

Data sheet

DE38

**Digital differential pressure transmitter / switch
with 4-digit colour change LCD**

Differential pressure transmitter / switch for measuring over-pressure, under-pressure and differential pressure in liquid and gaseous, and primarily neutral media.

Fields of application include

- Heating, air conditioning and ventilation equipment
- Filling level measuring equipment

Design and mode of operation

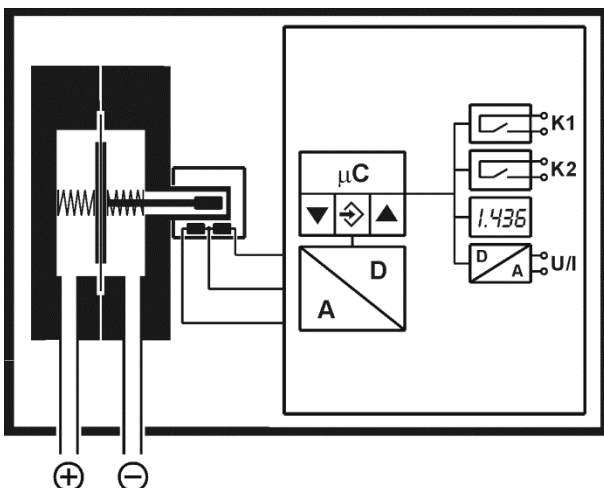
The switching device is based on a robust and durable diaphragm measuring unit. The pressures to be compared have an effect on a spring mounted measuring diaphragm that is in an idle state when the pressure is equalised.

In case of pressure differences, the force acting on the measuring diaphragm causes it to be moved towards the side of the lower pressure until the spring forces compensate this force.

This movement is transferred via a tappet into the core of the inductive displacement sensor.

The electronics integrated into the device evaluate this movement and transform it into a display, switch contacts and electrical output signals. The optional output signal can be dampened, spread, inverted and transformed via a table function even if it is non-linear.

Functional Schematic

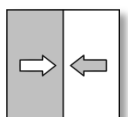


Important features

- Depending on the measured value, e.g. when limits are exceeded, various background colour changes can be programmed.
- Robust and resistant to overpressure
- Maintenance-free through wear-free inductive pickup
- Switchable pressure units
- Optional signal output with possibility of characteristic curve spread and reversal with any offset
- Characteristic curve implementation via table with max. 30 measuring points
- Complete adjustment of all parameters and measuring point protocol possible through optional PC adaptor EU03

Typical applications

- Monitoring of compressors, filters and extraction systems etc.
- Differential pressure measurements between the supply and return on heating systems
- Flow, control pressure and filling level measurements



