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Datasheet EE600

Differential Pressure Sensor



EE600

Differential Pressure Sensor

The EE600 is dedicated for reliable measurement of differential pressure in HVAC, building automation and filter monitoring applications. The multi-range device is suitable for air as well as all non-flammable and non-aggressive gases. Optionally, the sensor is available with auto-zero function.

Measurement Performance

The EE600 is available with full scale 1000 Pa (4 inch WC) and 10000 Pa (40 inch WC) and offers an outstanding accuracy of $\pm 0.5\%$ full scale. 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 for installation with closed cover, the electronics are thus protected against construction site damage and pollution.

Configurable and Adjustable

The setup and adjustment can be easily performed with DIP switches on the electronics board (EE600 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 can be set with the PCS10 The EE600 can be set up for volume flow or air velocity measurement, as well as for filter monitoring or level indication. A zero point and span adjustment can be easily performed with push buttons on the electronics board.



EE600 with backlit display



EE600 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...250/500/750/1000 Pa
- 0...2500/5000/7500/10000 Pa

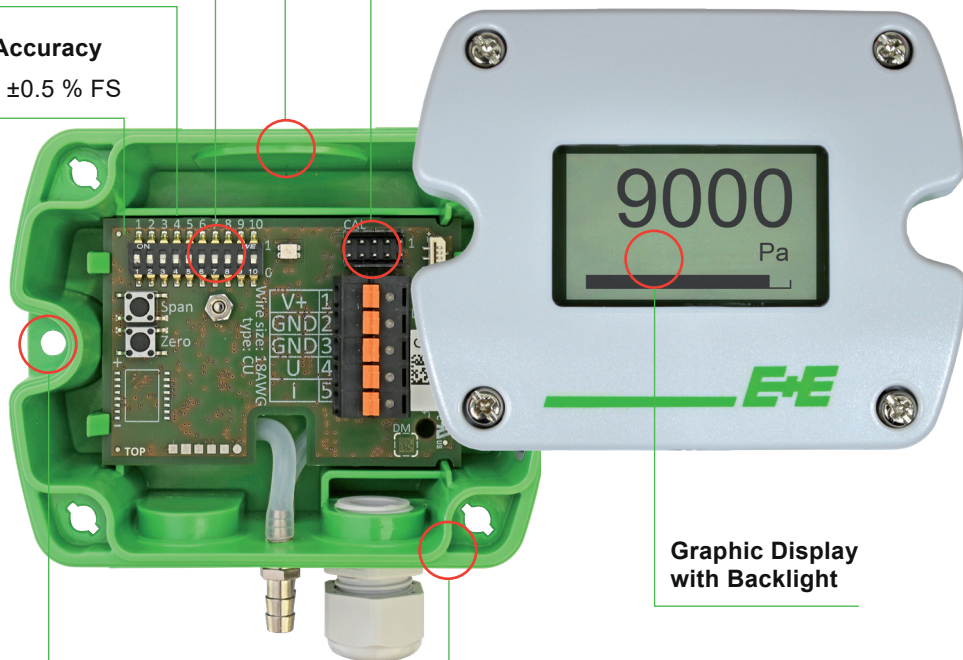
Accuracy

- $\pm 0.5\%$ FS

Knockout for 1/2" Conduit Fitting (US)

Service Interface for Configuration

- Measurands
 - Differential pressure Δp
 - Volume flow V' (k-Factor input)
 - Air velocity v (k-Factor input)
- Application setting
 - Filter monitoring
 - Level indicator
- 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

