E+E

your partner
in sensor
technology.

Datasheet EE600

Differential Pressure Sensor

Modbus

www.epluse.com

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 1 000 Pa (4 inch WC) and 10 000 Pa (40 inch WC) and as a 2-wire current version with ±1 000 and ±10 000 Pa bidirectional ranges. All versions offer excellent accuracy of ±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

Knockout for ½" Conduit Fitting (US)

Service Interface for Configuration

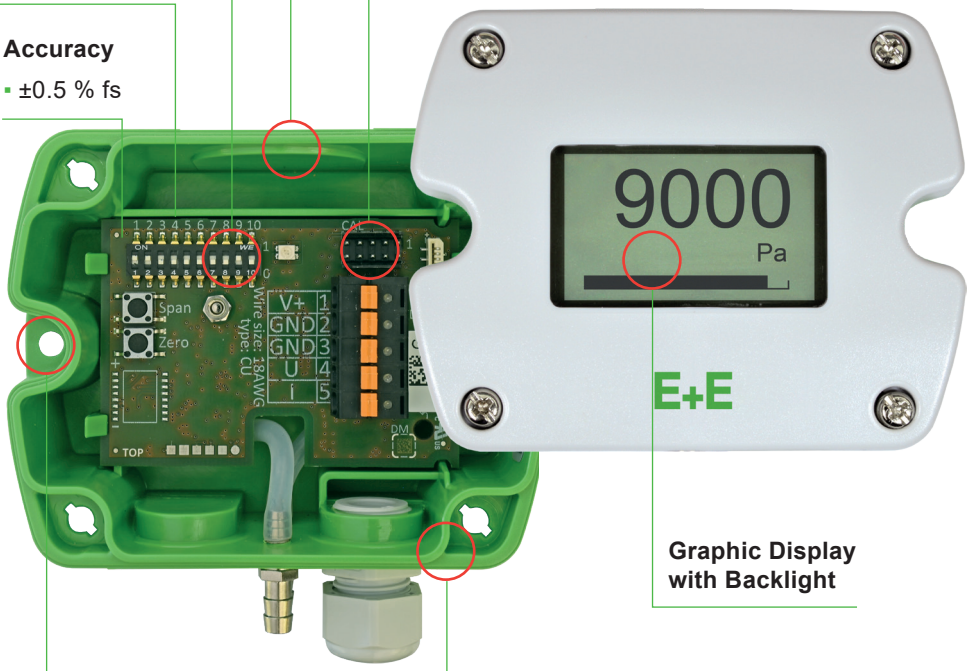
- Measurands
  - Differential pressure Δp
  - Volume flow V' (k-Factor input)
  - Air velocity v (k-Factor input)
- Application setting
  - Filter monitoring
  - Level indicator
- Auto-zero interval (optional)

Multi-range (Analogue Output)

- 0…250 / 500 / 750 / 1 000 Pa
- 0…2 500 / 5 000 / 7 500 / 10 000 Pa
- ±250 / ±500 / ±750 / ±1 000 Pa
- ±2 500 / ±5 000 / ±7 500 / ±10 000 Pa

