

## Differential Pressure Sensor Air

Differential pressure transmitter with 8 selectable ranges and Modbus functionality. For monitoring over-, under or the differential pressure of air and other non-flammable and non-aggressive gases. Typical application in HVAC systems for monitoring air filters, fans V-belts or fire and smoke control dampers. Options available with LCD display and Auto-Zero function. NEMA 4X / IP65 rated enclosure.



## Type Overview

Type	Measuring range pressure [Pa]	Measuring range pressure [inch WC]	Communication	Output signal active pressure	Output signal active volumetric flow	Burst pressure	Display type	Additional features
22ADP-55Q	0...250	0...1	Modbus RTU	0...5 V, 0...10 V	0...5 V, 0...10 V	40 kPa / 160 inch WC	-	-
22ADP-55QA	0...250	0...1	Modbus RTU	0...5 V, 0...10 V	0...5 V, 0...10 V	40 kPa / 160 inch WC	-	Auto-Zero
22ADP-55QB	0...250	0...1	Modbus RTU	0...5 V, 0...10 V	0...5 V, 0...10 V	40 kPa / 160 inch WC	LCD	Auto-Zero
22ADP-55QL	0...250	0...1	Modbus RTU	0...5 V, 0...10 V	0...5 V, 0...10 V	40 kPa / 160 inch WC	LCD	-

## Technical Data

<b>Electrical Data</b>	Nominal voltage	AC/DC 24 V			
	Nominal voltage range	AC 19...29 V / DC 15...35 V			
	Power consumption AC	2 VA			
	Power consumption DC	1.4 W			
	Electrical connection	Removable spring loaded terminal block max. 2.5 mm <sup>2</sup>			
	Cable entry	Cable gland with strain relief 2 x Ø6 mm (1/2" NPT conduit adapter included)			
<b>Functional Data</b>	Sensor Technology	piezo measuring element			
	Communicative control	Modbus RTU			
	Multirange	8 measuring ranges selectable			
	Output signal active note	Output 0...5/10 V selectable with switch Voltage output: min. 10 kΩ load current output: max. 500 Ω load			
	Display	LCD, 1.14x1.38" [29x35 mm] with backlight measured values: Pa, inchWC (configurable) measured values volumetric flow: m <sup>3</sup> /h, cfm (configurable)			
	Application	air			
Response time	adjustable 0.8 s or 4.0 s				
<b>Measuring Data</b>	Measuring values	differential pressure			
	Measuring fluid	air and non-aggressive gases			
	Measuring range settings pressure	Setting	range [Pa]	range [inch WC]	Factory setting
		S0	0...250	0...1	✓
S1	0...100	0...0.4			
S2	0...50	0...0.2			

	S3	0...25	0...0.1
	S4	-25...25	-0.1...0.1
	S5	-50...50	-0.2...0.2
	S6	-100...100	-0.4...0.4
	S7	-150...150	-0.6...0.6
Accuracy pressure		±0.004 inch WC @ range <1 inch WC	
Long-term stability		±2.5% FSO (Full Scale Output) over 4 years under normal environmental conditions	
<b>Materials</b>	Cable gland	PA6, black	
	Housing	cover: lexan, orange base: lexan, orange seal: 0467 NBR70, black UV resistant	
<b>Safety Data</b>	Ambient humidity	max. 95% r.H., non-condensing	
	Ambient temperature	15...120°F [-10...50°C]	
	Fluid temperature	15...120°F [-10...50°C]	
	Protection class IEC/EN	III Safety Extra-Low Voltage (SELV)	
	Protection class UL	UL Class 2 Supply	
	EU Conformity	CE Marking	
	Certification IEC/EN	IEC/EN 60730-1 and IEC/EN 60730-2-6	
	Certification UL	cULus acc. to UL60730-1A/-2-6, CAN/CSA E60730-1:02	
	Degree of protection IEC/EN	IP65	
	Degree of protection NEMA/UL	NEMA 4X	
Quality Standard	ISO 9001		

**Safety Notes**


This device has been designed for use in stationary heating, ventilation and air-conditioning systems and must not be used outside the specified field of application. Unauthorised modifications are prohibited. The product must not be used in relation with any equipment that in case of a failure may threaten humans, animals or assets.

Ensure all power is disconnected before installing. Do not connect to live/operating equipment.

Only authorised specialists may carry out installation. All applicable legal or institutional installation regulations must be complied during installation.

The device contains electrical and electronic components and must not be disposed of as household refuse. All locally valid regulations and requirements must be observed.

**Remarks**
**Automated Zero-Point calibration (Auto Zero)**

Transmitters equipped with the auto-zero calibration are maintenance-free.

The auto-zero calibration electronically adjusts the transmitter zero every 10 minutes. The function eliminates all output signal drift due to thermal, electronic or mechanical effects. The auto-zero adjustment takes approx. 4 seconds after which the device returns to its normal measuring mode. During the 4 second adjustment period, the output and display values will freeze to the latest measured value.

