

## Preparation of compressed air - FRL

## \* Pressure switch, Series PE5

electronic, with digital display, adjustable, Push-in fitting Ø 4 mm or thread connection G1/4, -1 - 10 bar, Switch outputs: 2x PNP; 2x NPN; 1x PNP and analog or 1x NPN and analog



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|   |   |
|---|---|
| Version   | electronic pressure switch  |
| Design  | with piezo-resistive sensor element, adjustment via push buttons, LCD-Display: 2 Schaltzustandsanzeigen (out1, out2), 4-digit Anzeige und Einheitenanzeige (bar, psi, kPa, inHg für Vakuum) |
| Ambient temperature min./max.                   | +0 °C / +60 °C  |
| Medium  | compressed air acc. to ISO 8573-1: 2001   |
| Compressed air class                            | class 7-4-3   |
| Hysteresis in % (from end value)                | 0-100%  |
| Local power consumption                         | < 50 mA   |
| Output signal analog                            | 4-20 mA   |
| Response time                                   | < 5 ms  |
| Switching logic                                 | NO/NC (customer-specific programming)   |
| Protection class according to DIN EN 60529:2000 | IP65  |
| materials:                                      |   |
| Housing   | Polycarbonate   |
| Seal  | acrylonitrile butadiene caoutchouc  |

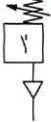
short circuit resistance: clamping

Repetitive precision in % (of the final value): < 2% including temperature drift

Analog output signal: switchable signal interface (voltage interface 0 to 10 V, current interface 4 to 20 mA)

