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Datasheet EE610

Low Differential Pressure Sensor

Modbus

www.epluse.com

EE610

Low Differential Pressure Sensor

The EE610 is dedicated for the highly accurate measurement of low differential pressure in applications like clean rooms, hospitals, laboratories, isolation chambers or in the pharmaceutical industry. It is suitable for air as well as all non-flammable and non-aggressive gases.

Measurement Performance

The EE610 offers ±0.5 Pa accuracy over the entire measurement range. For the versions with analogue outputs, the measuring ranges ±25 / ±50 / ±100 Pa and 0…100 Pa (±0.1 / ±0.2 / ±0.4 and 0…0.4 inch WC) are selectable with DIP switches. The piezoresistive, no flow-through pressure sensing element stands for outstanding long-term stability.

Analogue and Digital Outputs

The measured data is available on the analogue voltage and current output or on the RS485 interface with Modbus RTU protocol.

Functional and Robust

The IP65 / NEMA 4X enclosure minimizes installation costs. External mounting holes allow installation with closed cover, the electronics are thus protected against construction site damage and pollution.

Configurable and Adjustable

The setup can be easily performed with DIP switches on the electronics board (EE610 with analogue output) or with an optional stick and the free PCS10 Product Configuration Software. The setup includes measuring range, output signal, response time, displayed units and backlight. The auto-zero interval and the measuring range can also be set with the PCS10. A zero point and span adjustment can be easily performed with push buttons on the electronics board.

EE610 with backlit display

EE610 without display

Features

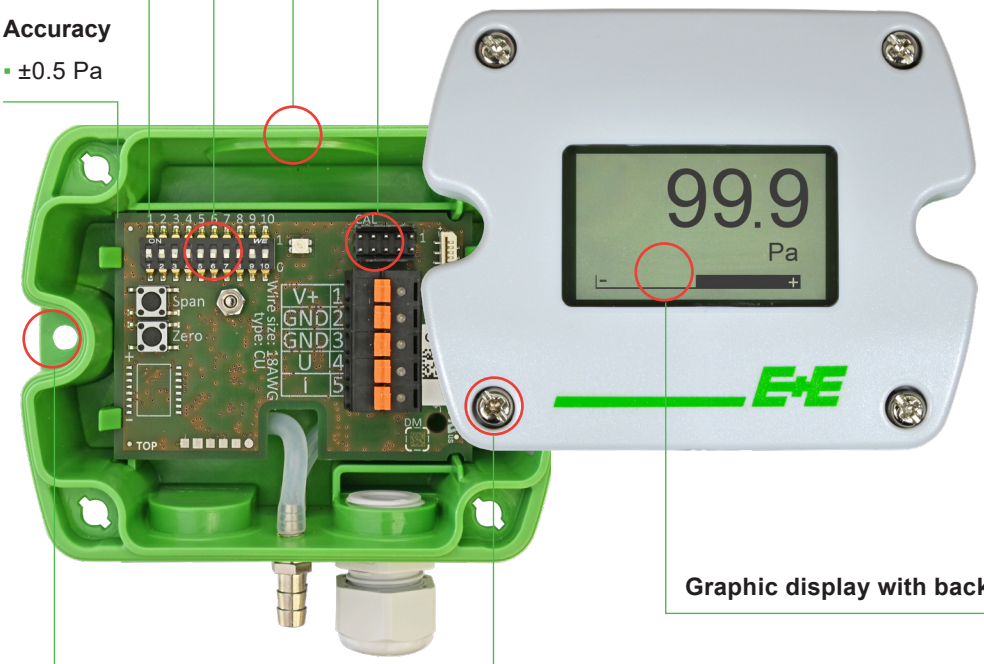
Configurable and adjustable
- Measuring range
- Output signal
- Response time
- Displayed units and backlight
- Zero point and span adjustment

Knockout for ½" conduit fitting (US)

Service interface for configuration
- Measurand: Differential pressure Δp
- Auto-zero interval (optional)

