BELIMO

Differential pressure sensor Air

Differential pressure transmitter with 8 selectable ranges and Modbus funtionality. 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 as well as the use in pressure differential systems. Options available with LCD display and Auto-Zero function. NEMA 4X / IP65 rated enclosure.

5

5-year warranty

CE UL Modbus

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	-150...250	-0.6...1	Modbus RTU	0...5 V, 0...10 V	0...5 V, 0...10 V	160 inch WC [40 kPa]	-	-
22ADP-55QA	-150...250	-0.6...1	Modbus RTU	0...5 V, 0...10 V	0...5 V, 0...10 V	160 inch WC [40 kPa]	-	Auto-Zero
22ADP-55QB	-150...250	-0.6...1	Modbus RTU	0...5 V, 0...10 V	0...5 V, 0...10 V	160 inch WC [40 kPa]	LCD	Auto-Zero
22ADP-55QL	-150...250	-0.6...1	Modbus RTU	0...5 V, 0...10 V	0...5 V, 0...10 V	160 inch WC [40 kPa]	LCD	-

Technical data

Electrical Data	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	Pluggable spring loaded terminal block max. 2.5 mm²
	Cable entry	Cable gland with strain relief 2 x Ø6 mm (1/2" NPT conduit adapter included)
Functional Data	Sensor Technology	piezo measuring element
	Application	air
	Communication	Modbus RTU
	Multirange	8 measuring ranges selectable
	Voltage output	2x 0...5 V, 0...10 V, min. load 10 kΩ
	Output signal active note	Output 0...5/10 V selectable with switch
	Display	LCD, 1.14x1.38 in. [29x35 mm], Measured values: Pa, inch WC (programmable), with backlight, measured values volumetric flow: m³/h, cfm (parametrisable)
	Response time	adjustable 0.8 s or 4.0 s
Measuring Data	Measured values	Differential pressure
	Measuring fluid	air and non-aggressive gases

Measuring Data	Measuring range pressure settings	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) / 4 yr.			
Materials	Cable gland	PA6, black			
	Housing	Cover: PC, orange Bottom: PC, orange Seal: NBR70, black UV resistant			
Safety Data	Ambient humidity	Max. 95% RH, 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)			
	Power source 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			
	Degree of protection IEC/EN	IP65			
	Degree of protection NEMA/UL	NEMA 4X			
	Enclosure	UL Enclosure Type 4X			
	Quality Standard	ISO 9001			
	Mode of operation	Type 1			
	Pollution degree	3			
	Rated impulse voltage supply	0.8 kV			
	Construction	Independently mounted control			

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. Unauthorized 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 authorized 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
	Mounting plate L housing	A-22D-A10
	Duct connector kit, PVC tube 2 m, 2 connection elements (Plastic) for 22ADP-..	A-22AP-A08
	Cable Gland with strain relief Ø6...8 mm	
	Dowel	
	Screws	
	1/2" NPT conduit adapter, 2 x Ø6 mm	

Accessories

Optional accessories	Description	Type
	Pitot tube, Metal, L 1.5", Tube connection 0.2"	A-22AP-A01
	Pitot tube, Metal, L 4", Tube connection 0.2"	A-22AP-A03
Service tools	**Description**	**Type**
	Belimo Duct Sensor Assistant App	Belimo Duct Sensor Assistant App
	Bluetooth dongle for Belimo Duct Sensor Assistant App	A-22G-A05
	* Bluetooth dongle A-22G-A05	
	Certified and available in North America, European Union, EFTA States and UK.	

Service

Service tools connection

This sensor can be operated and parametrized using the Belimo Assistant App.

When using the Belimo Duct Sensor Assistant App, the Bluetooth dongle is required to enable communication between the app and the Belimo sensor.

For the standard operation and parametrization of the sensor the Bluetooth dongle and the Belimo Duct Sensor Assistant App are not needed. The sensor will arrive pre-configured with the factory default settings shown above.