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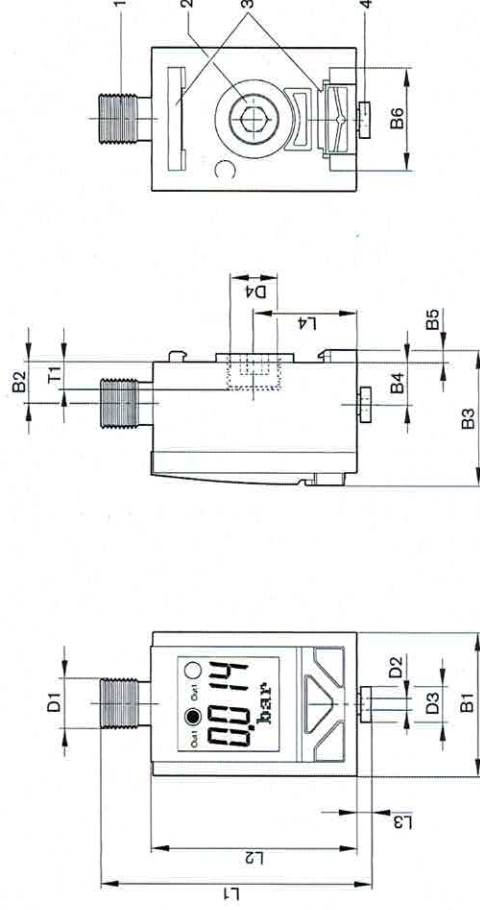
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|  | Port  | Output signal   | Working pressure min/max | Electr. connection | Protection against overpressure | Weight | Note   | Part No.   |
|--|-------|-----------------|--------------------------|--------------------|---------------------------------|--------|--------|------------|
|  | Ø 4   | 2x PNP          | 0 - 6                    |                    | 15 bar                          |        | Fig. 1 | R412007974 |
|  | G 1/4 | 2x PNP          | 0 - 6                    |                    | 15 bar                          |        | Fig. 2 | R412007975 |
|  | Ø 4   | 2x NPN          | 0 - 6                    |                    | 15 bar                          |        | Fig. 1 | R412007976 |
|  | G 1/4 | 2x NPN          | 0 - 6                    |                    | 15 bar                          |        | Fig. 2 | R412007977 |
|  | Ø 4   | 2x PNP          | 0 - 10                   |                    | 15 bar                          |        | Fig. 1 | R412007978 |
|  | G 1/4 | 2x PNP          | 0 - 10                   |                    | 15 bar                          |        | Fig. 2 | R412007979 |
|  | Ø 4   | 2x NPN          | 0 - 10                   |                    | 15 bar                          |        | Fig. 1 | R412007980 |
|  | G 1/4 | 2x NPN          | 0 - 10                   |                    | 15 bar                          |        | Fig. 2 | R412007981 |
|  | Ø 4   | 1x PNP1x analog | 0 - 6                    |                    | 15 bar                          |        | Fig. 1 | R412007982 |
|  | G 1/4 | 1x PNP1x analog | 0 - 6                    |                    | 15 bar                          |        | Fig. 2 | R412007983 |
|  | Ø 4   | 1x NPN1x analog | 0 - 6                    |                    | 15 bar                          |        | Fig. 1 | R412007984 |
|  | G 1/4 | 1x NPN1x analog | 0 - 6                    |                    | 15 bar                          |        | Fig. 2 | R412007985 |
|  | Ø 4   | 1x PNP1x analog | 0 - 10                   | M12x1              | 15 bar                          | 0.05   | Fig. 1 | R412007986 |
|  | G 1/4 | 1x PNP1x analog | 0 - 10                   |                    | 15 bar                          |        | Fig. 2 | R412007987 |
|  | Ø 4   | 1x NPN1x analog | 0 - 10                   |                    | 15 bar                          |        | Fig. 1 | R412007988 |
|  | G 1/4 | 1x NPN1x analog | 0 - 10                   |                    | 15 bar                          |        | Fig. 2 | R412007989 |
|  | Ø 4   | 2x PNP          | -1 - 0                   |                    | 5 bar                           |        | Fig. 1 | R412007990 |
|  | G 1/4 | 2x PNP          | -1 - 0                   |                    | 5 bar                           |        | Fig. 2 | R412007991 |
|  | Ø 4   | 2x NPN          | -1 - 0                   |                    | 5 bar                           |        | Fig. 1 | R412007992 |
|  | G 1/4 | 2x NPN          | -1 - 0                   |                    | 5 bar                           |        | Fig. 2 | R412007993 |
|  | Ø 4   | 2x PNP          | -1 - 1                   |                    | 5 bar                           |        | Fig. 1 | R412007994 |
|  | G 1/4 | 2x PNP          | -1 - 1                   |                    | 5 bar                           |        | Fig. 2 | R412007995 |
|  | Ø 4   | 2x NPN          | -1 - 1                   |                    | 5 bar                           |        | Fig. 1 | R412007996 |
|  | G 1/4 | 2x NPN          | -1 - 1                   |                    | 5 bar                           |        | Fig. 2 | R412007997 |

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dimensioned drawing, Fig. 1



- 1) Electrical connection
- 2) G 1/4 port (closed)
- 3) mounting clips for holder and hat rail
- 4) Push-in fitting Ø 4 mm

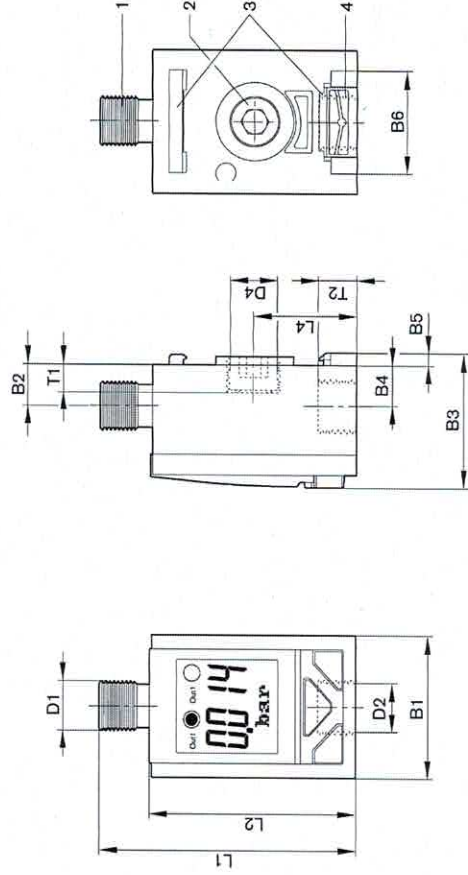
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dimensioned drawing, Fig. 2