Multi-range (analogue output)
- ±25 / ±50 / ±100 Pa / 0...100 Pa

Accuracy
- ±0.5 Pa



Graphic display with backlight

Enclosure
- IP65 / NEMA 4X protection rating
- Bayonet screws - opend / closed with a ¼ rotation

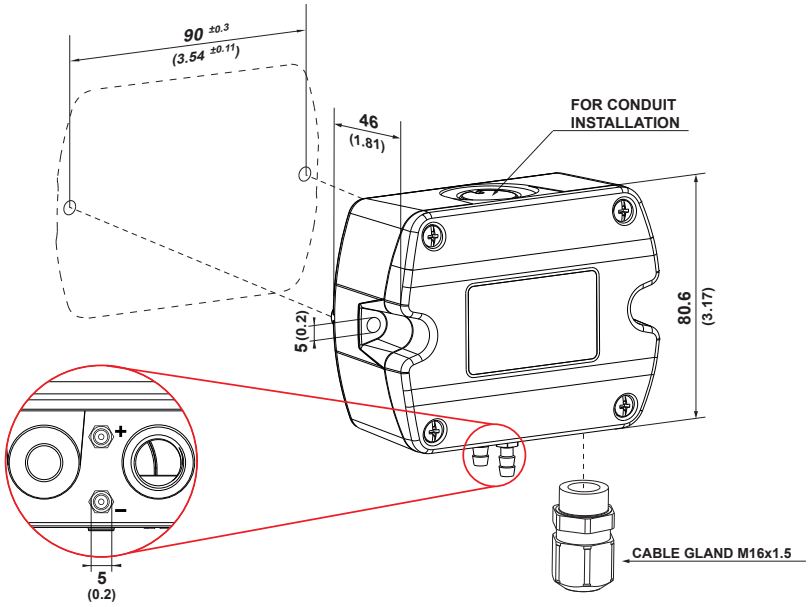
External mounting holes
- Mounting with closed cover
- Electronics protected against construction site pollution
- Easy and fast mounting

Test report

According DIN EN 10204-2.2

Dimensions

Values in mm (inch)



Pressure fittings Ø5 (Ø0.2)

\+ high pressure

\- low pressure

Pressure connection set is included in the scope of supply.

Technical Data

Measurands

Differential Pressure (Δp)

Measurement principle	Piezoresistive, no flow-through
Measuring range **Analogue output selectable with DIP switches**[1)] **With PCS10**	 ±25 / ±50 / ±100 Pa / 0…100 Pa Configurable within max. measuring range
Accuracy, typ. @ 20 °C (68 °F), incl. hysteresis, non-linearity and repeatability	±0.5 Pa = ±0.5 % FS FS = full scale (100 Pa)
Temperature dependency, typ.	0.03 Pa/K
Response time t_{90} **Analogue output**[1)] **Digital interface**[2)]	50 ms / 500 ms / 2 s / 4 s selectable with DIP switches Configurable in the range from 0.05 to 30 s with the PCS10 Configurable in the range from 0.5 to 30 s with the PCS10
Auto-zero interval	24 h (factory setting) Configurable between 10 min and 7 days with PCS10. Can be deactivated.
Long-term stability	<0.5 Pa/year
Overload limits	±7 000 Pa

1) Factory setup analogue output: measurement range ±100 Pa; response time t_{90}: 50 ms; displayed unit: Pa; display backlight: on; analogue outputs: 0 - 10 V and 4 - 20 mA. Other ranges upon request.
2) Factory setup RS485: response time t_{90}: 500 ms; displayed unit: Pa; display backlight: on.

Technical Data

Outputs

Analogue

Analogue output[1)]	0 - 5 V or 0 - 10 V and 0 - 20 mA or 4 - 20 mA (3-wire)	-1 mA < I_L < 1 mA R_L ≤ 500 Ω	I_L = load current R_L = load resistor

1) Voltage and current output signals available simultaneously at the spring loaded terminals. Settings selectable with DIP switches.
Factory setup analogue output: measurement range 0...100 % FS; response time t_{90}: 50 ms; displayed unit: Pa; display backlight: on; analogue outputs: 0 - 10 V and 4 - 20 mA. Other ranges upon request.

