FKM/MS | flange | 0,2 | 03 |
| 0881280 | 0,2 ... 2 | 0,15 | 0,27 | 80 | 100 | AL | FKM/MS | flange | 0,2 | 03 |
| 0881380 | 0,5 ... 8 | 0,25 | 0,65 | 80 | 100 | AL | FKM/MS | flange | 0,2 | 03 |
| 0881480 | 1 ... 16 | 0,3 | 0,9 | 80 | 100 | AL | FKM/MS | flange | 0,2 | 03 |
| 0881680 | 1 ... 30 | 1 | 5 | 80 | 100 | AL | FKM/MS | flange | 0,2 | 03 |

### Characteristics / electrical connection M12x1
### Permitted voltage: 30 V maximal

Wire sockets see page 4! wire socket is not included in the supply scope. Please order separately. it is only allowed to utilize the wire sockets listed in the data sheet, otherwise the device will loose its EX-permission.

| Model | Pressure range [1] | Pressure difference | | Max. over-pressure [2] | Switching (Cycles per min) | Pressure sensor Material | | Connection | Weight | Drawing no. |
|---|---|---|---|---|---|---|---|---|---|---|
| | (bar) | lower range (bar) | upper range (bar) | (bar) | z (1/min) | Housing | Seal | Size | (kg) | |
| 0880181 | -1 ... 0 | 0,15 | 0,18 | 80 | 100 | AL | FKM/MS | G1/4 | 0,2 | 02 |
| 0880281 | 0,2 ... 2 | 0,15 | 0,27 | 80 | 100 | AL | FKM/MS | G1/4 | 0,2 | 02 |
| 0880381 | 0,5 ... 8 | 0,25 | 0,65 | 80 | 100 | AL | FKM/MS | G1/4 | 0,2 | 01 |
| 0880481 | 1 ... 16 | 0,3 | 0,9 | 80 | 100 | AL | FKM/MS | G1/4 | 0,2 | 01 |
| 0880681 | 1 ... 30 | 1 | 5 | 80 | 100 | AL | FKM/MS | G1/4 | 0,2 | 01 |
| 0881181 | -1 ... 0 | 0,15 | 0,18 | 80 | 100 | AL | FKM/MS | flange | 0,2 | 03 |
| 0881281 | 0,2 ... 2 | 0,15 | 0,27 | 80 | 100 | AL | FKM/MS | flange | 0,2 | 03 |
| 0881381 | 0,5 ... 8 | 0,25 | 0,65 | 80 | 100 | AL | FKM/MS | flange | 0,2 | 03 |
| 0881481 | 1 ... 16 | 0,3 | 0,9 | 80 | 100 | AL | FKM/MS | flange | 0,2 | 03 |
| 0881681 | 1 ... 30 | 1 | 5 | 80 | 100 | AL | FKM/MS | flange | 0,2 | 03 |

[1] Reference pressure is the atmospherical air pressure

[2] Switching points should ideally be in the middle of the switching pressure range.
Limit value = Testing pressure is not to utilize under normal operating conditions. Exceeding of the switching pressure according to the subsequent table is not allowed.
AL = Aluminium
FKM = Viton

## Options selector for pneumatic pressure switch

088★★8★

| Variants | Substitute |
|---|---|
| Thread | 0 |
| Flange | 1 |

| Electrical Connection | Substitute |
|---|---|
| DIN EN 175301-803 (DIN 43650, form A) | 0 |
| M 12 x 1 | 1 |

| Switching pressure range | Substitute |
|---|---|
| -1 ... 0 | 1 |
| 0,2 ... 2 | 2 |
| 0,5 ... 8 | 3 |
| 1 ... 16 | 4 |
| 1 ... 30 | 6 |

## Ordering information

Pressure switch with connection G 1/4,
Electrical connection DIN EN 175301-803, (DIN 43650)
Switching pressure range -1 to 0 bar

Quote: **0880180**

## Hydraulic pressure switch

## Characteristics / electrical connections DIN EN 175301-803 (DIN 43650)

The EX-permission refers to the pressure switch in combination with the supplied plug facility.

| Model | Pressure range [1] | Pressure difference | | Max. over-pressure [2] | Switching (Cycles per min) | Pressure sensor Material | | Connection | Weight | Drawing no. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | lower range | upper range | | | | | | | |
| | (bar) | (bar) | (bar) | (bar) | z (1/min) | Housing | Seal | Size | (kg) | |
| 0882180 | 5 ... 70 | 10,5 | 15 | 400 | 100 | AL/Steel | PTFE/NBR | G1/4 | 0,2 | 02 |
| 0882280 | 10 ... 160 | 11 | 17 | 400 | 100 | AL/Steel | PTFE/NBR | G1/4 | 0,2 | 02 |
| 0882380 | 25 ... 250 | 13 | 21 | 400 | 100 | AL/Steel | PTFE/NBR | G1/4 | 0,2 | 02 |
| 0882480 | 40 ... 420 | 17 | 38 | 600 | 100 | AL/Steel | PTFE/NBR | G1/4 | 0,2 | 02 |
| 0883180 | 5 ... 70 | 10,5 | 15 | 400 | 100 | AL/Steel | PTFE/NBR | Flange | 0,2 | 03 |
| 0883280 | 10 ... 160 | 11 | 17 | 400 | 100 | AL/Steel | PTFE/NBR | Flange | 0,2 | 03 |
| 0883380 | 25 ... 250 | 13 | 21 | 400 | 100 | AL/Steel | PTFE/NBR | Flange | 0,2 | 03 |
| 0883480 | 40 ... 420 | 17 | 38 | 600 | 100 | AL/Steel | PTFE/NBR | Flange | 0,2 | 03 |