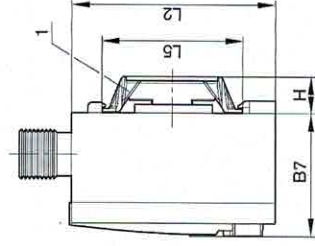
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- 1) Electrical connection  
 2) G 1/4 port (closed)  
 3) mounting clips for holder and hat rail  
 4) Port G 1/4

|        | B1  | B2   | B3 | B4   | B5 | B6 | D1    | D2    | D3 | D4    | L1   | L2   | L3 | L4 |
|--------|-----|------|----|------|----|----|-------|-------|----|-------|------|------|----|----|
| Fig. 2 | 35  | 10.2 | 33 | 10.2 | 3  | 25 | M12x1 | G 1/4 | -  | G 1/4 | 63.8 | 50.5 | -  | 25 |
| Fig. 2 | T1  | T2   |    |      |    |    |       |       |    |       |      |      |    |    |
|        | 9.5 | 9.5  |    |      |    |    |       |       |    |       |      |      |    |    |

## mounting: holder and hat rail



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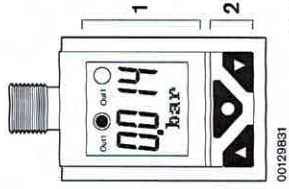
- 1) holder  
 2) hat rail

|     | B7 | H   | H1     | L2   | L5 |
|-----|----|-----|--------|------|----|
| PE5 | 30 | 9.2 | 7.5/15 | 50.5 | 35 |

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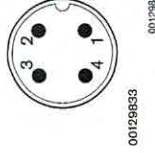
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## Display and operation area



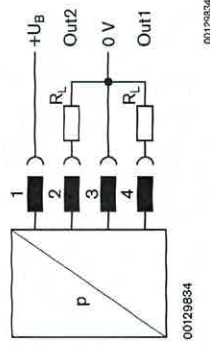
- 1) LCD display
- 2) control panel with 3 buttons

## plug assignment, Electrical connection M12x1, 4-pin

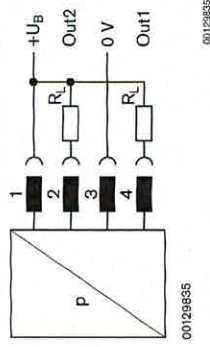


- Pin 1: operational voltage + UB
- Pin 2: switch output Out2, (PNP/NPN/analog)
- pin 3: 0 V
- Pin 4: switch output Out1, (PNP/NPN)

## block diagram, 2 x PNP



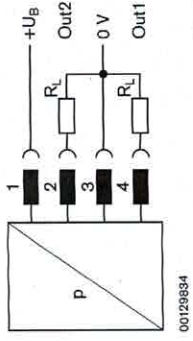
## block diagram, 2 x NPN



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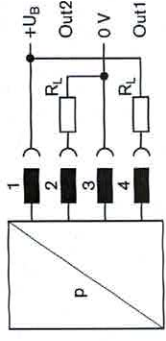
#### block diagram, 1x PNP and 1x analog



