

# FLUIDTRONIK® Pressure Switch



Electronic pressure switch  
with up to 4 switching points  
for neutral gaseous and liquid fluids

Switching pressure ranges: 0 ... 10 bar  
0 ... 400 bar



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## Description

The FLUIDTRONIK® pressure switch is an electronic pressure monitoring and control device for universal use, e.g. in pneumatics and hydraulics. It mainly consists of a pressure connection with built-in pressure sensor, integrated evaluation electronics and electrical connection as per DIN 43651. There are 2 basic versions:

### Version with 4 switching points (4-channel)

4 switching points and the respective switching pressure difference (hysteresis) can be separately set internally via potentiometers.

### Version with 1 switching point (1-channel)

1 switching point and the switching pressure difference (hysteresis) can be separately set:  
– Internally via potentiometers or  
– Externally via current signals 4 ... 20 mA.  
In addition, a pressure-proportional measuring output 4 ... 20 mA is available (as feedback device for pressure control or pressure remote display).

A plug-on display module AM 10 is available as an accessory, and can be universally used for all pressure switch versions and switching pressure ranges. Measured and setting values can be interrogated and displayed via an LCD display. This facilitates especially user-friendly exact switching point setting. After setting, the display module can be removed or remain on the FLUIDTRONIK® pressure switch for permanent pressure display.



Type 30 D

## Applications

- Hydraulic installation constructions
- Pneumatic controls
- Press engineering
- Welding technology
- Packing machines and filling technology
- Testing
- Clamping
- Plastic blowing machines
- Robot and handling industries

## Features

- Accuracy  $\pm 0.5\%$
- 4 switching points with respective separately set switching pressure differences
- Setting of the switching points without applied system pressure (irrespective of the installation point)
- The switching function can be inverted via jumper clips
- Direct control of solenoid valves possible
- Switching display via LEDs
- Switching frequency  $> 500/\text{min}$
- High service life
- Large setting range
- Adjustable cushioning (pressure peak filter)
- Underpressure safe down to  $-1$  bar

## Parameters of FLUIDTRONIK® pressure switch

### General parameters

Switching pressure difference	Adjustable 0 ... 100 % of switching pressure range
Linearity	± 0.5 % of final value
Mounting position	Optional
Ambient temperature [°C]	– 10 ... + 55
Fluid temperature [°C]	0 ... + 80
Temperature influence <sup>3)</sup> at zero over range	± ≤ 0.3 % / 10 K of final value ± ≤ 0.3 % / 10 K of final value
Degree of protection to DIN 40050	IP 65 (with cover)
Electric connection	6-pin connector to DIN 43651

### Electrical parameters

Supply voltage [VDC]	24 (18 ... 32 including residual ripple)
Residual ripple [%]	≤ 10
Current draw [A]	Approx. 0.15 (plus load currents)

### Switching outputs (short-circuit-proof)

Function	Open collector switched to positive, signal as pressure rises (can be inverted via jumper clips)	
Output voltage	Supply voltage minus approx. 3 V	
Switching current [A]	4-channel model: 0.1	1-channel model: 1.0

### Measuring output (1-channel model)

Current output [mA]	4 ... 20
Load [Ω]	max. 500
Load influence	≤ 0.1 % of final value (at load = 0 ... 500 Ω)
Influence of supply voltage	≤ 0.1 % / 10 V

### External specification of switching point and switching pressure difference (1-channel model)

Current input [mA]	4 ... 20	
Internal load [Ω]	250	

Switching pressure range [bar]	Model		Overpressure safety [bar]	Pressure connection	Type of connection	Dimensional drawing No.	Weight [kg]	Cat. No.
	4-channel	1-channel						
0 ... 10	●		30	G 1/4	I	01	0.3	<b>0864300<sup>1)</sup></b>
0 ... 10		●	30	G 1/4	I	01	0.3	<b>0861300<sup>1)</sup></b>
0 ... 400	●		600	G 1/4	I	02	0.3	<b>0864700<sup>2)</sup></b>
0 ... 400		●	600	G 1/4	I	02	0.3	<b>0861700<sup>2)</sup></b>
– 1 ... +1		●	15	G 1/4	I	01	0.3	<b>0861320<sup>1)</sup></b>
– 1 ... 9	●		30	G 1/4	I	01	0.3	<b>0864325<sup>1)</sup></b>

I – internal thread

<sup>1)</sup> Filtered, lubricated or non-lubricated air.