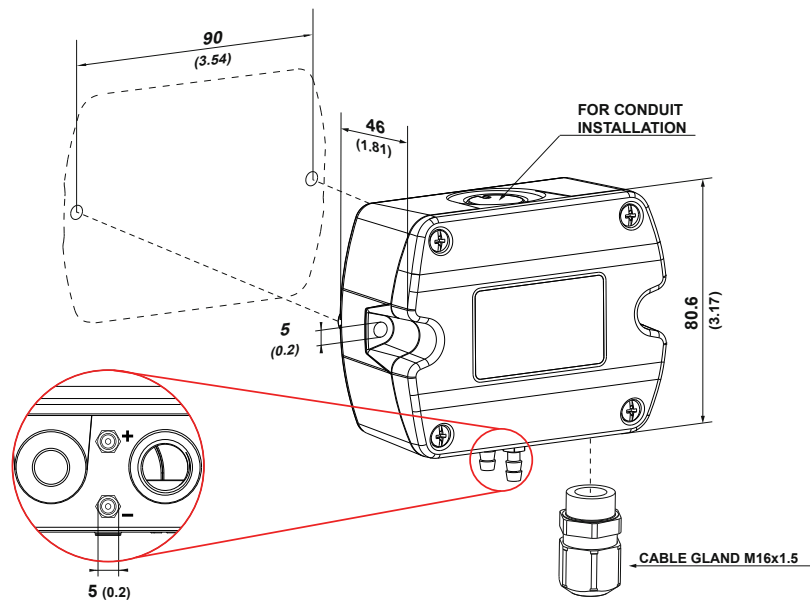
- Mounting with closed cover
- Electronics protected against construction site pollution
- Easy and fast mounting

Test Report

According to DIN EN 10204-2.2

Dimensions

Values in mm (inch)



Pressure fittings Ø5 (0.2)

- + 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 switches¹⁾	0...250/500/750/1 000 Pa 0...2 500/5 000/7 500/10 000 Pa	
With PCS10	Configurable within max. measuring range	
Accuracy @ 20 °C (68 °F), incl. hysteresis, non-linearity and repeatability	± 0.5 % FS	FS = full scale (1 000 Pa oder 10 000 Pa)
Temperature dependency, typ.	<0.03 % from FS/K	
Response time t_{90}	Analogue output¹⁾	50 ms/500 ms/2 s/4 s selectable with DIP switches Configurable in the range from 0.05 to 30 s with PCS10
	Digital interface²⁾	Configurable in the range from 0.5 to 30 s with 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 % FS/year	
Overload limits	1 000 Pa FS	$\pm 10 000$ Pa
	10 000 Pa FS	$\pm 80 000$ Pa

1) 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.

2) Factory setup RS485: response time t_{90} : 500 ms; displayed unit: Pa; display backlight: on

Calculated measurands

		Unit
Level Indicator	LI	cm
		inch
Volume flow	V'	m ³ /h
		l/s
		m ³ /s
		ft ³ /s
Air velocity	v	m/s
		f/s
Filter contamination level	FCL	%

Technical Data

Outputs

Analogue




Analogue output ¹⁾	0 - 5 V or 0 - 10 V	-1 mA < I _L < 1 mA	I _L = load current
	and 0 - 20 mA or 4 - 20 mA (3-wire)	R _L ≤ 500 Ω	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 outputs: measurement range 0...100 % FS; response time t₉₀: 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 (EE600 = 1/2 unit load)
Protocol Factory settings Supported Baud rates Data types for measuring values	Modbus RTU 9600 Baud, parity even, 1 stop bit, Modbus address 43 9600, 19200 and 38400 FLOAT32 and INT16
Protocol Factory settings Supported Baud rates	BACnet MS/TP BACnet address 43 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 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, kPa, mbar, mm H ₂ O Pa, kPa, mbar, mm H ₂ O, inch WC, m ³ /h, m ³ /s, ft ³ /min, l/s m/s, ft/min, %		
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 Material compliance	Polycarbonat IP65/NEMA 4X UL94 V-0 (with display UL94 HB) approved	
Electromagnetic compatibility	EN 61326-1 FCC Part15 Class A	EN 61326-2-3 ICES-003 Class A	Industrial environment
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/ee600.

Ordering Guide

	Feature	Description	Code		
Hardware configuration			EE600-		
	Measuring range ¹⁾	0...1000 Pa (0...4 inch WC, 0...10 mbar, 0...1 kPa)	HV52		
		0...10000 Pa (0...40 inch WC, 0...100 mbar, 0...10 kPa)	HV53		
	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		
		BACnet MS/TP ³⁾	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 0...25 % / 50 % / 75 % / 100 % FS, selectable with DIP switches at analogue output or PCS10.

2) Factory setting: Even parity, 1 stop bit; Modbus Map and communication setting: See User Manual and Modbus Application Note at www.epluse.com/ee600.

