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+ Datasheet EE600

Differential Pressure Sensor



EE600

Differential Pressure Sensor

The EE600 is designed for the reliable measurement of differential pressure in HVAC, building automation and filter monitoring. 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 unidirectional ranges of 1000 Pa (4 inch WC) and 10000 Pa (40 inch WC) and as a 2-wire current version with ± 1000 and ± 10000 Pa bidirectional ranges. All versions offer excellent accuracy of $\pm 0.5\%$ full scale and the piezoresistive, non-flow-through pressure sensing element ensures outstanding long-term stability.

Analogue and Digital Outputs

The measured data is available on a combined analogue voltage and current output, on a current 2-wire (4 - 20 mA) 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 for installation with closed cover, the electronics are thus protected against construction site damage and pollution.

Configurable and Adjustable

A zero point and span adjustment can be easily performed with push buttons on the electronics board.

For analogue versions, DIP switches on the electronics board allow easy field setup. This includes measuring range, output signal, response time, displayed units and backlight.

Using an optional stick and the free PCS10 Product Configuration Software, the EE600 can be set up for volume flow or air velocity measurement, as well as for filter monitoring or level indication. Additionally, the auto-zero interval can be configured.



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
- ±250/±500/±750/±1000 Pa
- ±2500/±5000/±7500/±10000 Pa