<sup>2)</sup> Gaseous and liquid fluids, compatible with st.st.1.4305.

<sup>3)</sup> Unit calibrated at + 20 °C.

## Parameters of display module AM10

Ambient temperature [°C]	-10 ... + 55
Measuring accuracy	≤ 0.2 % of final value
Type of display	LCD-display (3-figure display)
Control	via diaphragm switch
Dimensions in mm	H 28, B 28, L 77,5
Cat. No.	<b>0862000</b>



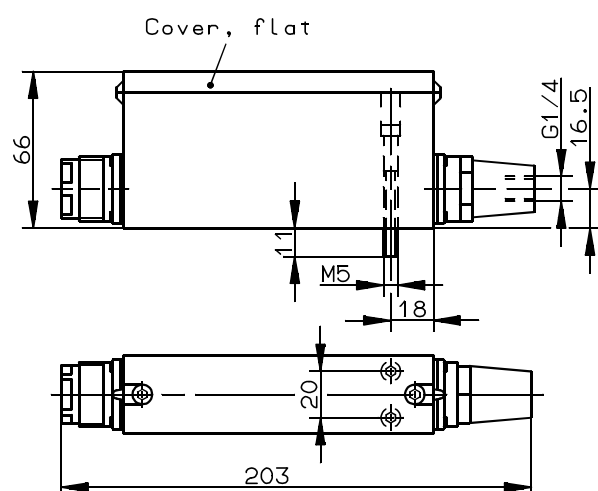
## Accessories

Designation	Publication	Cat. No.
Cover, high <sup>1)</sup>	—	<b>0554493</b>
Cable plug to DIN 43 651	—	<b>0660689</b>

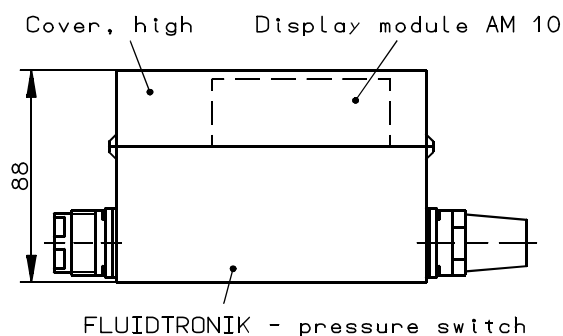
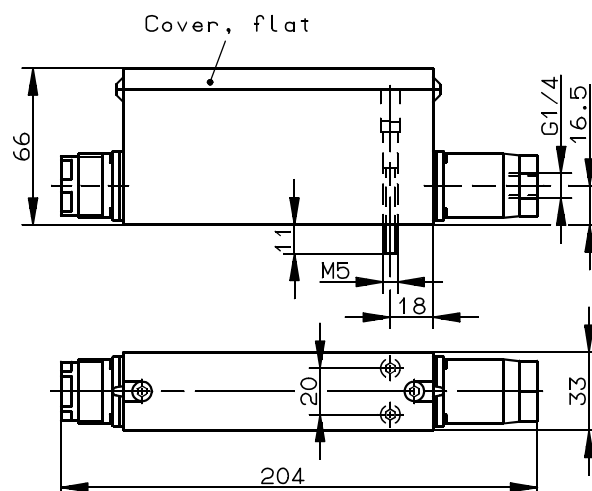
1) necessary if display module remains permanently in the FLUIDTRONIK pressure switch.