Accuracy

- ±0.5 % fs



Graphic Display with Backlight

Enclosure

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

External Mounting Holes

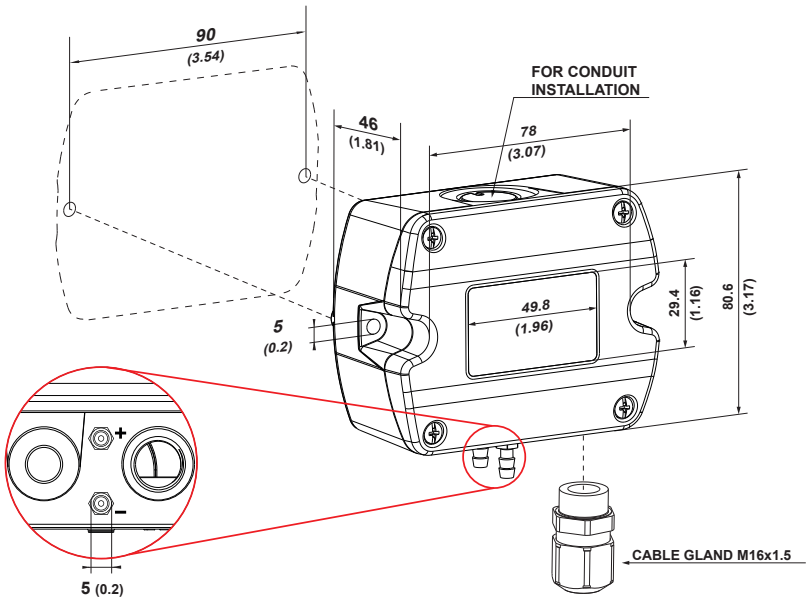
- Mounting with closed cover
- Electronics protected against construction site pollution
- Easy and fast mounting

Test Report

According DIN EN 10204-2.2

Dimensions

Values in mm (inch)



Pressure fittings Ø5 (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	±1 000 Pa (±4 inch WC) ±10 000 Pa (±40 inch WC)
Voltage and current output / RS485	0...1 000 Pa (0...4 inch WC) 0...10 000 Pa (0...40 inch WC)
Analogue scaling	
4 - 20 mA (2-wire) output	±250 / ±500 / ±750 / ±1 000 Pa..... field selectebale with DIP switches[1)] ±2 500 / ±5 000 / ±7 500 / ±10 000 Pa.... field selectebale with DIP switches[1)]
Voltage and current output	0...250 / 500 / 750 / 1 000 Pa..... field selectebale with DIP switches[2)] 0...2 500 / 5 000 / 7 500 / 10 000 Pa ..... field selectebale with DIP switches[2)]
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 or 10 000 Pa)
Temperature dependency, typ.	<0.03 % from fs/K
Response time t_{90}	
Analogue output[1,2)]	50 ms / 500 ms / 2 s / 4 s field selectable with DIP switches Configurable from 0.05 to 30 s with PCS10
Digital interface[3)]	Configurable from 0.5 to 30 s with PCS10
Auto-zero interval	
Factory setting	24 h
4 - 20 mA (2-wire) output	Configurable from 90 min to 7 days with PCS10. Can be disabled.
Voltage and current output / RS485	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
10 000 Pa fs	±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...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 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 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 ±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		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/ee600.

Ordering Guide

	Feature	Description	Code		
			EE600-		
Hardware configuration	Measuring range[1]	0...1 000 Pa (0...4 inch WC, 0...10 mbar, 0...1 kPa)	HV52		
		0...10 000 Pa (0...40 inch WC, 0...100 mbar, 0...10 kPa)	HV53		
		±1 000 Pa (±4 inch WC, ±10 mbar, ±1 kPa)			HV54
		±10 000 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]		P1	
	Baud rate	9 600		BD5	
		19 200		BD6	
		38 400		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**

Company Headquarters &
Production Site

E+E Elektronik Ges.m.b.H.
Langwiesen 7
4209 Engerwitzdorf | Austria
T +43 7235 605-0
F +43 7235 605-8
info@epluse.com
www.epluse.com

Subsidiaries

E+E Sensor Technology (Shanghai) Co., Ltd.
T +86 21 6117 6129
info@epluse.cn

E+E Elektronik France SARL
T +33 4 74 72 35 82
info.fr@epluse.com

E+E Elektronik Deutschland GmbH
T +49 6171 69411-0
info.de@epluse.com

E+E Elektronik India Private Limited
T +91 990 440 5400
info.in@epluse.com

E+E Elektronik Italia S.r.l.
T +39 02 2707 86 36
info.it@epluse.com

E+E Elektronik Korea Ltd.
T +82 31 732 6050
info.kr@epluse.com

E+E Elektronik Corporation
T +1 847 490 0520
info.us@epluse.com

your partner
in sensor
technology.

datasheet_EE600 | Version v1.12 | 11-2024

www.epluse.com