Technical data

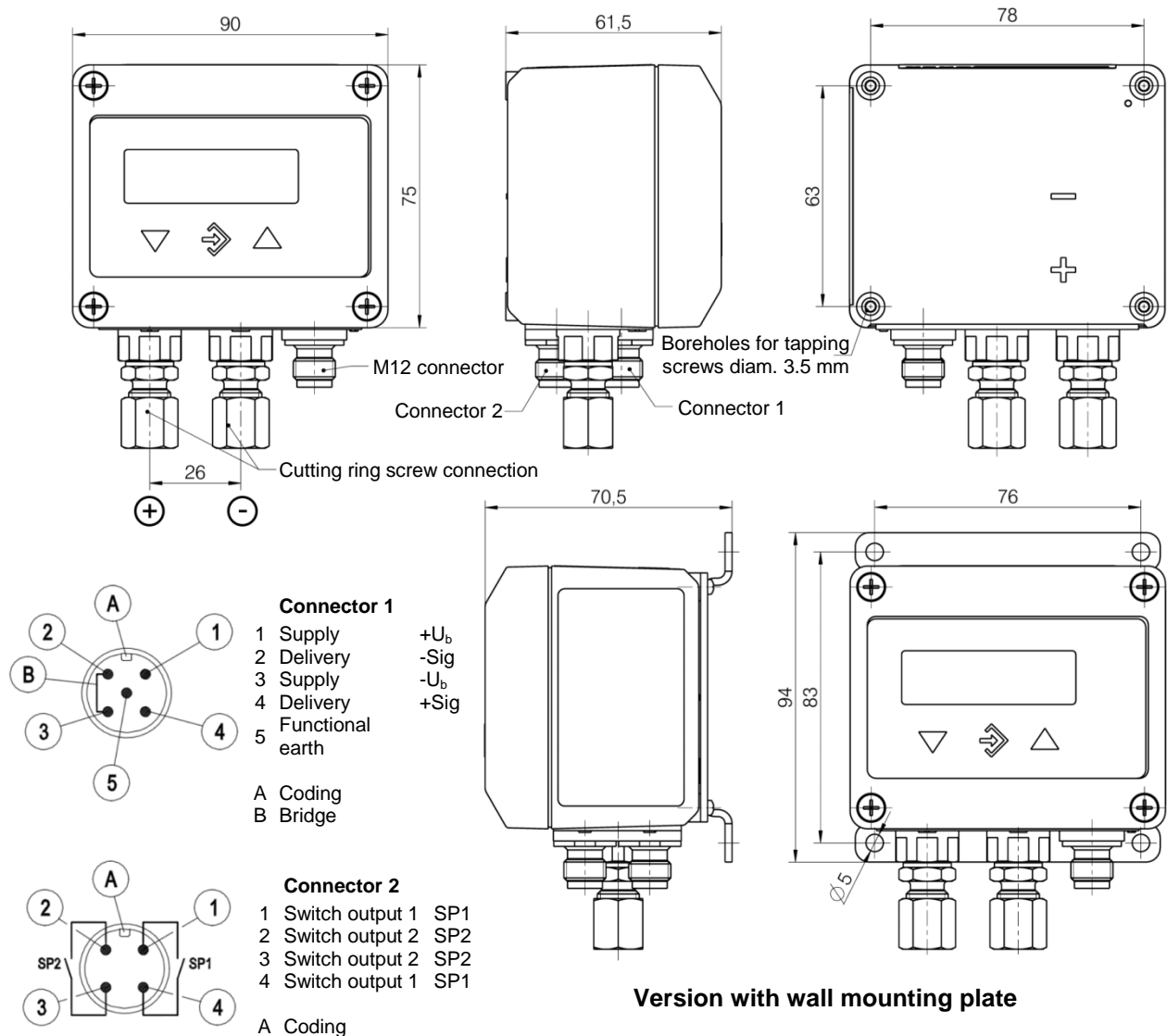
Basic measuring ranges	mbar bar		0...400	0...0.6	0...1	0...1.6	0...2.5	0...4	0...6
Static operating pressure	bar	max	16	16					
Characteristic curve deviation	%FS	max	2.5	2.5					
		type	0.8	0.8					
Tk span ^{°°}	%FS/10K	max	0.8	0.4					
		type	0.2	0.2					
Tk zero point ^{°°}	%FS/10K	max	0.8	0.5					
		type	0.2	0.2					

[°] : Characteristic curve deviation (non-linearity and hysteresis) at 25°C, basic measuring range (linear characteristic curve, not spread)
^{°°} : with reference to the basic measuring range (linear characteristic curve, not spread), compensation range 0...60 °C.

