

DE27 || Digital Differential Pressure Transmitter

The DE27 is a multi-function differential pressure transmitter with a 2-wire or 3-wire electrical interface.

It is suitable for accurate measurement of positive / negative gauge pressure or differential pressure of air and gases.

Examples of applications:

- Air conditioning plant and systems
- Ventilation systems
- Environmental monitoring

Principles of Operation

The instrument is based on a piezo-resistive sensor element and can measure positive gauge, negative gauge or differential pressure.

The pressure is measured directly by a piezo-resistive resistance bridge that is formed on the surface of an integral silicon diaphragm in each sensor.

Change of pressure results in change of resistance that is converted to a varying voltage and then digitized. The instrument's internal microcontroller transmits the measured value through a D/A converter as a voltage or current signal output, and transfers the measured value to the LC display (in versions with display).

The output signal can be damped, scaled and inverted accurately and easily by digital means.



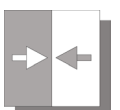
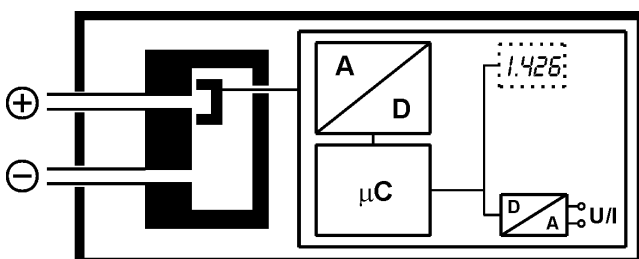
Features

- Robust design; over-pressure protected; maintenance-free
- Output signal can be accurately scaled, adjusted for zero offset anywhere in the specified pressure range, and inverted if needed
- All settings/adjustments can be done from a PC using the optional EU03 PC Adaptor

Typical Applications

- Condition monitoring of roll-band filters
- Flue draft measurement
- Air flow and actuator air pressure monitoring

Schematic Diagram



Specifications

General

Base measuring range ⁺	mbar	0-4.00	0-6.0	0-10.00	0-16.00	0-25.0	0-40.0	0-60.0	0-100.0	±2.50	±4.00	±6.00	±10.00	±16.00	±25.0	±40.0	±60.0	
	Pa	0-400	0-600	0-1000	0-1600	(++)	(++)	(++)	(++)	±250	±400	±600	±1000	±1600	(++)	(++)	(++)	
	inWC	0-1.60	0-2.0	0-4.00	0-6.50	0-10.00	0-16.00	0-25.0	0-40.0	±1.00	±1.60	±2.50	±4.00	±6.50	±10.00	±16.00	±25.0	
Max. static operating pressure	mbar	50		100		250		500		50			100		250		500	
Max. safe pressure	mbar	150		300		750		1500		150			300		750		1500	
Straight line error (max.) [°]	%FS	2.5 (optional 1.0)																
Straight line error (typ.) [°]	%FS	1.5 (optional 0.5)																
Accuracy span (max.) ^{°°}	%FS 10K	1.0		0.3				1.0		0.5		0.3						
Accuracy span (typ.) ^{°°}	%FS 10K	0.3																
Accuracy zero point (max.) ^{°°}	%FS 10K	1.0		0.4				1.0		0.5		0.4						
Accuracy zero point (typ.) ^{°°}	%FS 10K	0.2																

[°] : Straight-line error = nonlinearity + hysteresis; at 25 °C; base measuring range; linear output.

^{°°} : Pressure within base range; compensated temperature range 0 to 60 °C.

⁺ : Other selectable pressure units: "bar", "kPa", "psi", "%".

⁺⁺ : In the 4-digit version, displayed values can be from -9999...+9999. In this version the least significant digit value may fluctuate.

Operating temp. (ambient)	-10 ... 70°C
Operating temp. (media)	-10 ... 70°C
Storage temperature	-20 ... 70°C
Protection class (housing)	IP 65 per DIN EN 60529

Electrical

Nominal supply voltage	24 V DC / AC (AC for 3-wire only)
Operating supply voltage	3-wire: 12 to 32 V DC / AC, approx 3 W/VA, 2-wire (loop-supply): 6 to 32V DC
Output signal	3-wire: 0 to 10 V DC, 2-wire: 4 to 20 mA
Output signal load impedance	Current output: $R_L \leq (U_B - 6V) / 0.02 A$ Voltage output: $R_L \geq 2 K\Omega$ ($U_B \geq 15 V$), $R_L \geq 15 K\Omega$ ($U_B = 12$ to 15V DC)

Operating current 3-wire: ≤ 15 mA; 2-wire: ≤ 22 mA, programmable

Display Standard: no display.

