SDA-P Programmable differential pressure transmitter

Features

- Pressure measurement from 300 Pa up to 5 kPa (1.2 in WC to 20 in WC)
- Programmable pressure output signal range
- Selectable square root function
- Minimum and maximum pressure memory
- 0…10 V or 0…20 mA measuring signals, selectable with jumpers
- Selectable averaging signal

Applications

- Pressure measurement in the field of heating, ventilation and air conditioning
- Measuring of air flow velocity
- Measuring and control of positive or negative pressure for example for clean rooms
- Measure exactly the range you need
- Recording of minimum and maximum values for critical environments
- Supervision of critical pressures

Functions

The transmitter measures the pressure by the use of a diaphragm that transfers the force onto a ceramic fulcrum lever. The signal is temperature compensated and calibrated. The microprocessor samples the pressure once per second. It calculates an averaging signal over a preset number of seconds and generates an output signal based on minimum and maximum pressure values.

Minimum and maximum values

Using the programming tool, the user has the option to read out and reset minimum and maximum values. The minimum and maximum values may be sent to the output using OP00. This way the sensor may be used to supervise the temperature for critical environments. The minimum and maximum values are saved into the EEPROM every minute. They will still be available after a power failure.

Square root function

The input signal is multiplied with a square root function. The signal curve will thus change to the typical square root shape. This is useful to directly measure and control air flows. As air flow is proportional to the square root of differential pressure. The picture on the right shows the shape of the square root function.
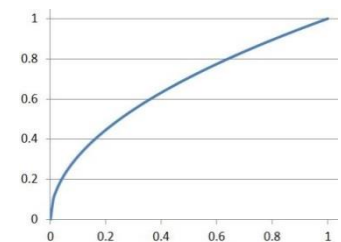
Signal fine tuning

The pressure-signal may be fine-tuned to fit your system. Define your signal through a minimum and maximum pressure limit. The output will then only react if the pressure is above the lower limit. The output signal will be spanned to the upper limit. The full output signal resolution may this way be used even only a fraction of the pressure sensor signal range is used. A 0-300 Pa transmitter may thus be converted into a 0-100 Pa transmitter. (Note: the sensing resolution will thus not be improved, only the output signal resolution).

Ordering

Name	Item Code	Description/Option
SDA-P1	40-300045	Pressure range 0…300 Pa (1.2 in WC)
SDA-P2	40-300046	Pressure range 0…500 Pa (2 in WC)
SDA-P3	40-300047	Pressure range 0…1 kPa (4 in WC)
SDA-P4	40-300048	Pressure range 0…3 kPa (12 in WC)
SDA-P5	40-300049	Pressure range 0…5 kPa (20 in WC)

Configuration

SDA-Px-W0	40-3000xx-0	**Output Signal: 0…10 VDC (Default)**
SDA-Px-W1	40-3000xx-1	Output Signal: 4…20 mA
SDA-Px-W2	40-3000xx-2	Output Signal: 2…10 VDC
SDA-Px-W3	40-3000xx-3	Output Signal: 0…20 mA

Accessories

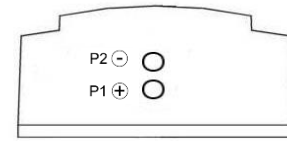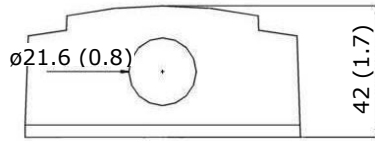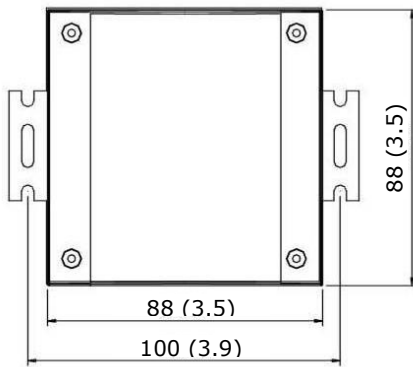|		
OPA-S	40-500006	External display module

Technical specifications

Important notice and safety advice

This device is for use as a pressure transmitter. It is not a safety device. Where a device failure could endanger human life and property, it is the responsibility of the client, installer and system designer to add additional safety devices to prevent such a device failure. Ignoring specifications and local regulations may cause equipment damage and endangers life and property. Tampering with the device and misapplication will void warranty.