		General points	
Admissible ambient temperature		-10 ... 70°C	
Admissible media temperature		-10 ... 70°C	
Admissible storage temperature		-20 ... 70°C	
Enclosure protection class		IP 65 acc. to DIN EN 60529	
		Electrical data	
Rated Voltage		24 V DC/AC	
Admissible operating voltage U _b		12 ... 32 V DC/AC	
Electrical connection type		Three-wire	
Characteristic curve		can be programmed (see section Parameter configuration)	
Power consumption		approx. 2 W / VA	
Display		4-digit colour change LCD for free unit up to 6 points Display with 4-digit resolution	
		Output signal	
Admissible apparent ohmic resistance		0 ... 20 mA or 4 ... 20 mA	0 ... 10 V
	U _b ≤ 26V	$R_L \leq \frac{U_b - 4V}{0,02A}$	U _b < 15V R _L ≥ 10kΩ
	U _b > 26V	R _L ≤ 1100Ω	U _b ≥ 15V R _L ≥ 2kΩ
		programmable switch contacts	
U _{max} I _{max} P _{max}		2 potential-free relay contacts as NO contact or NC contact	2 potential-free MOSFET semiconductor switch SPST ¹ as NO contact or NC contact
		32 V AC/DC	3...32 V AC/DC
		2 A	0.25 A
		64 W/VA	8 W/VA
		Connections	
Process connection		Inner thread G 1/8, cutting ring screw connections for 6 or 8 mm pipes	
Electrical connection		2 x round connectors M12	
		Connector 1 for power supply and analogue output signal (5-pin, male)	
		Connector 2 for switch contacts (4-pin, male)	
		Materials	
Casing		Polyamide PA 6.6	
Media-contacting material		Brass, FKM, NBR	
		Assembly	
		Bore-holes on the reverse side for attachment of the assembly panels or wall mounting by means of assembly plate	
		If the device is intended for outdoor use, we recommend permanently protecting the membrane keypad against UV radiation and using a suitable enclosure or at least the erection of a sufficiently dimensioned canopy as a protection measure against constant rain or snow.	

¹ SPST: **S**ingle **P**ole **S**ingle **T**hrow

Dimensional drawings (All dimensions in mm unless stated otherwise)



Parameters

Via membrane keyboard with menu-controlled operation or PC adapter; can be locked with a password.

	Settings
Attenuation	0.0 ... 100.0 s (jump response time 10 / 90 %), separate also for display
Switch contacts (SP1, SP2)	Switch-off point, switch-on point, response time (0 ... 100 s); function (NO contact /NC contact)
Measuring range unit	bar, mbar, psi, MPa, kPa, %
Zero-point stabilising	0 ... 1/3 of the basic measuring range ²
Output signal	can be set anywhere within the basic measuring range ³
Zero point correction	1/3 of the basic measuring range ⁴
Implementation of characteristic curve	linear, square rooted, table with 3 ... 30 support points
Password	001 ... 999 (deactivated via value = 000)

² Measured values around zero are set to zero, e.g. to suppress leak flow rate.

³ Max. effective spread 4:1. Only impacts on the output signal.
A falling characteristic curve is also possible (Start of measuring range > End of measuring range).

⁴ Zero-point correction to compensate the different installation positions.

Order Codes

Digital differential pressure transmitter with 4-digit colour change LCD

Type DE38

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Measuring ranges

0 ... 400 mbar.....>	8 3
0 ... 0.6 bar.....>	0 1
0 ... 1 bar.....>	0 2
0 ... 1.6 bar.....>	0 3
0 ... 2.5 bar.....>	0 4
0 ... 4 bar.....>	0 5
0 ... 6 bar.....>	0 6

Design of the measuring system

Pressure chamber, membrane, seals: Ms/NBR.....>	M
Pressure chamber, membrane, seals: Ms/Viton.....>	N

Pressure connection

Inner thread G 1/8.....>	0 0
Cutting ring screw connection in brass for 6 mm pipe.....>	2 8
Cutting ring screw connection in brass for 8 mm pipe.....>	2 9

Electrical output signal

without analogue electrical output signal.....>	0
0 - 20 mA 3-LINE.....>	A
0 - 10 V DC 3-LINE.....>	C
4 - 20 mA 3-LINE.....>	P

Operating voltage

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

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

4-digit colour change LCD - 2 relay contacts.....>	C
4-digit colour change LCD - 2 semiconductor switch.....>	D

Electrical connection

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

Standard (attachment boreholes on rear side).....>	0
Wall mounting.....>	W