Digital

Digital interface	RS485 (EE610 = 1/2 unit load)
Protocol **Factory settings** **Supported Baud rates** **Measured data types**	Modbus RTU Baud rate see order information, parity even, 1 stop bit, Modbus address 44 9600, 19200 and 38400 FLOAT32 and INT16

General

Power supply class III USA & Canada: Class 2 supply necessary, max. voltage 30 V DC	15 - 35 V DC or 24 V AC ±20 %		
Current consumption, typ. @ 0 Pa (0 psi) / 24 V DC		**Analogue output**	**Digital interface**
	Without display	23 mA	8 mA
	Display with backlight	49 mA	29 mA
Electrical connection **Analogue output** **Digital interface**	Spring-loaded terminals, max. 1.5 mm² (AWG16) Screw terminals, max. 2.5 mm² (AWG14)		
Cable gland	M16x1.5		
Display	Graphic, with backlight		
Selectable units on display with **Analogue output via DIP switch** **Analogue output and digital interface via PCS10**	 Pa, mbar, inch WC, mm H_2O Pa, kPa, mbar, inch WC, mm H_2O		
Humidity range	0...95 %RH, non-condensing		
Temperature range **Operation** **Storage**	-20...+60 °C (-4...+140 °F) -40...+70 °C (-40...+158 °F)		
Enclosure **Material** **Protection rating**	PC (Polycarbonate) UL94 V-0 (with display UL94 HB) approved IP65 / NEMA 4X		
Electromagnetic compatibility	EN 61326-1 EN 61326-2-3 Industrial environment FCC Part15 Class A ICES-003 Class A		
Shock and vibration	Tested according to EN 60068-2-64 and EN 60068-2-27		
Conformity	CE UKCA		

Technical Data

Configurability

Device	DIP switches	PCS10
Analogue output without auto-zero	✓	✓
Analogue output with auto-zero	✓	✓
Digital interface without auto-zero	✓	✓
Digital interface with auto-zero	✓	✓

Configuration options see above or manual at www.epluse.com/ee610.

Ordering Guide

	Feature	Description	Code	
			EE610-	
Hardware Configuration	Measuring range[1]	±100 Pa (±1 mbar, ±0.4 inch WC, ±10.2 mm H_2O)	HV51	
	Output	Analogue (voltage and current output)	A7	
		RS485		J3
	Display	Without display	No code	
		Display with backlight	D2	
	Auto-zero	Without auto-zero	No code	
		Auto-zero	AF8	
Software Setup	Protocol	Modbus RTU[2]		P1
	Baud rate	9 600		BD5
		19 200		BD6
		38 400		BD7

1) Measuring ranges ±25 / ±50 / ±100 Pa and 0…100 Pa selectable by DIP switches at analogue output or PCS10.
2) Factory setting: Parity even, 1 stop bit; Modbus map and communication setting: See User Manual and Modbus Application Note at www.epluse.com/ee610.

Order Examples

EE610-HV51A7

Feature	Code	Description
Measuring range	HV51	±100 Pa (±1 mbar, ±0.4 inch WC, ±10.2 mm H_2O)
Output	A7	Analogue (voltage and current output)
Display	No code	Without display
Auto-zero	No code	Without auto-zero

EE610-HV51A7D2AF8

Feature	Code	Description
Measuring range	HV51	±100 Pa (±1 mbar, ±0.4 inch WC, ±10.2 mm H_2O)
Output	A7	Analogue (voltage and current output)
Display	D2	Display with backlight
Auto-zero	AF8	Auto-zero

Accessories

For further information, see data sheet Accessories.

Accessories	Code
Pressure connection set, 2 m (6.6 ft) PVC hose with two ABS pressure connection nipples (included in the scope of supply)	**HA011304**
USB-C configuration stick	**HA011070**
E+E Product Configuration Software (Free download: www.epluse.com/pcs10)	**PCS10**

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