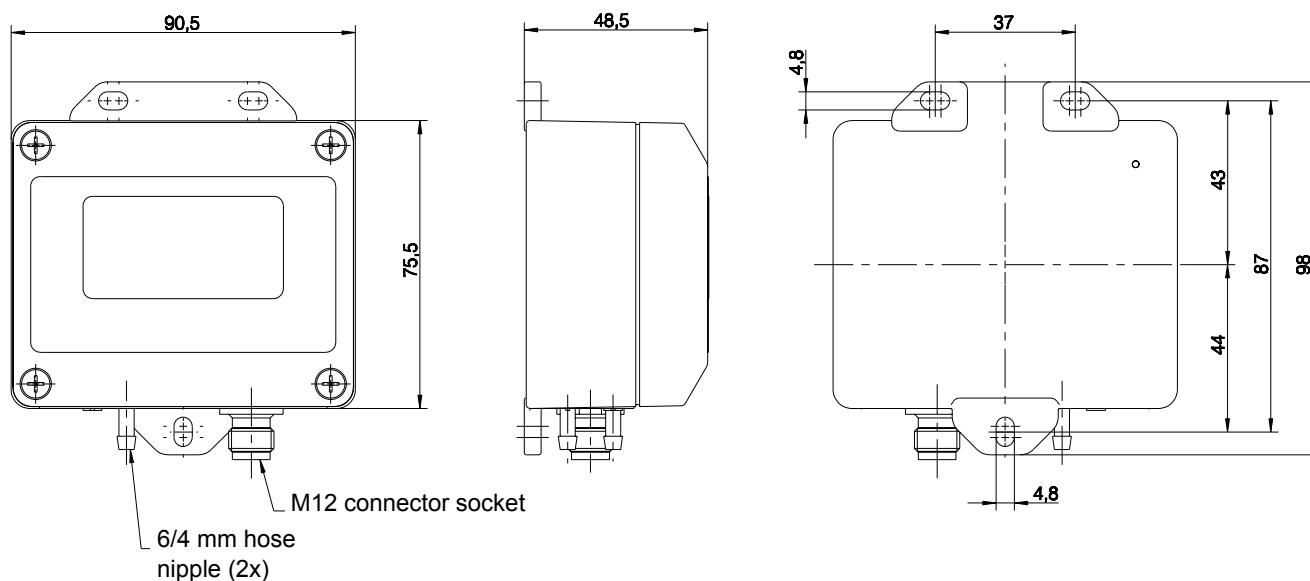
Optional: 3½- or 4-digit LC display.

Note: With a 4-digit display the indicated resolution can be finer than the measured resolution (approx. 3500 counts). Therefore displayed values may fluctuate.

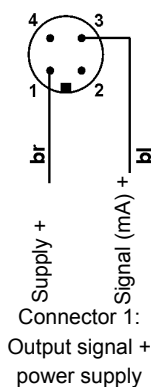
Connections, Materials, Mounting

Electrical connections	M12 round-shell multi-pin connector Plug connector 1 for supply voltage and analogue output signal (4 pin plug male)
Pressure connections	6/4 mm nickel-plated brass hose nipples
Materials, housing	Polyamide PA 6.6, polycarbonate PC
Materials, media contact	Silicon, PVC, aluminum, brass
Mounting	Wall mounting (integral mounting links) If the instrument is intended for outdoor application, we highly recommend using an adequate protective housing (or at least a big enough shelter) as protection against UV-radiation on the membrane keyboard and against exposure of the instrument to rain or snow.

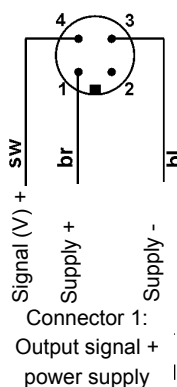
Dimensions (all units in mm unless stated otherwise)



2-wire connections



3-wire connections



Programming

The DE27 is programmed from a PC using the EU03 PC adaptor (optional accessory).

Settings:	
Damping	0.0 to 100.0 sec (10 / 90 % step response time)
Unit of measurement	mbar / Pa / in. H ₂ O / bar / kPa / psi / % ⁽⁰⁾
Zero stabilization	0 to 100 counts of least significant digit ⁽¹⁾
Measuring range min./max.	Basic measuring range min./max. ⁽²⁾
Zero adjustment	± 100 counts of least significant digit ⁽³⁾
Output signal transformation	Linear, turndown ratio 4:1 max., inverted
Password	001 to 999 (000 = password lock disabled)

Notes:

⁽⁰⁾: "%" units refer to the measuring range span: 0% = range min.; 100% = range max.

⁽¹⁾: Measured values within ± 100 counts of zero are displayed as exactly zero (i.e., zero drift is suppressed).

⁽²⁾: Turndown ratio = 4:1 max. Only the output signal is affected. Downward sloping output signals are also possible when the starting value of the measuring range is greater than the ending value. "%" units relate to the full pressure range, whether increasing or decreasing.

⁽³⁾: Zero adjustment may be needed for mounting orientation other than vertical.

Bestellkennzeichen

Digital Differential Pressure Transmitter		DE 27			0	4	5		0		M	W
Measuring range	Max. static 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									
- 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	100 mbar	B	1									
- 25 . . . 25 mbar	250 mbar	B	2									
- 40 . . . 40 mbar	250 mbar	C	5									
- 60 . . . 60 mbar	500 mbar	B	3									
Accuracy class												
Straight-line error ≤ 2.5%												
Straight-line error ≤ 1%												
Pressure connections												
6 / 4 mm hose nipples						4	5					
Signal output												
4 - 20 mA linear, 2-wire (select power supply „P“ with this)												B
0 - 10 V DC linear, 3-wire (select power supply „K“ with this)												C
Power supply input												
24 V DC/AC nominal (12-32 V DC/AC operating)												K
24 V DC nominal (6-32 V DC operating)												P
Display												
Without display												0
3½ digit LC display												1
4 digit LC display												A
Electrical connections												
M12 round-shell multi-pin connector (socket)												M
Mounting												
Integral rear mounting links												W

Accessories

Order code	Description	Pins	Function	Length
06401993	M12 connector plug with cable	4	Supply + signal	2 m
06401994	M12 connector plug with cable	4	Supply + signal	5 m
EU03.F300	PC programming adaptor with software, for 3-wire transmitter			
EU03.F200	PC programming adaptor with software, for 2-wire transmitter			