

Datasheet

DE38 | Digital Differential Pressure Transmitter / Switch

Digital Differential Pressure Transmitter / Switch for measurement of positive or negative gauge pressure, differential pressure, flow and level. It is compatible for use with relatively clean and non-corrosive gases or liquids.

Examples of applications:

- heating, ventilation and air conditioning technology
- level measurement technology

Principles of Operation

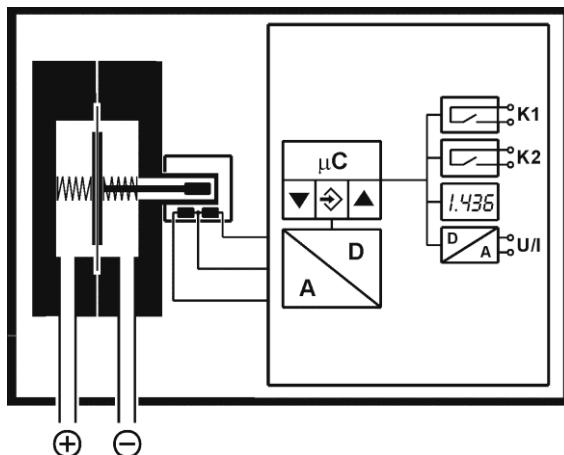
The instrument uses a tough, flexible sensing diaphragm embedded between stiffening plates and balanced by springs on either side.

The diaphragm is at zero position when pressures on either side of the diaphragm are equal. Inequality of pressures results in deflecting the diaphragm towards the lower pressure side until a new equilibrium determined by the changed balance of forces is reached.

Fastened to the centre of the diaphragm is an axial rod, the other end of which forms the moving core of an inductive displacement transducer. The linear displacement of the core is proportional to the pressure difference across the diaphragm. This displacement is converted by the transmitter's electronic module to a standard electrical signal output.

An optional output signal can be slew rate limited, spreaded, inverted and piecewise transformed nonlinearly by means of a table function.

Block Schematic Diagram

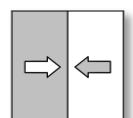


Features

- Robust design; over-pressure protected
- Wear-free non-contact LVDT sensing element needs no maintenance
- Selectable pressure units
- Signal output with possibility of spreading and inverting characteristic curve with any offset (optional)
- Characteristic conversion of output via 3...30 entries table
- Complete set-up of all parameters and print out by using optional PC-programming interface EU03

Applications

- Monitoring of compressors, filters and vacuum systems
- Measurement of differential pressure between supply and return fuel lines in heating systems
- Flow, control-pressure and level measurement



Specifications

Measuring range	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					
straight line error °	%FS	max	2,5	2,5					
		typ	0,8	0,8					
TC span °°	%FS/10K	max	0,8	0,4					
		typ	0,2	0,2					
TC zero point °°	%FS/10K	max	0,8	0,5					
		typ	0,2	0,2					

° : Straight line error = nonlinearity + hysteresis; at 25°C; pressure within specified range (characteristic linear, not spreaded)

°° : Pressure within specified range (characteristic linear, not spreaded); compensated temperature range 0 to 60°C

	General
Operating temp. (ambient)	-10 ... 70°C
Operating temp. (media)	-10 ... 70°C
Storage temperature	-20 ... 70°C
Protection class (housing)	IP 65 according to DIN EN 60529
	Electrical
Nominal supply voltage	24 V DC/AC
Operating supply voltage U_o	12 ... 32 V DC/AC
Electrical connection type	3 wire circuit
Characteristic curve	programmable (s. section Programming)
Power consumption	approx. 2 W/VA
Display	3½ digit LED
	Output signal
	0 ... 20 mA resp. 4 ... 20 mA
Signal load	$U_o \leq 26V \quad R_L \leq \frac{U_o - 4V}{0,02A}$
	$U_o > 26V \quad R_L \leq 1100\Omega$
	$0 \dots 10 V$
	$U_o < 15V \quad R_L \geq 10k\Omega$
	$U_o \geq 15V \quad R_L \geq 2k\Omega$
	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 SPST ¹ as make (no) or break (nc) contact
U_{max}	32 V AC/DC
I_{max}	2 A
P_{max}	64 W/VA
	3...32 V AC/DC
	0,25 A
	8 W/VA
	Connections
Process connections	G 1/8 female threads with optional cutting ring fittings for 6 or 8 mm tube
Electrical connections	Two round-shell multi-pin connector sockets (M12, male) Connector 1: 5-pin power input and analog signal output Connector 2: 4-pin relay contacts / solid-state switch outputs
	Materials
Housing	Polyamid PA 6.6
Media contact	Brass, VITON®, NBR
	Mounting
	Rear mounting holes for panel mounting Wall mountable using adaptor plate

