

Data Sheet

DE44 | Digital 2-channel differential pressure switch/transmitter with 4-digit color change LCD

Switch device with optional transmitter output for two over, under and differential pressures in gaseous mediums.

Main Features

- Robust and overpressure safe
- Maintenance-free
- Two independent differential pressure sensors
- Two analogue outputs
- Switchable pressure units
- Color change LCD
- Switchover of LCD background lighting switchover (red/yellow/green)
- Menu-guided operation
- Optional signal output with the option for characteristic curve spread and reversal with any offset
- Characteristic curve implementation using table with max. 30 measurement points

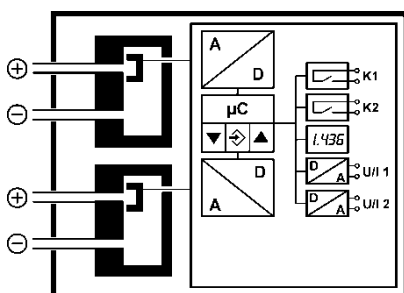
Design and Mode of Operation

The basis of this switch device is two piezoresistive sensors.

The pressure to be measured, effects directly on a silicon membrane equipped with a resistance measurement bridge. The deflection caused by the pressure effecting the membrane produces a change in resistance which is assessed by the electronics integrated in the device and converted into signals for display and switch contacts.

Two optionally available transmitter outputs can be dampened, spread, inverted and transformed using a table function, including non-linear.

Function diagram



Intended Use

- Air-conditioning technology
- Ventilation technology
- Environmental technology
- Monitoring roller band filters, suction systems etc.
- Draw measurements on chimneys
- Flow and control pressure measurements
- Surface technology

The device can be used as a display and switch device and has two independent differential pressure sensors and two analogue outputs. It is suitable for measuring pressure, underpressure and differential pressure for neutral gaseous mediums.



Technical data

Basic measurement range	mbar	4	6	10	16	25	40	60	100	±2.5	±4	±6	±10	±16	±25	±40	±60	±100
	Pa	400	600	1000	1600					±250								
	kPa	0.4	0.6	1	1.6	2.5	4	6	10	±0.25	±0.4	±0.6	±1	±1.6	±2.5	±4	±6	
Max. stat. operating pressure	mbar	50		100		250		500		50			100		250		500	
Burst pressure	mbar	150		300		750		1500		150			300		750		1500	
Characteristic deviation ^{*)}	max	%FS		1.0						1.0								
	Typ.	%FS		0.5						0.5								
TK range ^{**)}	max	%FS/10K	1.0		0.3				1.0		0.5				0.3			
	Typ.	%FS/10K	0.3						0.3									
TK zero point ^{**)}	max	%FS/10K	1.0		0.4				1.0		0.5				0.4			
	Typ.	%FS/10K	0.2						0.2									

^{*)} : Characteristic curve deviation (non-linear and hysteresis) at 25°C, basic measurement range (linear characteristic curve, not spread)

^{**)} : in relation to the basic measurement range (not spread), compensation range 0... 60-C

General

Authorized environmental temperature	-10 ... 70°C
Authorized medium temperature	-10 ... 70°C
Authorized storage temperature	-20 ... 70°C
Housing protection class	IP 65 acc. to DIN EN 60529

Electrical data

Nominal voltage	24 VDC / VAC
Auth. operating voltage (U _b)	12-32 VDC / VAC

Electrical connection type Triple conductor

Output signal **0 ... 20 mA** | **4 ... 20 mA** | **0 ... 10V**

Authorized load $R_L \leq (U_b - 4V) / 0.02 A$ for U_b ≤ 26 VDC/VAC | $R_L \geq 10 k\Omega$ for U_b < 15 VDC/VAC
 $R_L \leq 1100 \Omega$ for U_b > 26 VDC/VAC | $R_L \geq 2 k\Omega$ for U_b ≥ 15 VDC/VAC

Characteristic Curve

P1 linear, root extracted, table with 3...30 bases
P2 linear

Power intake max. 3 W / VA

Programmable switching contacts

2 sets of voltage free relay contacts as make (no) or break (nc) contact

2 sets of voltage free solid state relay SPST¹ as make (no) or break (nc) contact

U_{max} 32 V AC/DC
I_{max} 2A
P_{max} 64 W/VA

3 ... 32 V AC/DC
0,25 A
8 W/VA (R_{on} ≤ 4Ω)

Measured Value Display 4-digit LCD with details of the measurement unit
Multi-coloured lighting (red, yellow and green)
Selectable bar graph display

Units mbar, Pa, kPa, inchWS, mmWS, mmHg

Connections

Electrical connection 2 x M12 round plug connector
Plug 1 for supply and analogue output signals (5-pole, male)
Plug 2 for switch contacts (4-pole, male)

Pressure Connections Aluminium hose screw connections for hose 6/4mm and 8/6mm

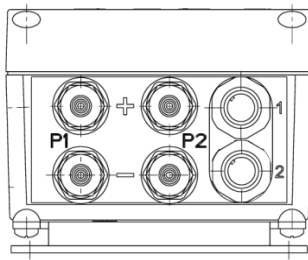
Materials, assembly

Housing material Nylon PA 6.6
Material touching medium Silicon, PVC, aluminium, brass