3) Factory setting: No parity, 1 stop bit; Product Implementation Conformance Statement (PICS) available at www.epluse.com/ee600.

Order Examples

EE600-HV52A7

Feature	Code	Description
Measuring range	HV52	0...1 000 Pa (0...4 inch WC, 0...10 mbar, 0...1 kPa)
Output	A7	Analogue (voltage and current output)
Display	No code	Without display
Auto-zero	No code	Without auto-zero

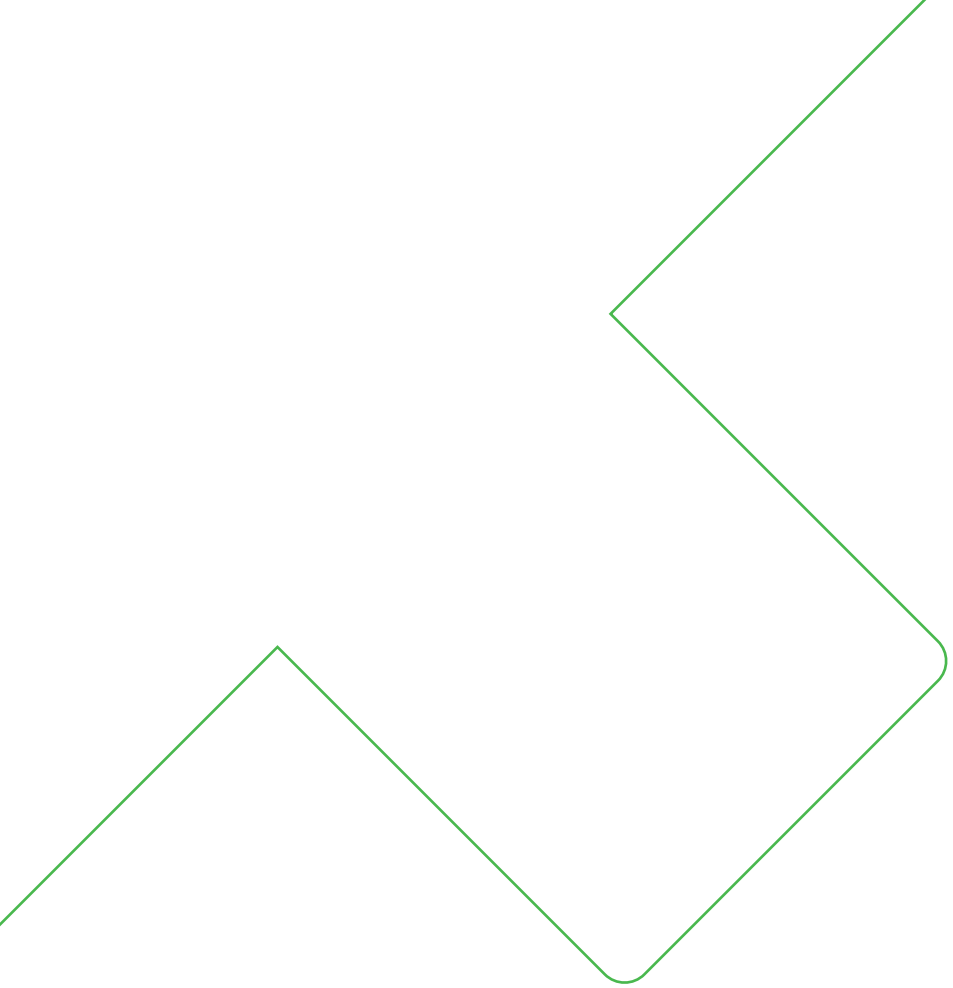
EE600-HV53J3D2AF8P1BD5

Feature	Code	Description
Measuring range	HV53	0...10 000 Pa (0...40 inch WC, 0...100 mbar, 0...10 kPa)
Output	J3	RS485
Display	D2	Display with backlight
Auto-zero	AF8	Auto-zero
Protocol	P1	Modbus RTU
Baud rate	BD5	9 600

Accessories

For further information see datasheet [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: www.epluse.com/pcs10)	PCS10



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Version v1.8 | 09-2022
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