## Dimensional drawings

01

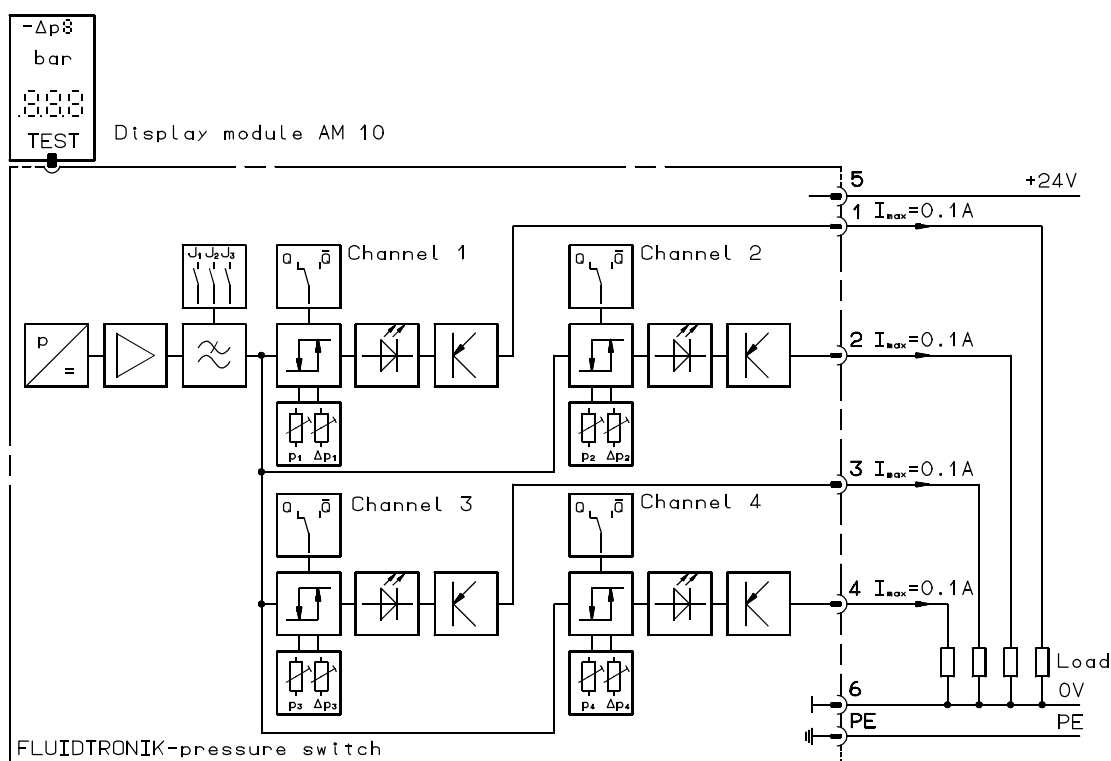


02

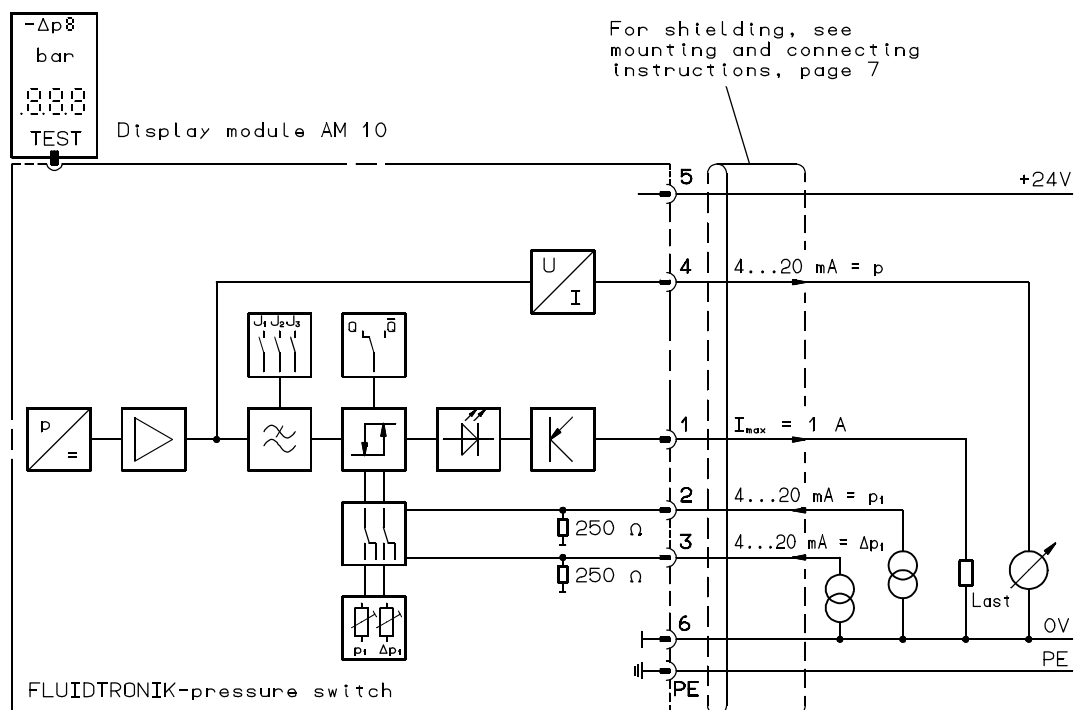


## Block diagrams with terminal diagram

### Model with 4 switching points (4-channel)

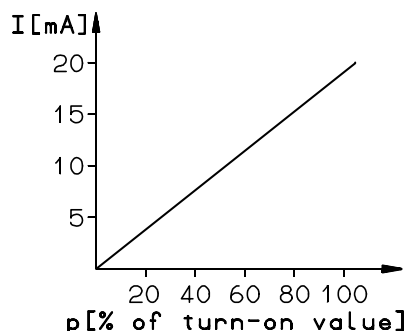


### Model with 1 switching point (1-channel)



## Pressure-current characteristic

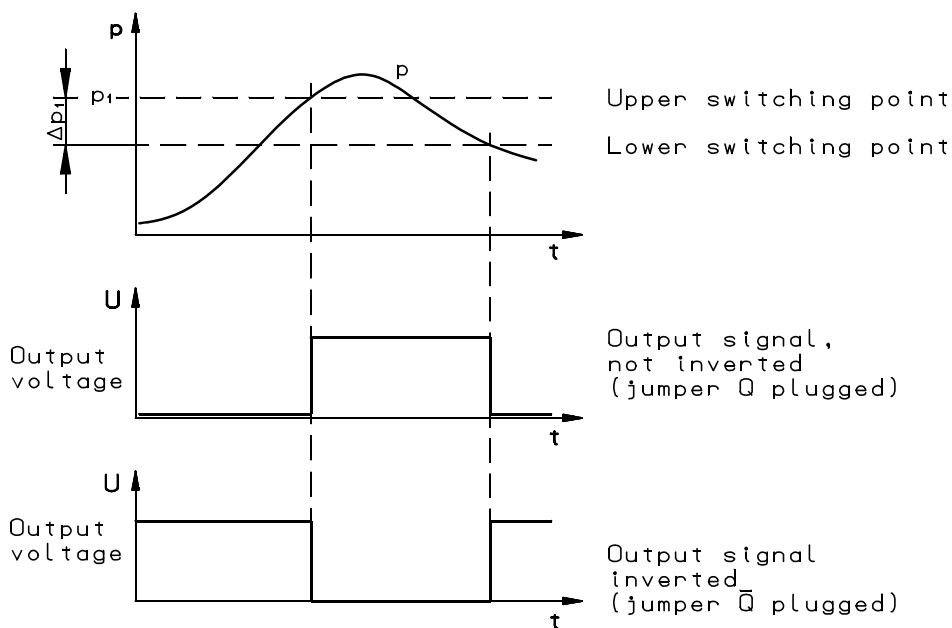
Measuring output and current inputs for external specification of switching point and switching pressure difference (with 1-channel model)



$$I[\text{mA}] = 4 \text{ mA} + 16 \text{ mA} \frac{p[\% \text{ of turn-on value}]}{100\%}$$

$$p[\% \text{ of turn-on value}] = \frac{I[\text{mA}] - 4 \text{ mA}}{16 \text{ mA}} \times 100\%$$

