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# + Datasheet EE610

Low Differential Pressure Sensor



# 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  $\pm 0.5$  Pa accuracy over the entire measurement range. For the versions with analogue outputs, the measuring ranges  $\pm 25/\pm 50/\pm 100$  Pa and  $0 \dots 100$  Pa ( $\pm 0.1/\pm 0.2/\pm 0.4$  and  $0 \dots 0.4$  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 or BACnet MS/TP 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 adapter 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

## Multi-range (analogue output)

- $\pm 25 / \pm 50 / \pm 100$  Pa / 0...100 Pa

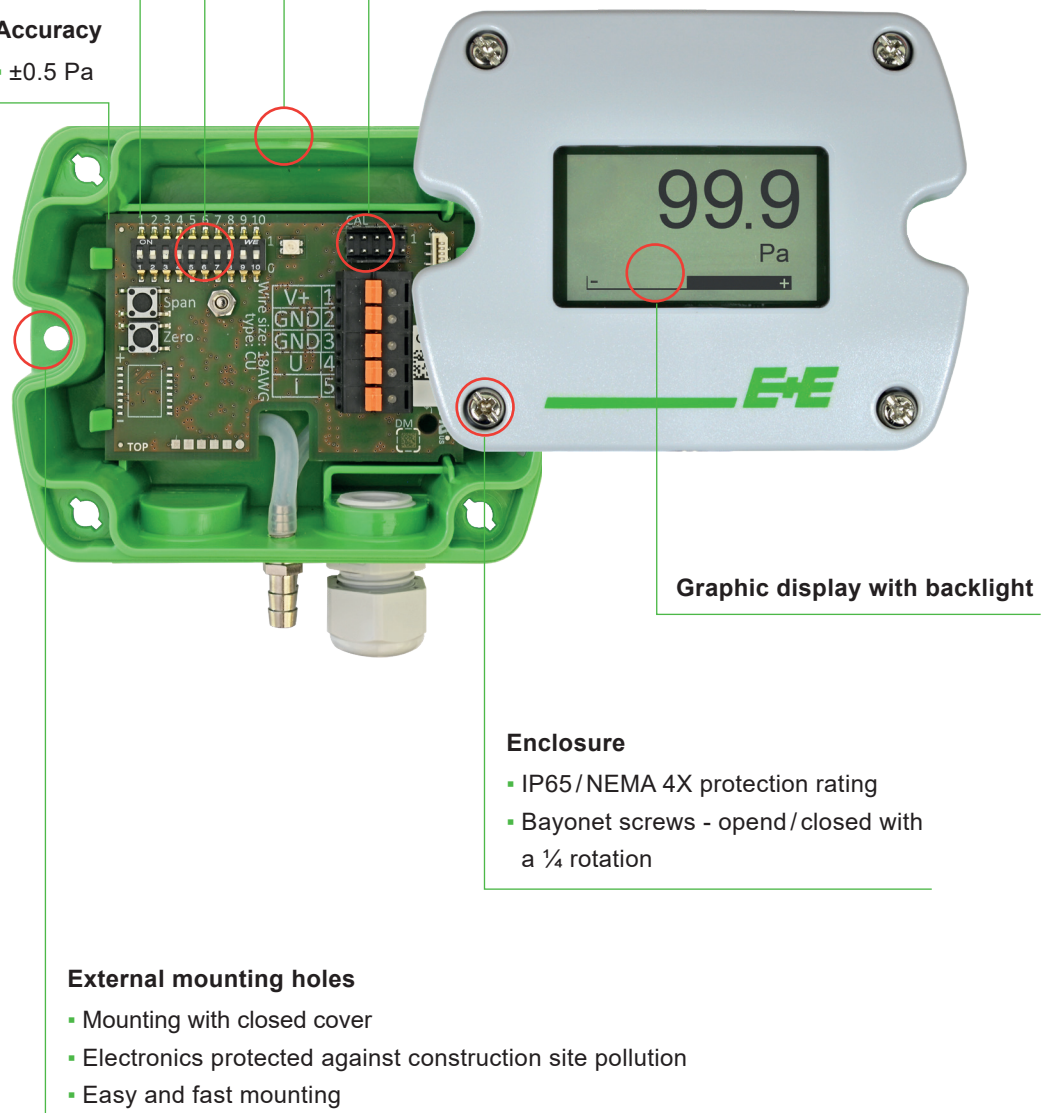
## Accuracy

- $\pm 0.5$  Pa

## Knockout for 1/2" conduit fitting (US)

## Service interface for configuration

- Measurand: Differential pressure  $\Delta p$
- Auto-zero interval (optional)



