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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. It is ideal for use in critical 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. The sensor is optionally available with auto-zero.

Measurement Performance

The EE610 offers ± 0.5 Pa accuracy across the entire measuring range. The device has a maximum measuring range of ± 100 Pa. With the analogue version, a measuring range of 25 %, 50 %, 75 % or 100 % of the maximum measuring range can be selected unidirectionally or bidirectionally. These settings can be made either via the PCS10 or via DIP switches. The piezoresistive, non-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 minimises installation costs. External mounting holes allow installation with closed cover, protecting the electronics 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 using the 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)

- 0...25/50/75/100 Pa
- $\pm 25 / \pm 50 / \pm 75 / \pm 100$ Pa

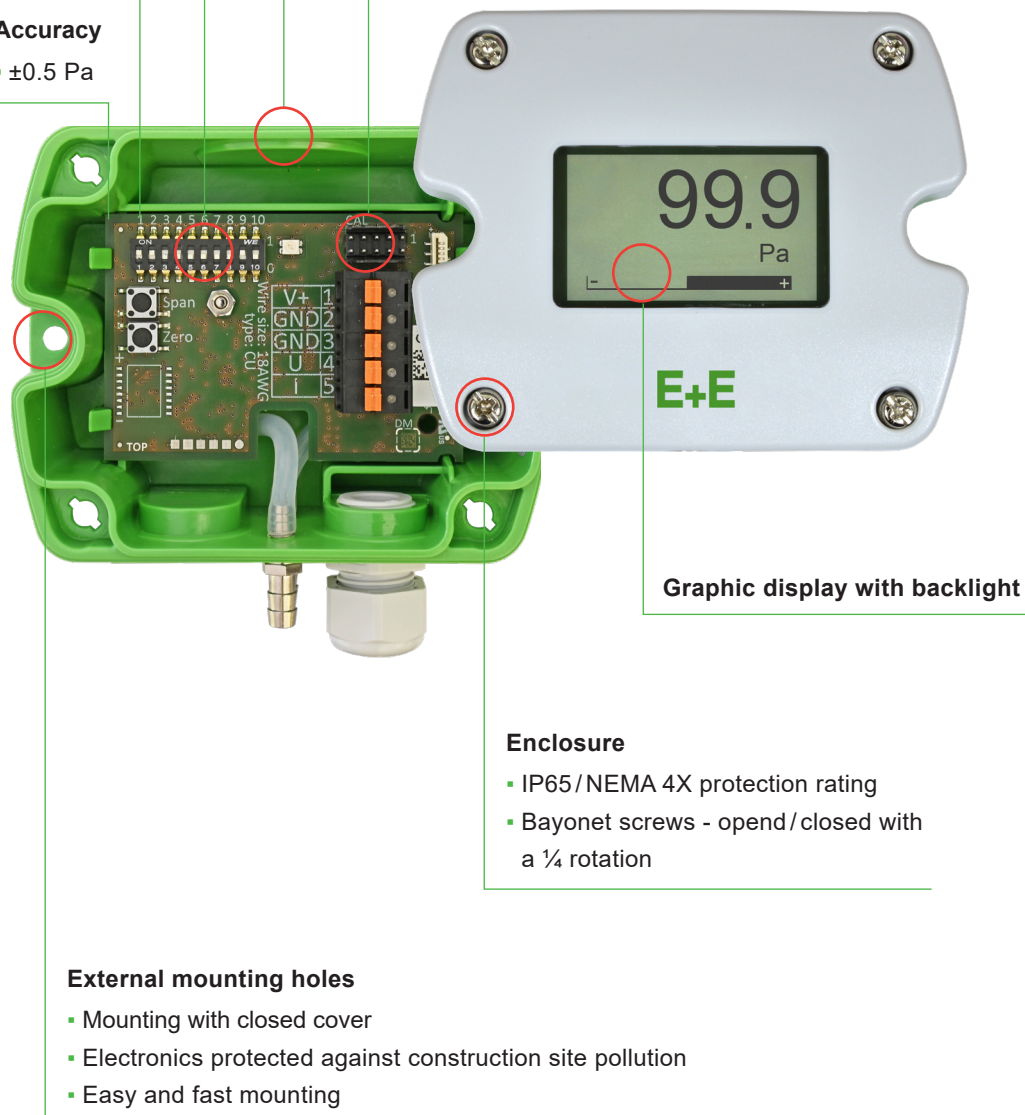
Accuracy

- ± 0.5 Pa

Knockout for 1/2" conduit fitting (US)

Service interface for configuration

- Measurand: Differential pressure Δp
- Auto-zero interval (optional)



Graphic display with backlight

Enclosure

- IP65/NEMA 4X protection rating
- Bayonet screws - opened/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 DIN EN 10204-2.2

Features

Accredited Traceable Calibration Certificate



Internationally recognised certificates for the calibration of measuring instruments from accredited laboratories document the traceability of the measurements to the International System of Units (SI). The E+E Elektronik calibration laboratory offers traceable calibrations.