¹ SPST: Single Pole Single Throw

Programming

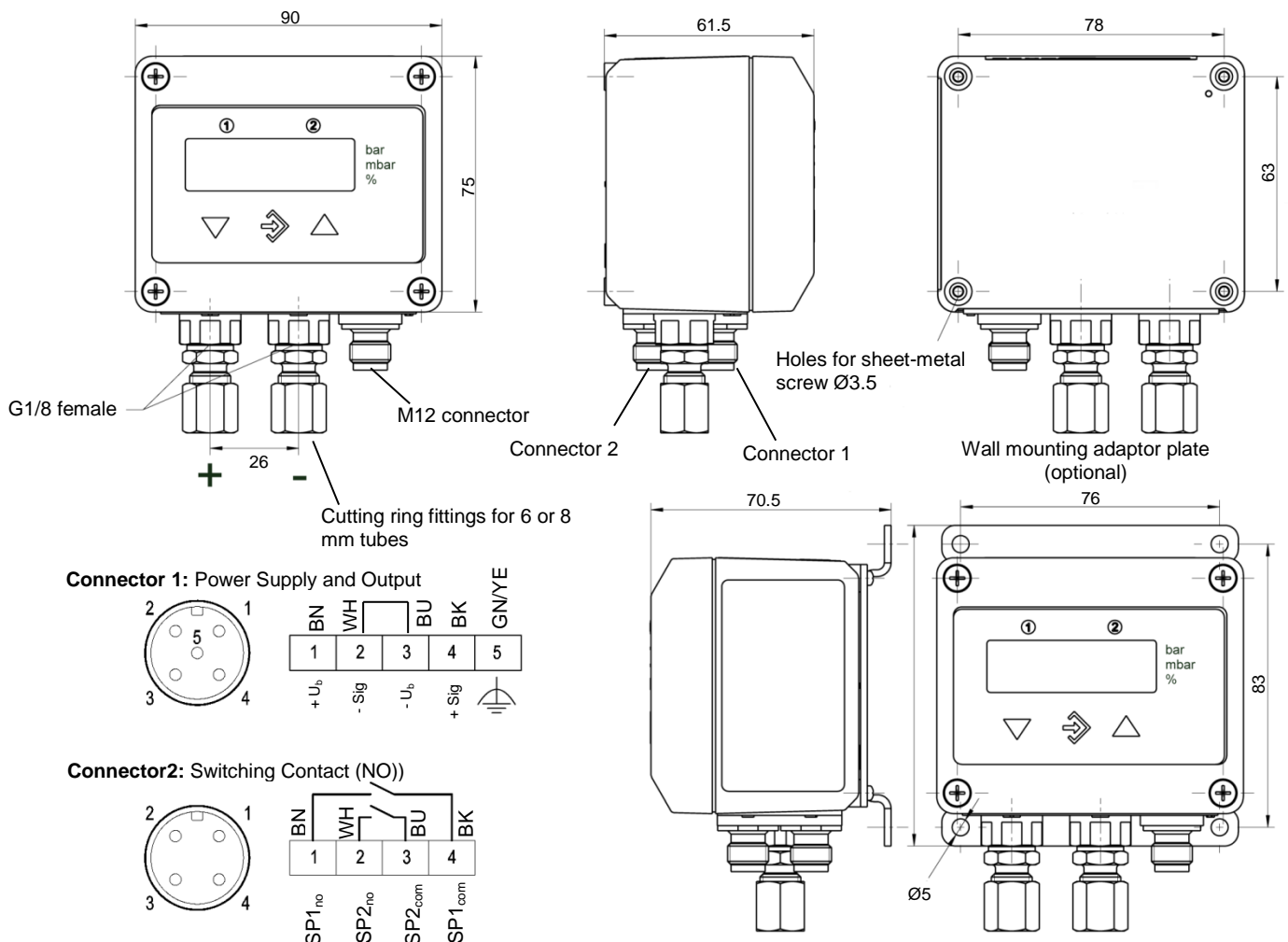
Via membrane key-switches or by using PC-programming interface (EU03 s. accessory); programming mode can be password protected.

Settings	
Damping	0...100 s (10 / 90% step response time) for signal output, display separated
Switching outputs ① ②	activation point, de-activation point, response time delay (0...100 s), as make (no) or break (nc) contact
Measuring range unit	bar, kPa, „free unit“ ↓, start value, end value and decimal place for „free unit“
Zero suppression	0...1/3 of measurement range (1)
Output signal	can be set at any point of measuring range (2)
Offset correction	± 1/3 of measurement range (3)
Output characteristic curve	linear, square rooted, horizontal cylindrical tank, table (3...30 entries)
Password	001 ... 999, (000 = password protection disabled)

- (1) Measured value deviations symmetric about zero are set to zero (Used for zero drift suppression).
 (2) Maximum effective turn-down ratio = 4:1. Only the output signal is affected. Transfer function is inverted if start value > end value.
 (3) Zero calibration setting may change with mounting orientation.

Dimensions

(All units in mm unless stated otherwise)



Ordering Code

Digital Differential Pressure Transmitter / Switch

Type DE38

			0			K	0		M	
--	--	--	---	--	--	---	---	--	---	--

Measuring range

- 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

Measuring system

- Pressure chambers, diaphragm, gaskets: brass / NBR®.....> M
- Pressure chambers, diaphragm, gaskets: brass / Viton®.....> N

Process connections

- G 1/8 female thread.....> 0 0
- Brass cutting ring fitting for 6 mm tube.....> 2 8
- Brass cutting ring fitting for 8 mm tube.....> 2 9

Output signal (3-wire circuit)

- No signal output.....> 0
- Current output: 0 - 20 mA linear.....> A
- Voltage output: 0 - 10 V DC linear.....> C
- Current output: 4 - 20 mA linear.....> P

Supply voltage

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

Measuring unit

- Standard pressure units.....> 0

Display / Switching output

- 3½ digit LED display – 2 sets of voltage-free relay contacts.....> 3
- 3½ digit LED display – 2 sets of voltage free solid state relay.....> 6

Electrical connection

- Two round-shell multi-pin connector sockets (M12, male).....> M

Mounting

- Standard (rear fastening holes).....> 0
- Wall mounting.....> W

Accessories

Ordering code	Description	Pole	Application	Length
06401993	cable with M12 connector	4-pole	switching output	2 m
06401994	cable with M12 connector	4-pole	switching output	5 m
06401995	cable with M12 connector	5-pole	supply and output signal	2 m
06401996	cable with M12 connector	5-pole	supply and output signal	5 m
04005144	wall mounting adapter set			
EU03.F300	PC-programming interface with SW			