**Manual Zero-Point Calibration**

In normal operation zero-point calibration should be executed every 12 months.

Attention! For executing zero-point calibration the power supply must be connected one hour before.

- Release both connection tubes from the pressure terminals + and -
- Press the button until the LED lights permanently
- Wait until the LED flashes again and reinstall the connection tubes to the pressure ports (note + and -)

**Scope of delivery**

Scope of delivery	Description	Type
	Duct connector kit, PVC tube 2 m, 2 connection elements (Plastic) for 22ADP-..	A-22AP-A08

Mounting plate L housing  
 Cable Gland with strain relief Ø6...8 mm  
 Dowel  
 Screws  
 1/2" NPT conduit adapter, 2 x Ø6 mm

A-22D-A10

Accessories

Optional accessories	Description	Type
	Duct connector, Metal, L 1.5", Tube connection 0.2"	A-22AP-A01
	Duct connector, Metal, L 4", Tube connection 0.2"	A-22AP-A03

Wiring Diagram

**Notes** Supply from safety isolating transformer.



The wiring of Modbus RTU (RS485) is to be carried out in accordance with applicable regulations (www.modbus.org). The device has switchable resistors for bus termination.

Modbus-GND: Supply and communication are not galvanically isolated. Connect earth signal of the devices with one another.

① Button  
 ② red: Error  
 ③ yellow: Tx  
 ④ yellow: Rx  
 ⑤ and ⑥ Status LED  
 \* Factory setting  
 P Pressure unit  
 T Response time  
 U Output signal

DC 0...5/10 V (V)  
 DC 0...5/10 V (Δp)  
 AC/DC 24 V

Setting	range [Pa]	range [inch WC]	Factory setting
S0	0...250	0...1	✓
S1	0...100	0...0.4	
S2	0...50	0...0.2	
S3	0...25	0...0.1	
S4	-25...25	-0.1...0.1	
S5	-50...50	-0.2...0.2	
S6	-100...100	-0.4...0.4	
S7	-150...150	-0.6...0.6	

Detailed documentation

The separate document Sensor Modbus-Register informs about Modbus register, addressing, parity and bus termination (DIP1: address, DIP2: baud rate, parity, bus termination)

In addition to the information on the bus, the following analogue outputs are available:

AOU1: differential pressure

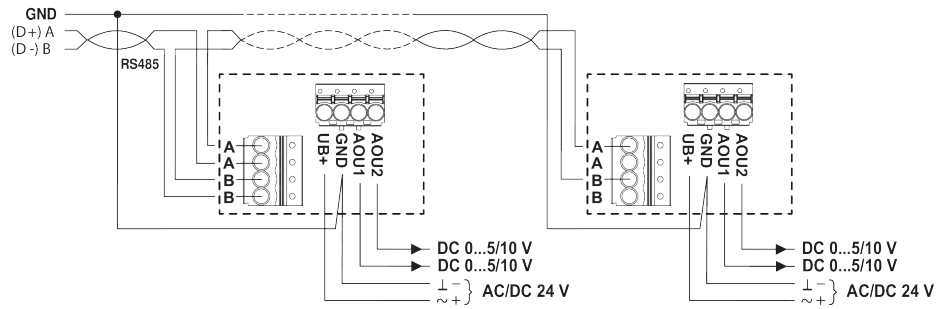
AOU2: volumetric flow

The volumetric flow is calculated from the differential pressure, the k-factor and the height above sea level.

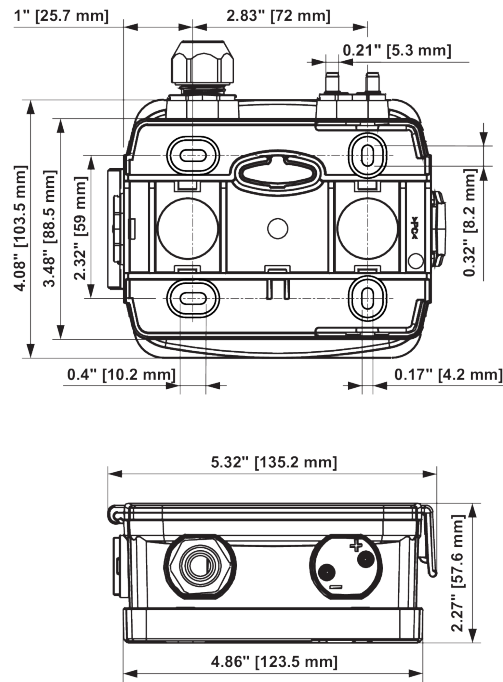
Factory setting for the k-factor is 1.00 and for the height above sea level 330 metres.

The values of the k-factor and the height can be changed via bus system.

Wiring RS485 Modbus RTU



Dimensions



Type	Weight
22ADP-55Q	0.64 lb [0.29 kg]
22ADP-55QA	0.66 lb [0.30 kg]
22ADP-55QB	0.73 lb [0.33 kg]
22ADP-55QL	0.68 lb [0.31 kg]