The E+E calibration laboratory is accredited by Akkreditierung Austria in accordance with DIN EN ISO/IEC 17025 with the identification number 0608. This allows the laboratory to issue ISO 17025 certificates for the measurands humidity, temperature, dew point temperature, air velocity, flow, pressure and CO₂.

Visit www.eplusecal.com for detailed information on calibration and to enquire a certificate of accredited traceable calibration for the EE600 from the E+E Elektronik calibration laboratory.

ISO 9001 Calibration Certificate

An ISO 9001 calibration certificate documents the comparative measurement of a device against high quality reference equipment (factory level standard). The comparison is performed in accordance with internal procedures that comply with ISO 9001 or and provides information on the specimen's measuring accuracy. The reference equipment is traceable to national standards, however, the calibration process is not accredited. Therefore, an ISO 9001 calibration is neither traceable nor internationally comparable.

Visit www.eplusecal.com for detailed information on calibration and to enquire an ISO 9001 calibration certificate.

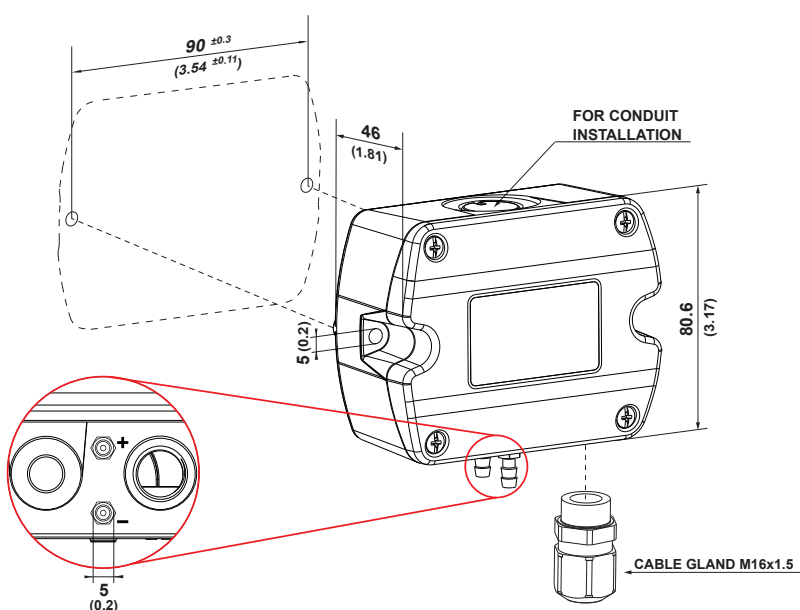
Dimensions

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	± 100 Pa
Analogue scaling	Analogue output With PCS10
	$\pm 25 / \pm 50 / \pm 75 / \pm 100$ Pa field selectable with DIP switches ¹⁾ 0...25/50/75/100 Pa field selectable with DIP switches ¹⁾ 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	$\pm 7\,000$ 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.

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 $R_L \leq 500 \Omega$	I_L = load current R_L = load resistor
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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 ¹⁾	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

1) Factory setting RS485: Response time t_{90} : 500 ms; Displayed units: Pa; Display backlight: on.

Technical Data

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 ² (AWG16) Screw terminals, max. 2.5 mm ² (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 ₂ O Pa, kPa, mbar, inch WC, mm H ₂ 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	PC (Polycarbonate) UL94 V-0 (with display UL94 HB) approved IP65/NEMA 4X	
Electromagnetic compatibility	EN 61326-1 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	 		

Configurability

All devices, analogue and digital, with or without auto-zero, can be configured via DIP switch or via PCS10.
 Configuration options see above or manual at www.epluse.com/ee610.