## Graphic display with backlight

## Enclosure

- IP65 / NEMA 4X protection rating
- Bayonet screws - open / closed with a 1/4 rotation

## External mounting holes

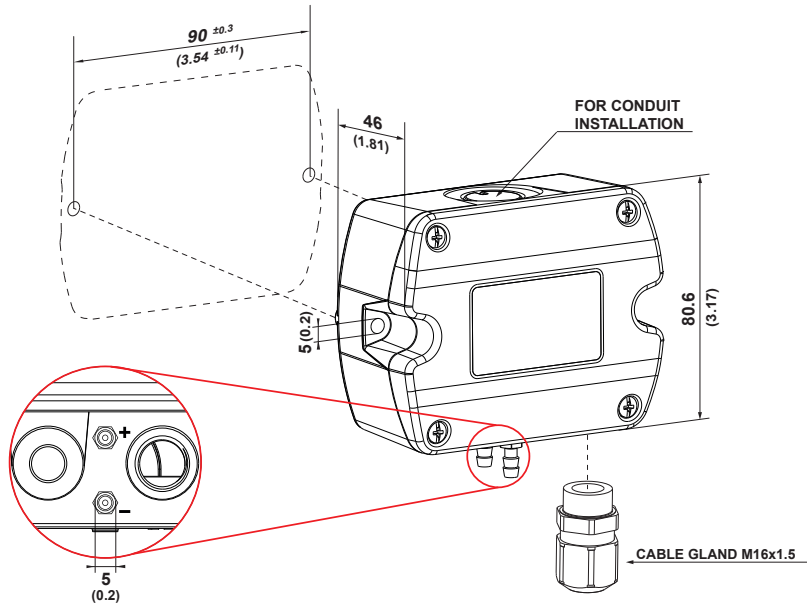
- Mounting with closed cover
- Electronics protected against construction site pollution
- Easy and fast mounting

## Test report

According to 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 ( $\Delta p$ )

Measurement principle	Piezoresistive, no flow-through	
Measuring range Analogue output selectable with DIP switches <sup>1)</sup> With PCS10	$\pm 25 / \pm 50 / \pm 100$ Pa / 0...100 Pa Configurable within max. measuring range	
Accuracy @ 20 °C (68 °F), incl. hysteresis, non-linearity and repeatability	$\pm 0.5$ Pa = $\pm 0.5$ % FS	FS = full scale (100 Pa)
Temperature dependency, typ.	0.03 Pa/K	
Response time $t_{90}$ Analogue output <sup>1)</sup> Digital interface <sup>2)</sup>	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	$\pm 7000$ Pa	

1) Factory setup analogue output: measurement range  $\pm 100$  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 <sup>1)</sup>	0 - 5 V or 0 - 10 V	-1 mA < I <sub>L</sub> < 1 mA	I <sub>L</sub> = load current
	and 0 - 20 mA or 4 - 20 mA (3-wire)	R <sub>L</sub> ≤ 500 Ω	R <sub>L</sub> = 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<sub>90</sub>: 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
Protocol Factory settings Supported Baud rates	BACnet MS/TP BACnet address 44 9600, 19200, 38400, 57600 and 76800

## 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 mm <sup>2</sup> (AWG16) Screw terminals, max. 2.5 mm <sup>2</sup> (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 <sub>2</sub> O Pa, kPa, mbar, inch WC, mm H <sub>2</sub> O		
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	Polycarbonat 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	 		

# 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](http://www.epluse.com/ee610).

# Ordering Guide

Feature	Description	Code	
Hardware Configuration	Measuring range <sup>1)</sup>	EE610-HV51	
	Output	A7	J3
	Display	No code D2	
	Auto-zero	No code AF8	
Software Setup	Protocol		P1 P3
	Baud rate	9600	BD5
		19200	BD6
		38400	BD7
		57600 (for BACnet MS/TP only)	BD8
76800 (for BACnet MS/TP only)	BD9		

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 Guide and Modbus Application Note at [www.epluse.com/ee610](http://www.epluse.com/ee610).