## Characteristics / Electrical connection M12x1

## Permitted voltage: 30 V maximum

Wire sockets see page 4! Wire socket is not included in the supply scope. Please order separately. It is only allowed to utilize the wire sockets listed in the data sheet, otherwise the device will loose its EX-permission.

| Model | Pressure range [1] | Pressure difference | | Max. over-pressure [2] | Switching (Cycles per min) | Pressure sensor Material | | Connection | Weight | Drawing no. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | lower range | upper range | | | | | | | |
| | (bar) | (bar) | (bar) | (bar) | z (1/min) | Housing | Seal | Size | (kg) | |
| 0882281 | 10 ... 160 | 11 | 17 | 400 | 100 | AL/Steel | PTFE/NBR | G1/4 | 0,2 | 02 |
| 0882381 | 25 ... 250 | 13 | 21 | 400 | 100 | AL/Steel | PTFE/NBR | G1/4 | 0,2 | 02 |
| 0882481 | 40 ... 420 | 17 | 38 | 600 | 100 | AL/Steel | PTFE/NBR | G1/4 | 0,2 | 02 |
| 0883181 | 5 ... 70 | 10,5 | 15 | 400 | 100 | AL/Steel | PTFE/NBR | Flange | 0,2 | 03 |
| 0883281 | 10 ... 160 | 11 | 17 | 400 | 100 | AL/Steel | PTFE/NBR | Flange | 0,2 | 03 |
| 0883381 | 25 ... 250 | 13 | 21 | 400 | 100 | AL/Steel | PTFE/NBR | Flange | 0,2 | 03 |
| 0883481 | 40 ... 420 | 17 | 38 | 600 | 100 | AL/Steel | PTFE/NBR | Falnge | 0,2 | 03 |

[1] Reference pressure is the atmospherical air pressure

[2] Switching points should ideally be in the middle of the switching pressure range.
Limit value = Testing pressure is not to utilize under normal operating conditions. Exceeding of the switching pressure according to the subsequent table is not allowed.

AL = Aluminium
FKM = Viton

## Options Selctor for hydraulic pressure switch

088★★8★

| Variants | Substitute |
|---|---|
| Thread | 2 |
| Flange | 3 |

| Electrical connection | Substitute |
|---|---|
| DIN EN 175301-803 (DIN 43650, form A) | 0 |
| M 12 x 1 | 1 |

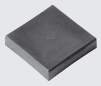
| Switching pressure range | Substitue |
|---|---|
| 5 ... 70 | 1 |
| 10 ... 160 | 2 |
| 25 ... 250 | 3 |
| 40 ... 420 | 4 |

## Ordering information

Pressure switch with port G 1/4,
electrical connection DIN EN 175301-803,
(DIN 43650)
Switching pressure range 5 to 70 bar

Quote: **0882180**

## Accessories

| Pressure port Reducing nipple | Snubber | Cover (via adjustment screw) | Connector M 12 x 1 | | | |
|---|---|---|---|---|---|---|
|  |  |  |  | |  | |
| See page 5 | See page 5 | See page 5 | | | | |
| 0574767 | 0574773 | 0554737 | 0523058 | (90° with 2 m cable, 4-wired) | 0523056 | (90° without cable) |
| | | | 0523053 | (90° with 5 m cable, 4-wired) | | |

## Making and/or breaking capacity
## Change-over switch with gold-plated contacts

| Load level | Current type | Load type | Umin [V] | Max. permanent currend Imax [A] bei U [V] 30 M 12x1 | 48 | 60 | 125 | 250 | Contact life [5] |
|---|---|---|---|---|---|---|---|---|---|
| Standard [3] | AC | resistive | 12 | 5 | 5 | 5 | 5 | 5 | $\geqslant 10^7$ hysteresis |
| (f. ex. contacts, | AC | inductive | | | | | | | |
| solenoids) | | cos φ ≈ 0,7 | 12 | 3 | 3 | 3 | 3 | 3 | |
| | DC | ohmic | 12 | 5 | 1,2 | 0,8 | 0,4 | – | |
| | DC | inductive L/R ≈ 10 ms | 12 | 3 | 0,5 | 0,35 | 0,05 | – | |
| Low [4] | AC | ohmic | 5 [5] | 0,34 | 0,2 | 0,17 | 0,08 | 0,04 | $\geqslant 10^7$ hysteresis |
| (f. ex. electronic | DC | induktive. | | | | | | | |
| switching circuit) | | L/R ≈ 10 ms | 5 [5] | 0,1 | 0,01 | – | – | – | |

Reference number of switchings: 30/min, reference temperature: +30°C
Spark quenching with diode with DC and inductive load:
$I_{max}$ = 1.5 x $I_{max}$ of table
$I_{min}$ = 1 [mA]
Creepage and air paths correspond to insulation group B according to VDE Reg. 0110 (except contact clearance of microswitch).

[3] Gold-plating not required as it would decay. Max. perm. in-rush current (appr. 30 ms) $AC_{make}$ = max. 15A

[4] Gold-plating required (will not decay)

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

## Proposal for spark extinction with direct voltage

1. Diode D parallel to the inductive load.
Observe correct polarity with connection (positive pol at cathode).

Dimensioning specificatons for erasing diode:
Nominal voltage of the diode $U_b \geqslant 1{,}4 \times U_s$.
Nominal current of the diode $I_N \geqslant I_{load}$.

Select fast switching diodes (blocking recovery time trr ⩽ 200 [ms]).

2. RC element parallel to the load (or parallel to the switching contact).
Suitable for direct voltage and alternating voltage.

Ratings:
R in [Ω] ≈ 0,2 x $R_{load}$ in [Ω]
C in [µF] ≈ $R_{load}$ in [A]

Making and/or breaking capacity
Change-over switch with gold-plated contacts