Ordering Guide

Feature	Description	Code	
Hardware Configuration	Measuring range ¹⁾	EE610-HV51	
	Output	A7	J3
	Display	No code	
	Auto-zero	No code	
	Auto-zero	AF8	
Software Setup, Analogue Outputs	Output scaling low	No code	
	Value in Pa ²⁾	SALValue	
	Output scaling high	No code	
	Value in Pa ²⁾	SAHValue	
	Protocol		P1
	Baud rate		BD5
			BD6
			BD7
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ISO 9001 Calibration Certificate		see www.eplusecal.com	

1) Measuring ranges 25 % / 50 % / 75 % / 100 % FS, unidirectional or bidirectional selectable with DIP switches at analogue output or PCS10.

2) Minimum span 50 Pa.

3) 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-HV51A7SAL-80SAH60

Feature	Code	Description
Measuring range	HV51	±100 Pa (±1 mbar, ±0.4 inch WC, ±10.2 mm H ₂ O)
Output	A7	Analogue (voltage and current output)
Display	No code	Without display
Auto-zero	No code	Without auto-zero
Output scaling low	SAL-80	-80 ¹⁾
Output scaling high	SAH60	60 ¹⁾

1) Value in Pa

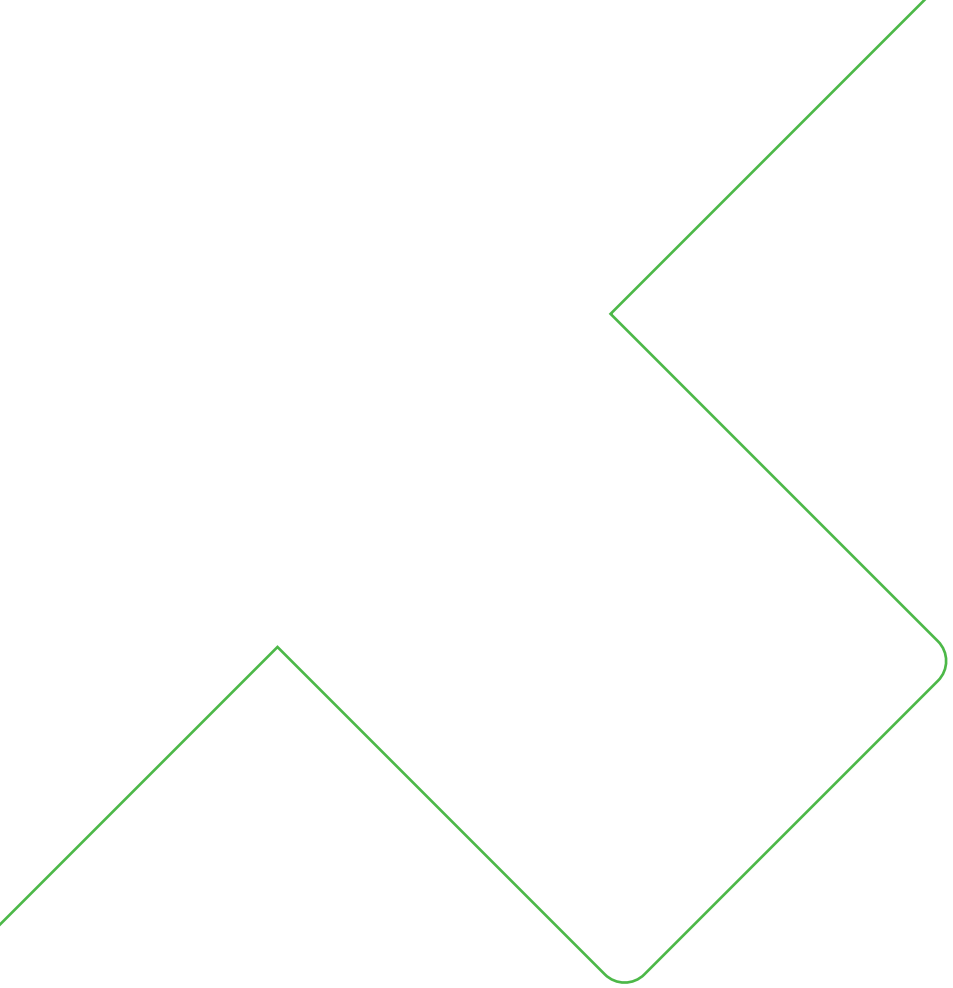
EE610-HV51A7D2AF8

Feature	Code	Description
Measuring range	HV51	±100 Pa (±1 mbar, ±0.4 inch WC, ±10.2 mm H ₂ O)
Output	A7	Analogue (voltage and current output)
Display	D2	Display with backlight
Auto-zero	AF8	Auto-zero
Output scaling low	No code	-100
Output scaling high	No code	100

Accessories

For further information please refer to the [Accessories](#) datasheet.

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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