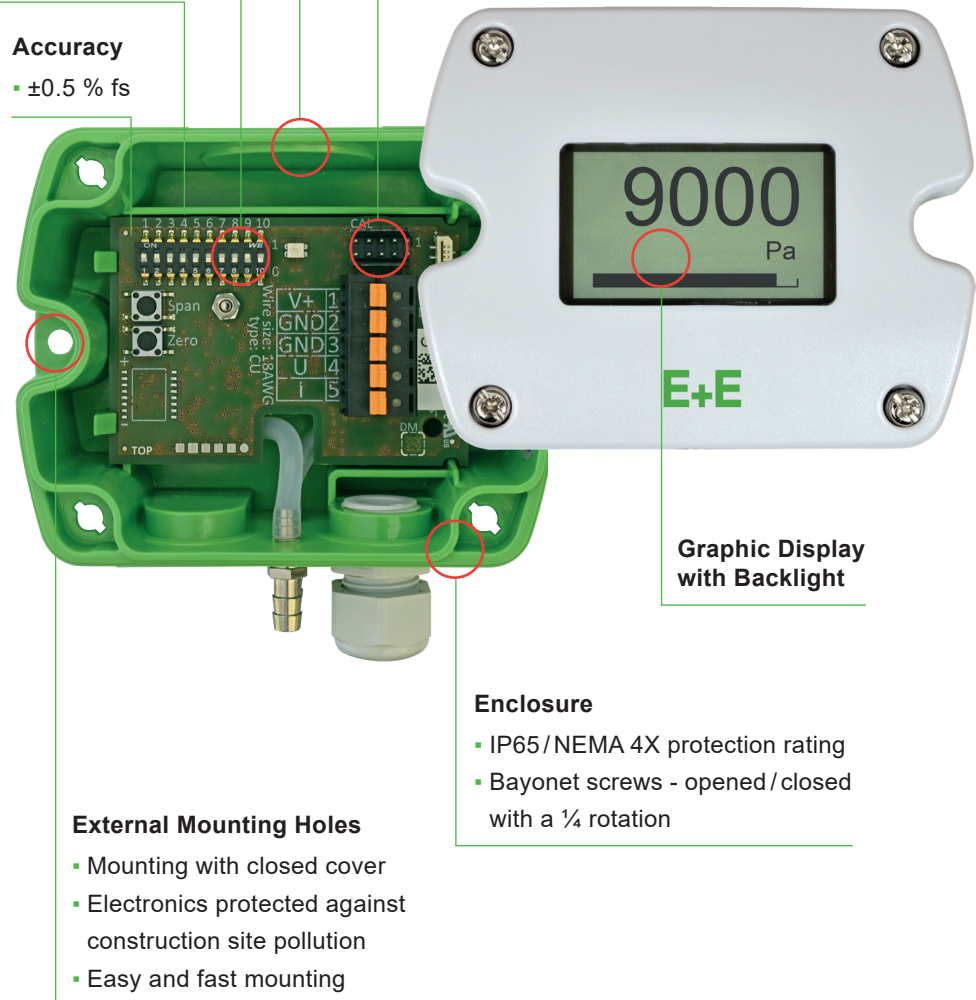
Accuracy

- ±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

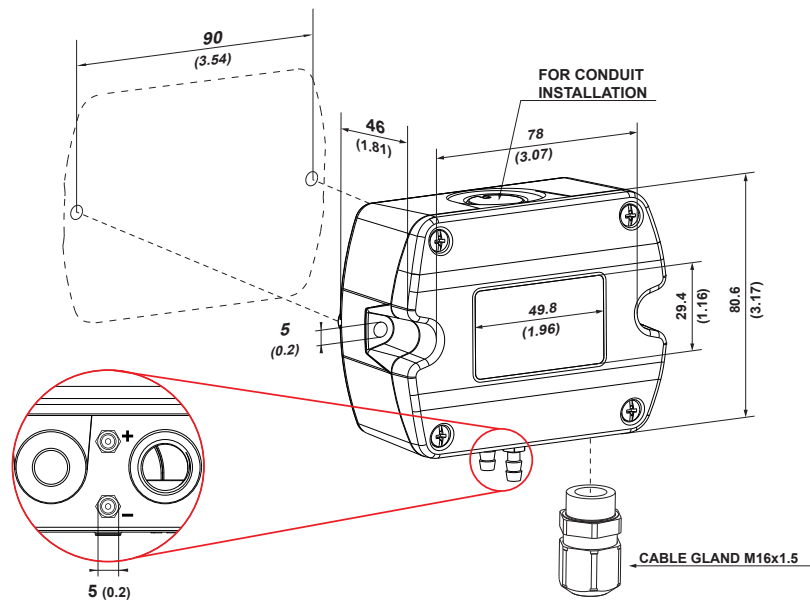
- Mounting with closed cover
- Electronics protected against construction site pollution
- Easy and fast mounting

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 4 - 20 mA (2-wire) output Voltage and current output/RS485	$\pm 1\,000$ Pa (± 4 inch WC) $\pm 10\,000$ Pa (± 40 inch WC) $0 \dots 1\,000$ Pa ($0 \dots 4$ inch WC) $0 \dots 10\,000$ Pa ($0 \dots 40$ inch WC)	
Analogue scaling 4 - 20 mA (2-wire) output Voltage and current output with PCS10	$\pm 250 / \pm 500 / \pm 750 / \pm 1\,000$ Pa field selectebale with DIP switches ¹⁾ $\pm 2\,500 / \pm 5\,000 / \pm 7\,500 / \pm 10\,000$ Pa..... field selectebale with DIP switches ¹⁾ $0 \dots 250 / 500 / 750 / 1\,000$ Pa..... field selectebale with DIP switches ²⁾ $0 \dots 2\,500 / 5\,000 / 7\,500 / 10\,000$ Pa field selectebale with DIP switches ²⁾ 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 or 10 000 Pa)
Temperature dependency , typ.	<0.03 % from fs/K	
Response time t_{90} Analogue output ^{1,2)} Digital interface ³⁾	50 ms / 500 ms / 2 s / 4 s field selectable with DIP switches Configurable from 0.05 to 30 s with PCS10 Configurable from 0.5 to 30 s with PCS10	
Auto-zero interval Factory setting 4 - 20 mA (2-wire) output Voltage and current output/ RS485	24 h Configurable from 90 min to 7 days with PCS10. Can be disabled. Configurable from 10 min to 7 days with PCS10. Can be disabled.	
Long-term stability	<0.5 % fs/year	fs = full scale (1 000 Pa or 10 000 Pa)
Overload limits 1 000 Pa fs 10 000 Pa fs	$\pm 10\,000$ Pa $\pm 80\,000$ Pa	

- 1) Factory setup A6: measuring range ± 100 % fs; response time t_{90} : 50 ms; displayed unit: Pa; other ranges upon request.
- 2) Factory setup A7: measuring range $0 \dots 100$ % fs; response time t_{90} : 50 ms; displayed unit: Pa; display backlight: on; other ranges upon request.
- 3) 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 /min
Air velocity	v	m/s
		ft/min
Filter contamination level	FCL	%

Technical Data

Outputs

Analogue




4 - 20 mA (2-wire) output	$R_L \leq 500 \Omega$		$R_L =$ load resistance
Voltage and current output¹⁾	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 resistance

1) Voltage and current output signals available simultaneously at the spring loaded terminals (factory setup: 0 - 10 V/4 - 20 mA). Settings selectable with DIP switches.