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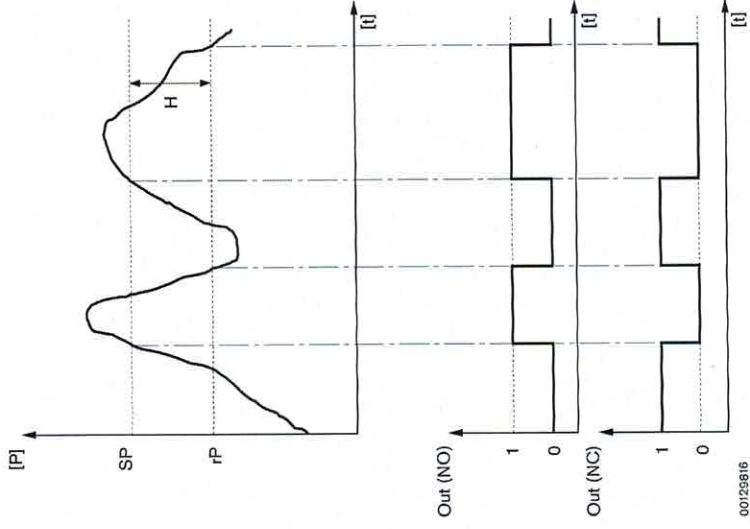
#### block diagram, 1x NPN and 1x analog



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Hysteresis function: switching and resetting behavior dependent on pressure  $p$  and time  $t$



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Hi: Hysteresis

SP = switching point, rP = resetting point

Out (NC): switch output, break contact

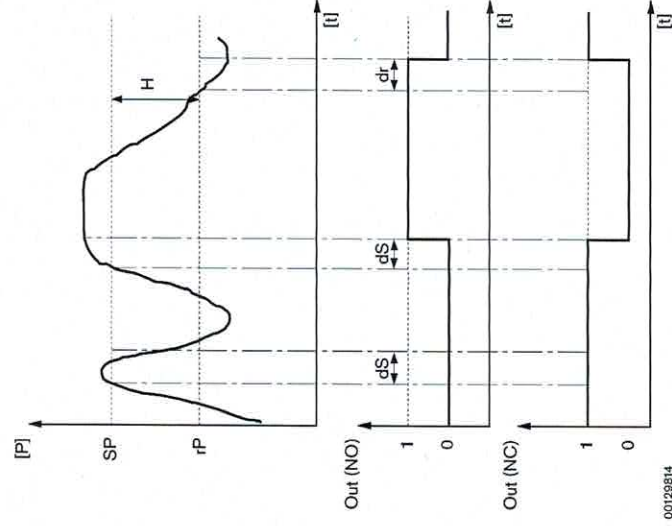
Out (NO): switch output, make contact



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Delayed hysteresis function: switching and resetting behavior depending on pressure p and time t



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H: Hysteresis

SP = switching point, rP = resetting point

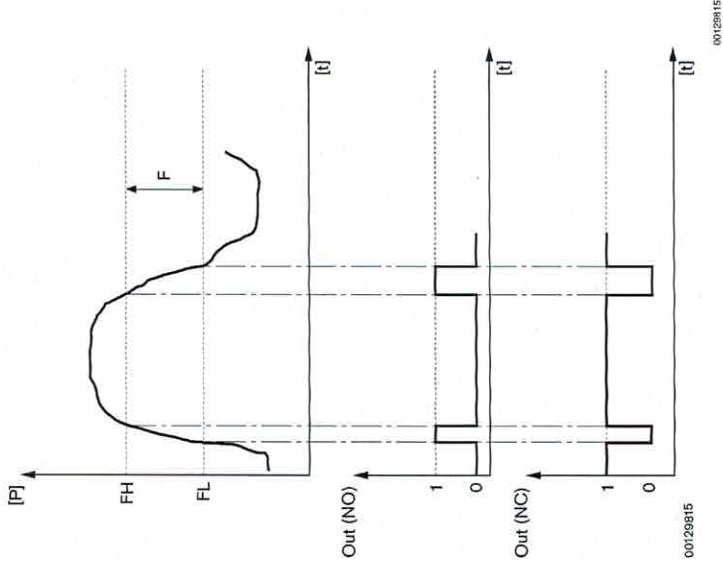
Out (NC): switch output, break contact

Out (NO): switch output, make contact

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Window function: switching and resetting behavior depending on pressure p and time t



F: pressure window

FH: pressure band, upper value

FL: pressure band, lower value

Out (NC): switch output, break contact / Out (NO): switch output, make contact