Assembly Back fixing holes
Wall mounting

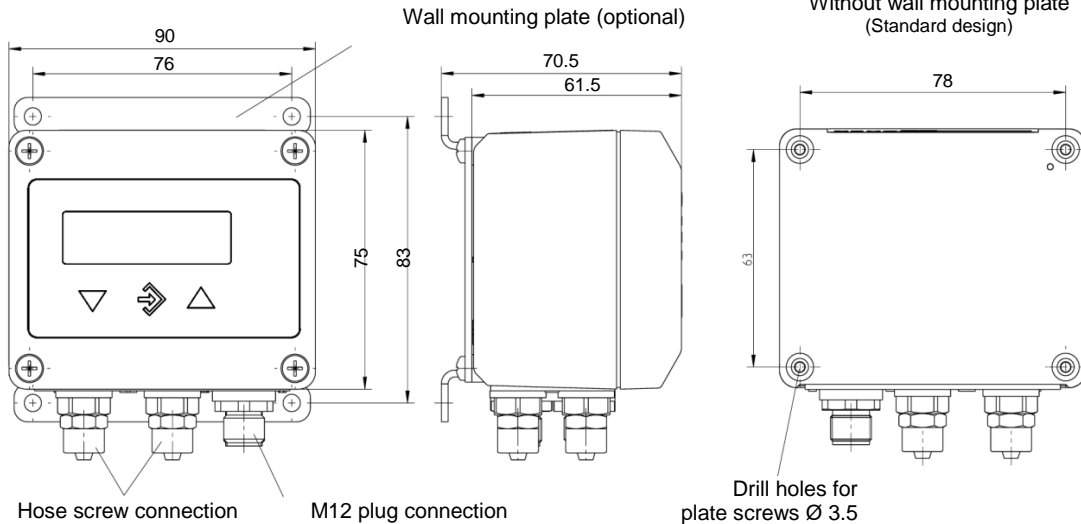
¹ SPST: Single Pole Single Throw

Dimensional drawings

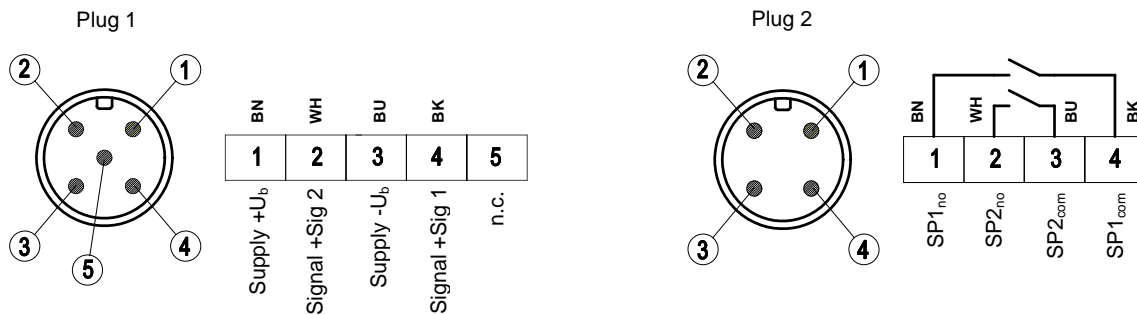


Plug 1

Plug 2



Wiring diagram



Programming

With film keypad with menu-guided operation; password lock

	Settings
Damping	0.0 ... 100.0 s (jump response time 10/90%)
Display allocation	P1 and P2 are shown at the same time
Switch output Channel 1 and channel 2	Switch-off point, switch-on point and response time (0...100 s), Function (opener/closer), allocation to relay
Zero point stabilization	1/3 of the basic measurement range
Zero point correction	1/3 of the basic measurement range
Zero point window	Measurement values around zero are set to zero within these limits
Output signal characteristic curve	Any settings within the basic measurement range linear, root extracted, table with 3...30 bases
Password	001 ... 999 (000 ⇒ no password protection)

Order codes

Digital 2-channel differential pressure switch/transmitter with 4 digit color change LCD

DE44

						K	W		M	
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Channel 1 - measurement range