Digital

Digital interface	RS485 (EE600 = 1/2 unit load)
Protocol Factory settings Supported Baud rates Data types for measuring values	Modbus RTU Baud rate see order information, parity even, 1 stop bit, Modbus address 43 9600, 19200 and 38400 FLOAT32 and INT16

General

Power supply class III  USA & Canada: Class 2 supply necessary, max. voltage 30 V DC			
4 - 20 mA (2-wire) output Voltage and current output/RS485	15 - 35 V DC 15 - 35 V DC or 24 V AC $\pm 20 \%$		
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
	Display without backlight and 4 - 20 mA (2-wire)	According to output current, max. 20 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, kPa Pa, kPa, mbar, kPa, 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) / -20...+50 °C (-4...+122 °F) with display -40...+70 °C (-40...+158 °F) / -20...+60 °C (-4...+140 °F) with display	
Enclosure	Material Protection rating	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	 		

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	Measuring range ¹⁾	0...1000 Pa (0...4 inch WC, 0...10 mbar, 0...1 kPa)	EE600-		
		0...10000 Pa (0...40 inch WC, 0...100 mbar, 0...10 kPa)	HV52		
		±1000 Pa (±4 inch WC, ±10 mbar, ±1 kPa)	HV53		HV54
		±10000 Pa (±40 inch WC, ±100 mbar, ±10 kPa)			HV55
	Output	4 - 20 mA (2-wire)			A6
		Analogue (voltage and current output)	A7		
		RS485		J3	
	Display	Without display	No code		
		Display with backlight	D2		
		Display without backlight			D1
Auto-zero	Without auto-zero	No code			
	Auto-zero	AF8			
Software setup	Protocol	Modbus RTU ²⁾			
	Baud rate	9600		P1	
		19200		BD5	
		38400		BD6	
			BD7		

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.

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

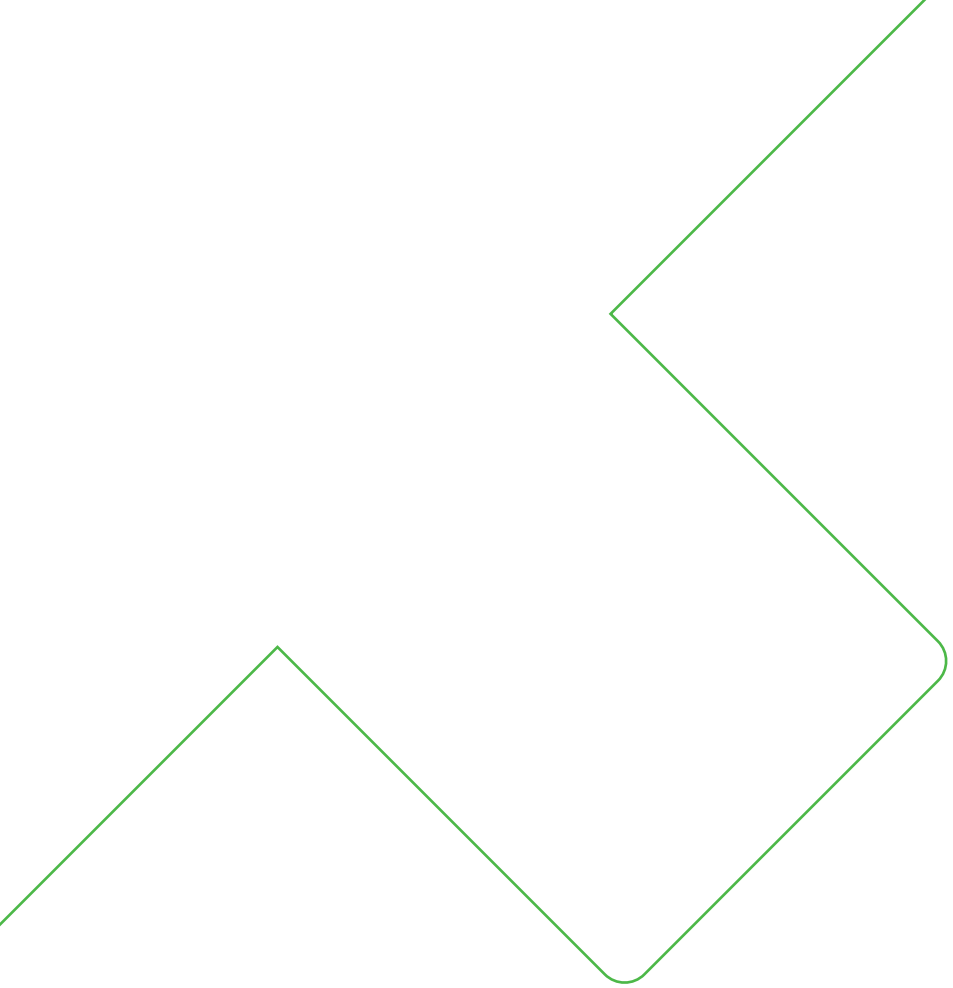
EE600-HV53J3D2AF8P1BD5

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-C configuration stick	HA011070
E+E Product Configuration Software (Free download: www.epluse.com/pcs10)	PCS10



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