3) Factory setting: No parity, 1 stop bit; Product Implementation Conformance Statement (PICS) available at [www.epluse.com/ee610](http://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 <sub>2</sub> O)
Output	A7	Analogue (voltage and current output)
Display	No code	Without display
Auto-zero	No code	Without auto-zero

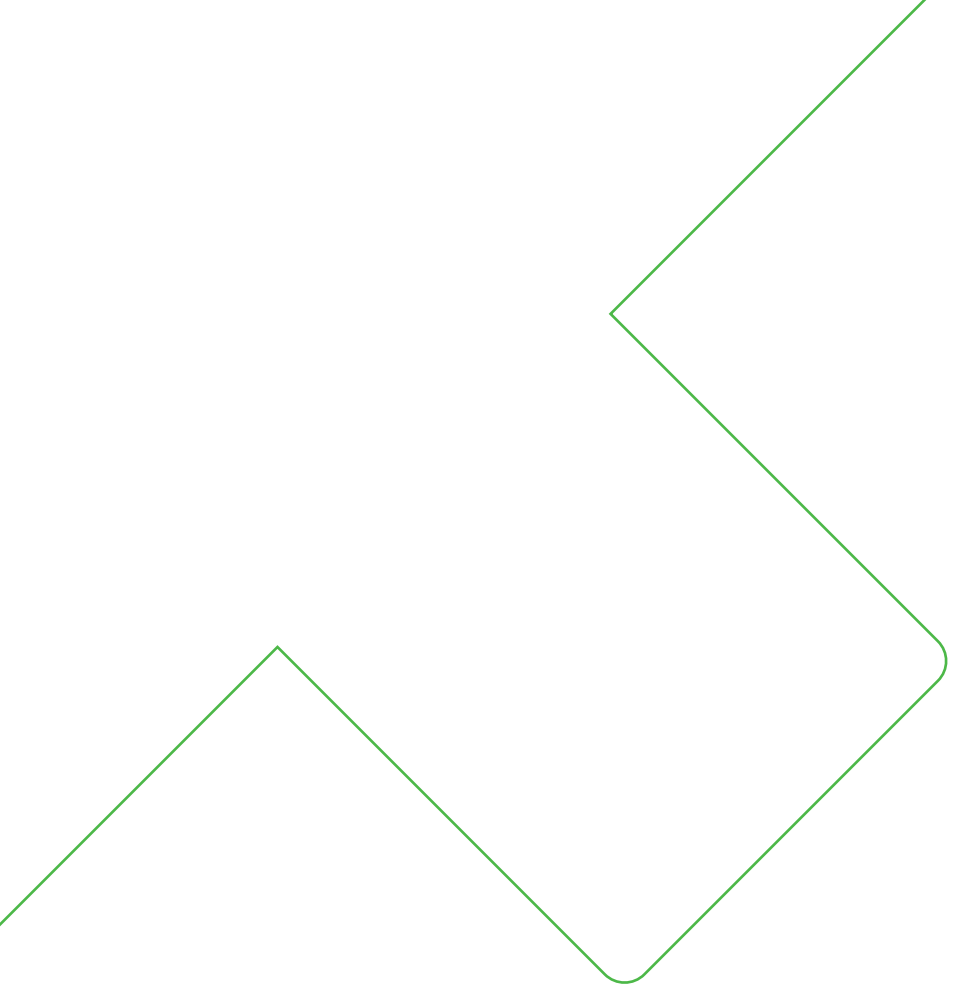
## EE610-HV51A7D2AF8

Feature	Code	Description
Measuring range	HV51	±100 Pa (±1 mbar, ±0.4 inch WC, ±10.2 mm H <sub>2</sub> O)
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 configuration adapter	HA011066
E+E Product Configuration Software (Free download: <a href="http://www.epluse.com/pcs10">www.epluse.com/pcs10</a> )	PCS10



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