auth. stat. operating pressure

0 ... 4 mbar.....	50 mbar.....	>	5	2
0 ... 6 mbar.....	50 mbar.....	>	5	3
0 ... 10 mbar.....	100 mbar.....	>	5	4
0 ... 16 mbar.....	100 mbar.....	>	5	5
0 ... 25 mbar.....	250 mbar.....	>	5	6
0 ... 40 mbar.....	250 mbar.....	>	5	7
0 ... 60 mbar.....	500 mbar.....	>	5	8
0 ... 100 mbar.....	500 mbar.....	>	5	9
0 ... 160 mbar.....	1500 mbar.....	>	6	0
0 ... 250 mbar.....	1500 mbar.....	>	8	2
-2.5 ... +2.5 mbar.....	50 mbar.....	>	A	6
-4 ... +4 mbar.....	50 mbar.....	>	A	7
-6 ... +6 mbar.....	50 mbar.....	>	A	8
-10 ... +10 mbar.....	100 mbar.....	>	A	9
-16 ... +16 mbar.....	250 mbar.....	>	B	1
-25 ... +25 mbar.....	250 mbar.....	>	B	2
-40 ... +40 mbar.....	500 mbar.....	>	C	5
-60 ... +60 mbar.....	500 mbar.....	>	B	3
-100 ... +100 mbar.....	500 mbar.....	>	B	4
0 ... 400 Pa.....	50 mbar.....	>	D	7
0 ... 500 Pa.....	50 mbar.....	>	J	7
0 ... 600 Pa.....	50 mbar.....	>	D	8
0 ... 1000 Pa.....	100 mbar.....	>	D	9
0 ... 1600 Pa.....	100 mbar.....	>	E	1
-250 ... +250 Pa.....	50 mbar.....	>	L	6
0 ... 1 kPa.....	50 mbar.....	>	N	1
0 ... 1.6 kPa.....	100 mbar.....	>	N	2
0 ... 2.5 kPa.....	250 mbar.....	>	N	3
0 ... 4 kPa.....	250 mbar.....	>	N	4
0 ... 6 kPa.....	500 mbar.....	>	N	5
0 ... 10 kPa.....	500 mbar.....	>	E	5
-1 ... +1 kPa.....	50 mbar.....	>	L	8
-1.6 ... +1.6 kPa.....	100 mbar.....	>	L	9
-2.5 ... +2.5 kPa.....	100 mbar.....	>	M	6
-4 ... +4 kPa.....	250 mbar.....	>	M	7
-6 ... +6 kPa.....	100 mbar.....	>	M	8

Channel 2 - measurement range

auth. stat. operating pressure

0 ... 4 mbar.....	50 mbar.....	>	5	2
0 ... 6 mbar.....	50 mbar.....	>	5	3
0 ... 10 mbar.....	100 mbar.....	>	5	4
0 ... 16 mbar.....	100 mbar.....	>	5	5
0 ... 25 mbar.....	250 mbar.....	>	5	6
0 ... 40 mbar.....	250 mbar.....	>	5	7
0 ... 60 mbar.....	500 mbar.....	>	5	8
0 ... 100 mbar.....	500 mbar.....	>	5	9
0 ... 160 mbar.....	1500 mbar.....	>	6	0
0 ... 250 mbar.....	1500 mbar.....	>	8	2
-2.5 ... +2.5 mbar.....	50 mbar.....	>	A	6
-4 ... +4 mbar.....	50 mbar.....	>	A	7
-6 ... +6 mbar.....	100 mbar.....	>	A	8
-10 ... +10 mbar.....	100 mbar.....	>	A	9
-16 ... +16 mbar.....	250 mbar.....	>	B	1
-25 ... +25 mbar.....	250 mbar.....	>	B	2
-40 ... +40 mbar.....	500 mbar.....	>	C	5
-60 ... +60 mbar.....	500 mbar.....	>	B	3
-100 ... +100 mbar.....	500 mbar.....	>	B	4
0 ... 400 Pa.....	50 mbar.....	>	D	7
0 ... 500 Pa.....	50 mbar.....	>	J	7
0 ... 600 Pa.....	50 mbar.....	>	D	8
0 ... 1000 Pa.....	100 mbar.....	>	D	9
0 ... 1600 Pa.....	100 mbar.....	>	E	1
-250 ... +250 Pa.....	50 mbar.....	>	L	6
0 ... 1 kPa.....	50 mbar.....	>	N	1
0 ... 1.6 kPa.....	100 mbar.....	>	N	2
0 ... 2.5 kPa.....	250 mbar.....	>	N	3
0 ... 4 kPa.....	250 mbar.....	>	N	4
0 ... 6 kPa.....	500 mbar.....	>	N	5
0 ... 10 kPa.....	500 mbar.....	>	E	5
-1 ... +1 kPa.....	50 mbar.....	>	L	8
-1.6 ... +1.6 kPa.....	100 mbar.....	>	L	9
-2.5 ... +2.5 kPa.....	100 mbar.....	>	M	6
-4 ... +4 kPa.....	250 mbar.....	>	M	7
-6 ... +6 kPa.....	500 mbar.....	>	M	8

Pressure connection

Aluminium screw connection for 6/4 mm hose.....	>	4	0
Aluminium screw connection for 8/6 mm hose.....	>	4	1

Electrical output signal (channel 1 and 2)

without analogue electrical output signal.....	>	0
0 - 20 mA 3-conductor channel 1+2.....	>	4
0 - 10 V DC 3-conductor channel 1+2.....	>	5
4 - 20 mA 3-conductor channel 1+2.....	>	6

Operating voltage

24 V DC/AC (12-32 V DC/AC).....	>	K
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Measurement unit

Selectable pressure units.....	>	W
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Measured value display/switch elements

4-digit color change LCD – 2 relay contacts.....	>	C
4-digit color change LCD – 2 semiconductor switches.....	>	D

Electrical connection

M12 plug connection.....	>	M
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Assembly option

Standard (back fixing holes).....	>	0
Wall mounting.....	>	W