Requirement:

- Bluetooth dongle (Belimo Part No: A-22G-A05)

- Bluetooth-capable smartphone

- Belimo Duct Sensor Assistant App (Google Play & Apple App Store)

Procedure:

- Plug the Bluetooth dongle into the sensor via the Micro-USB connector or by means of the interface PCB

- Connect Bluetooth-capable smartphone with Bluetooth dongle
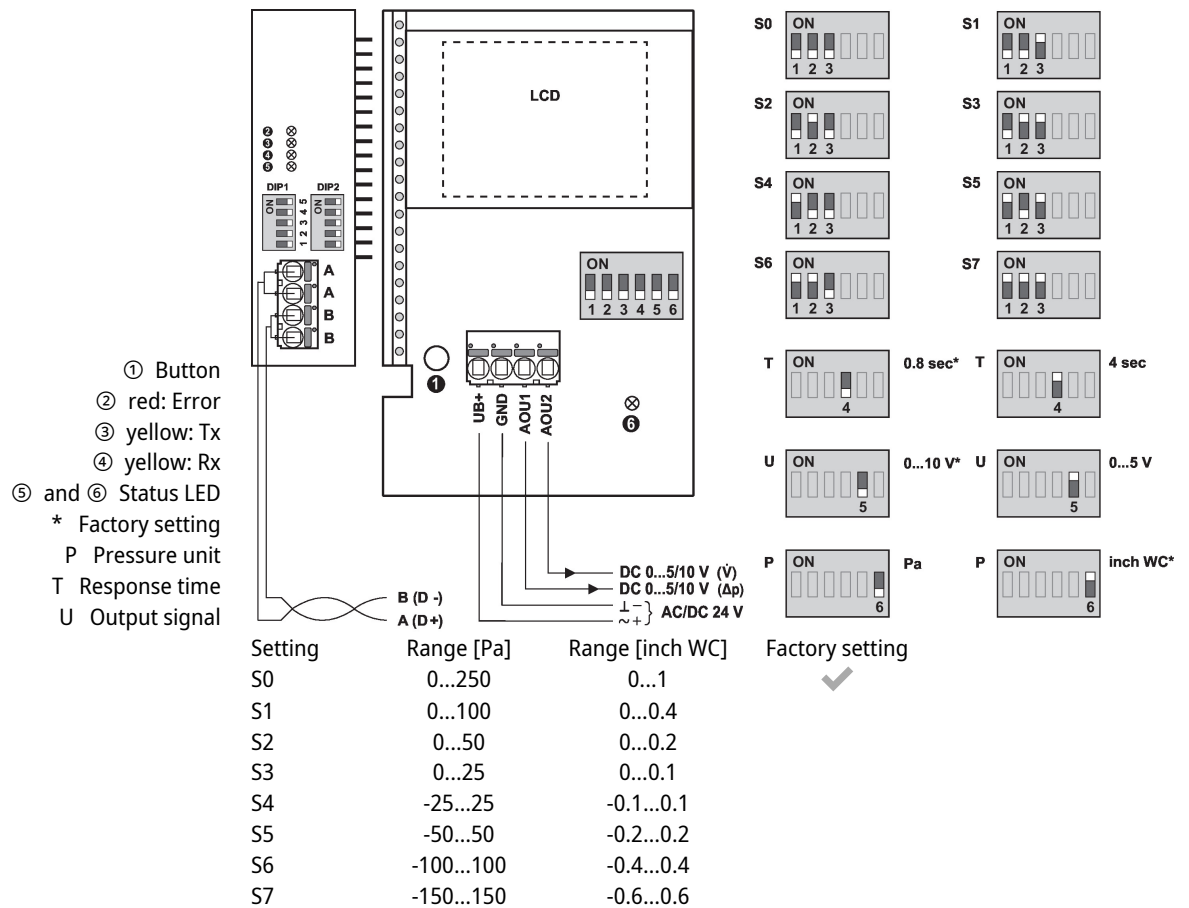
- Select parametrization in the Belimo Assistant App
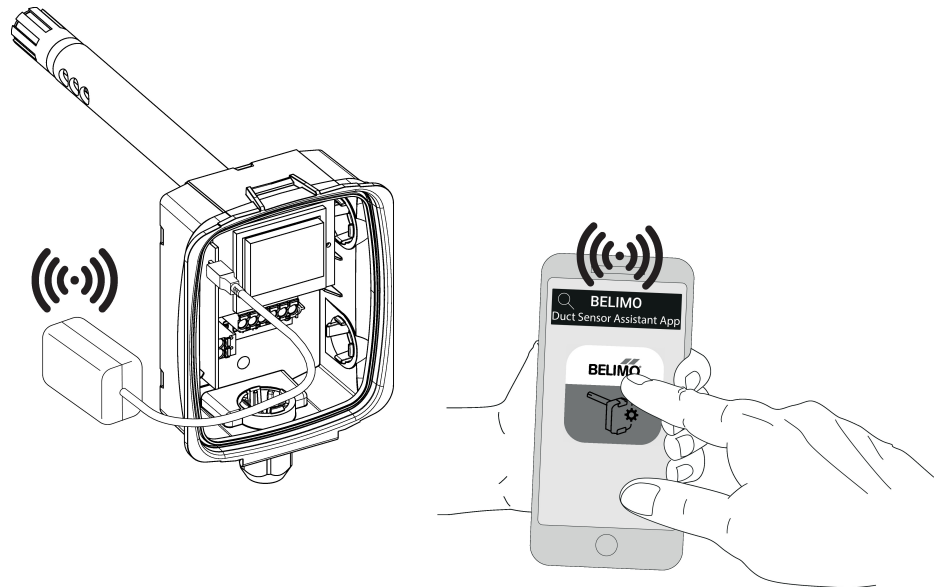
Wiring Diagram