## Switching function



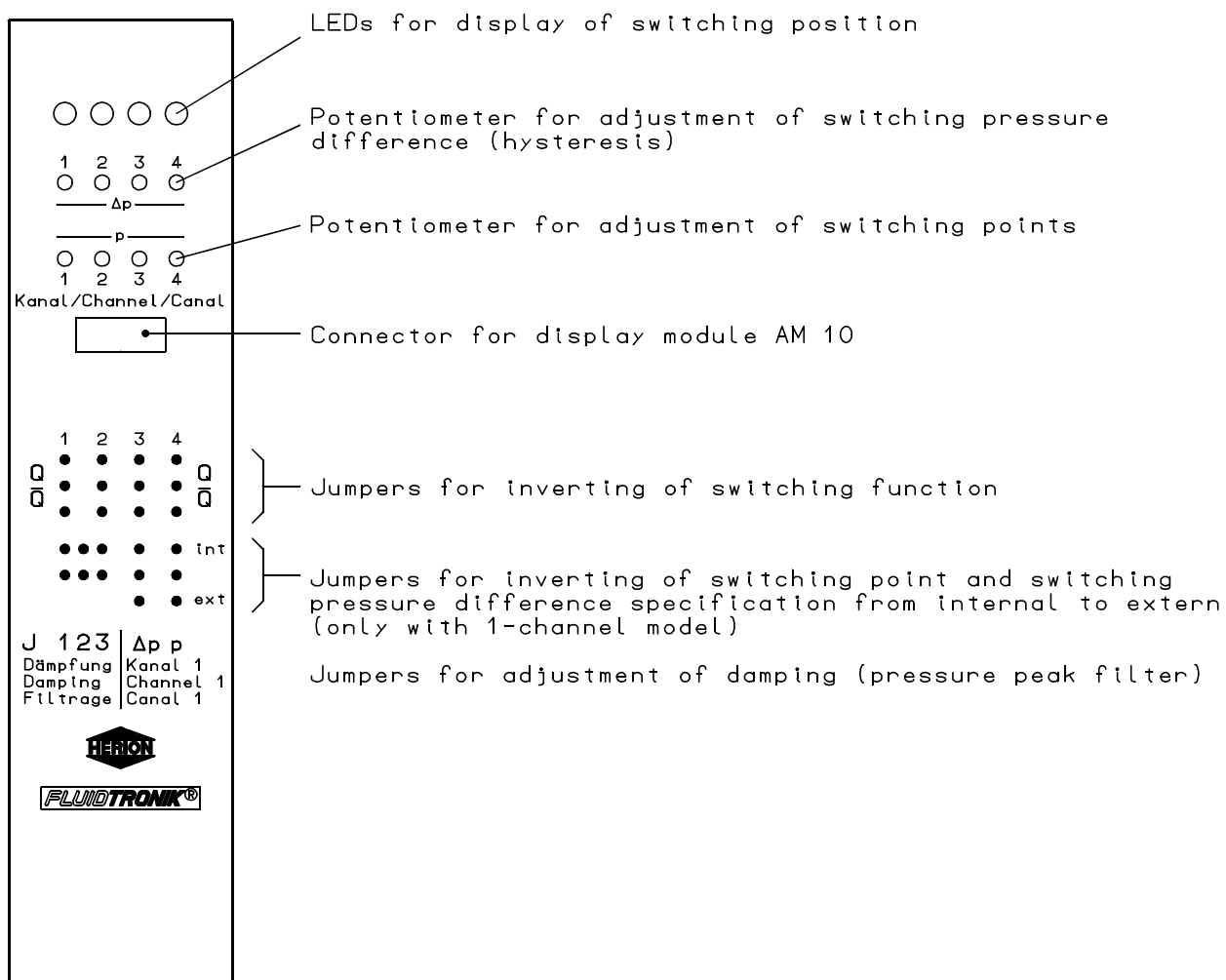
## Damping adjustment

J <sub>1</sub>	J <sub>2</sub>	J <sub>3</sub>	Approx. damping time
x	—	—	2 ms
—	—	—	4 ms
x	x	—	10 ms
—	x	—	20 ms
x	—	x	200 ms
—	—	x	400 ms