Notes

Supply from 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

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 analog outputs are available:
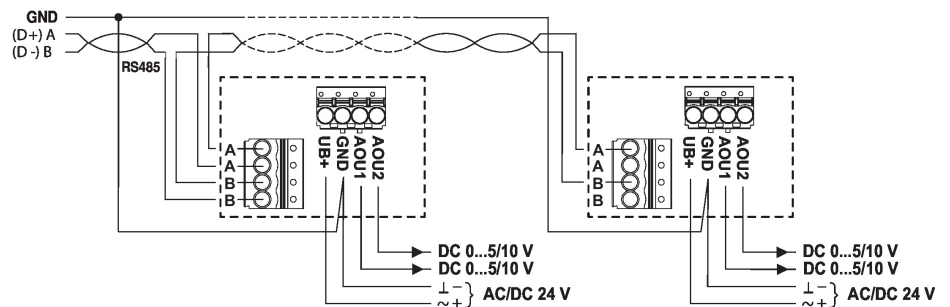
AOU1: differential pressure

AOU2: volumetric flow

The volumetric flow is calculated from the differential pressure, the k-factor and the height.
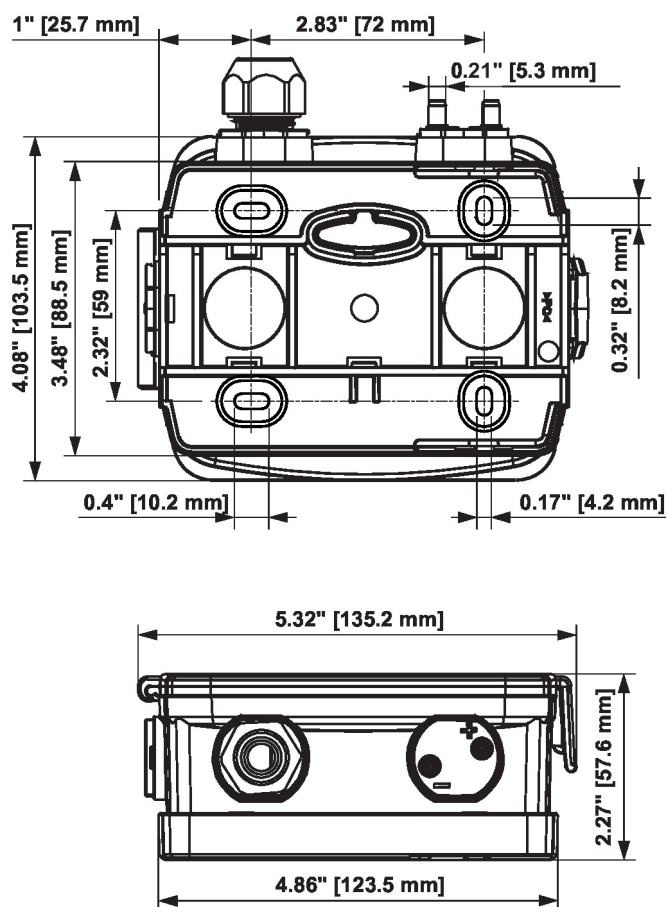
Factory setting for the k-factor is 1.00 and for the height 330 metres above sea level.

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

Wiring RS485 Modbus RTU

Dimensions

Type	Weight
22ADP-55Q	0.90 lb [0.41 kg]
22ADP-55QA	0.93 lb [0.42 kg]
22ADP-55QB	0.97 lb [0.44 kg]
22ADP-55QL	0.95 lb [0.43 kg]