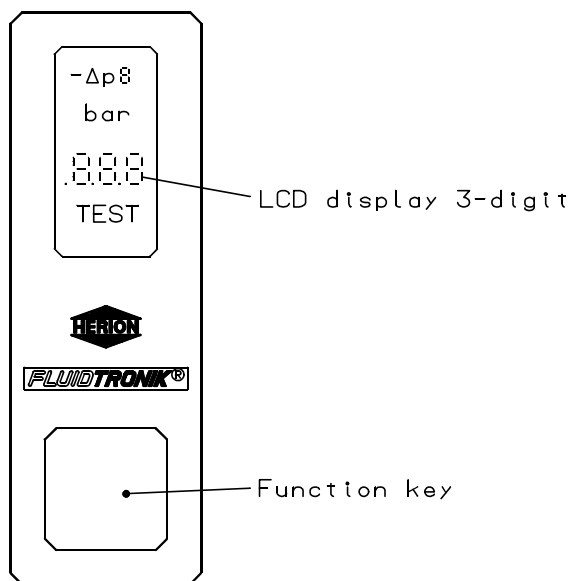
x = jumper plugged

## Position of control elements

### FLUIDTRONIK® pressure switch



### Display module AM10



## Setting of switching points and switching pressure differences (internal)

### Without using the display module AM 10

1. Electrical connection and wiring as per terminal diagram on Page 4.  
Power supply 18 ... 32 VDC.
2. After removing the cover, connect the jumper clips for specification of switching point  $p$  and switching pressure difference  $\Delta p$  to "internal". External switching point and switching pressure difference specification is only possible in the 1-channel version.
3. Connect the jumper clips for switching function to "Q".
4. Turn all the potentiometers to the right stop (max. 25 rotations).  
Note: Overturning of the potentiometers is not possible.
5. Set a constant pressure signal at fluid connection, corresponding to the required upper switching point  $p_1$ .
6. Turn potentiometer  $p_1$  slowly to the left until the appropriate LED display lights up.
7. Set a constant pressure signal at the fluid connection, corresponding to the required lower switching point.
8. Turn potentiometer  $\Delta p_1$  slowly to the left until the appropriate LED display extinguishes.  
In the case of the 4-channel FLUIDTRONIK pressure switch, the switching points can be set at the channels 2, 3 and 4 by repeating the operations, Points 5 to 8, with the corresponding potentiometers.

### With the aid of the display module AM10

1. Electrical connection and wiring as per terminal diagram on Page 4.  
Power supply 18 ... 32 VDC.
2. After removing the cover, connect the jumper clips for specification of switching point  $p$  and switching pressure difference  $\Delta p$  to "internal". External switching point and switching pressure difference specification is only possible in the 1-channel version.
3. Connect link plugs for switching function to "Q".
4. Plug display module onto the FLUIDTRONIK pressure switch. The indicator display briefly runs through an internal function test and then displays the pressure at the fluid connection ( $p$ -display of actual value in bar).

Possible display information:

UFL= Pressure at the fluid connection < permissible switching pressure range  
OFL= Pressure at the fluid connection > permissible switching pressure range  
F FLUIDTRONIK pressure switch defective

5. Press the function key on the display module – the upper switching point  $p_1$  last set is displayed.
6. Set the required upper switching point at the FLUIDTRONIK pressure switch with potentiometer  $p_1$ .

Possible display information:

OFL=  $p_1$  > permissible switching pressure range

Remedy:

Turn potentiometer  $p_1$  to the left.

7. Press function key on display module – the switching pressure difference  $\Delta p_1$  last set is displayed.

8. Set the desired switching pressure difference (hysteresis), from which the lower switching point is produced ( $p_1 - \Delta p_1$  = lower switching point) at the FLUIDTRONIK pressure switch with the potentiometer  $\Delta p_1$ .

Possible display information:

OFL =  $\Delta p_1$  >  $p_1$

Remedy:

Turn the potentiometer  $\Delta p_1$  to the left.

In the case of the 4-channel FLUIDTRONIK pressure switch, the switching points can be set at channel 2, 3 and 4 by repeating the operations, Points 5 to 8, with the corresponding potentiometers.

Note:

If the function key on the display module is pressed for longer than 3s, all the display segments are represented until the key is released. The previously displayed values then reappear.

After setting of all the switching points, the display module can be removed from the FLUIDTRONIK pressure switch.

The switching function can be reversed at the FLUIDTRONIK pressure switch by reconnecting the jumper clips from Q to Q (see diagram on Page 6).

During operation, the FLUIDTRONIK pressure switch is to be protected from environmental influences by the transparent cover.

## Mounting and connecting instructions

If possible, use shielded connection leads for the measuring output and external switching point setting. The shielding is to be connected on one side to the terminal connection 6.

The connection leads should not be laid parallel to the power lines. The cross-section of the connection leads should be  $\geq 0.75 \text{ mm}^2$ .