| Power Supply	Operating Voltage	24 VAC 50/60 Hz ± 10%, 24 VDC ± 10%				
	Power Consumption	Max 1 W, 2 VA				
	Terminal Connectors	For wire 0.34…2.5 mm^2 (AWG 22…13)				
Sensing Probe	Product type	SDA-P1	SDA-P2	SDA-P3	SDA-P4	SDA-P5
	Pressure range	300 Pa 1.2" WC	500 Pa 2" WC	1 kPa 4" WC	3 kPa 12" WC	5 kPa 20" WC
	Accuracy 0-point and full scale	2.3 % FS	2.3 % FS	2.3 % FS	1.5 % FS	1.5 % FS
	Sum of Linearity, Hysteresis and Reproducibility	1% FS	1% FS	0.6 % FS	0.6 % FS	0.6 % FS
	Long-term stability acc. DIN 60770	1% FS	1% FS	1% FS	1% FS	1% FS
	Diaphragm:	Silicone polymer (LSR)				
	Pressure sensing element	Ceramic Fulcrum Lever				
	Temperature coefficient sensitivity and zero point	±0.04%/°C				
	Tolerable overload	10 kPa (40" WC)				
	Rupture pressure	15 kPa @ 70 °C (60" WC @ 158 °F) 20 kPa @ 25 °C (80" WC @ 77 °F)				
Signal Outputs	Analog Outputs Output Signal Resolution Maximum Load	DC 0/2…10 V or 0/4…20 mA 10 Bit, 9.7 mV, 0.019.5 mA Voltage Signal : ≥1 kΩ, Current Signal : ≤500 Ω				
Environment	Operation Climatic Conditions Temperature Humidity	To EN 60721-3-3 class 3K5 0…70 °C (32…158 °F) < 95% RH, non-condensing				
	Transport & Storage Climatic Conditions Temperature Humidity Mechanical Conditions	To EN 60721-3-2 and EN 60721-3-1 class 3K3 and class 1K3 -30…80 °C (-22…176 °F) < 95% RH, non-condensing class 2M2				
Standards	CE conformity EMC Directive Low Voltage Directive	2004/108/EC 2006/95/EC				
	Product standards Automatic electrical controls for household and similar use	EN 60730-1				
	Electromagnetic compatibility for domestic and industrial sector	Emissions: EN 60730-1 Immunity: EN 60730-1				
	Degree of Protection	IP30 to EN 60529				
	Safety Class	III (EN 60536)				
General	Dimensions (H x W x D)	42 x 112 x 88 mm (1.7 x 4.4 x 3.5 in)				
	Housing Materials	Fire proof ABS plastic (UL 94 V-0)				
	Weight (including package)	249 g (8.8 oz)				

Dimension [mm]

P1 = Positive pressure
P2 = Negative pressure

Installation

- To install the sensor, disassemble base plate and cover
- Secure the base plate to the mounting surface with two screws
- Connect the wires according to the wiring diagram to the measuring circuit in the cover
- Connect the pressure pipes to the probe input. Observe pressure polarity
- Assemble the cover with the base plate

Wiring diagram
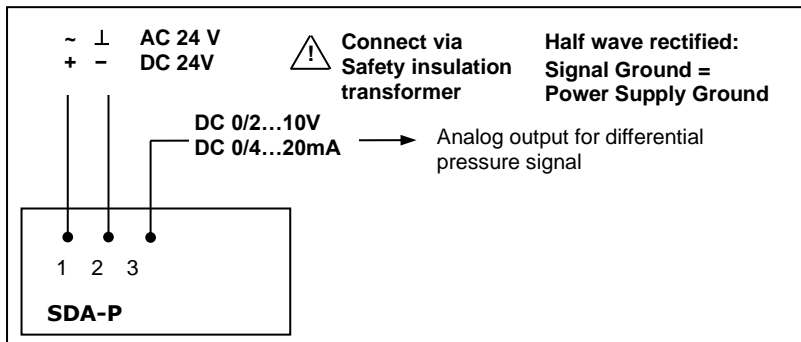
Output signal configuration

The analog output signal type may be configured with jumper 1 for 0…10 VDC or 0…20 mA control signals. The factory setting is to 0…10 VDC.

The signal range may be set with JP2. JP2 will only operate if the output range specified with OP01 and OP02 is left at the default position of 0…100%. With any other setting the position of JP2 has no influence and the range defined with the output parameters applies.

Signal Type	JP1
0 – 10 V	(1-2)
0 – 20 mA	(2-3)

Signal Range	JP2
0 – 10 V, 0 – 20 mA	(1-2)
2 – 10 V, 4 – 20 mA	(2-3)
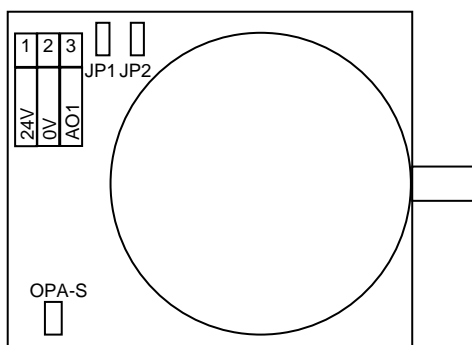
JP1: Signal type AO1
2-3 : 0…20 mA
1-2 : 0…10 VDC

JP2: Signal range AO1
2-3 : 2…10 VDC / 4…20 mA
1-2 : 0…10 VDC / 0…20 mA

Configuration parameters

By the use of parameters, the transmitter can be adapted to fit perfect into the application. The parameters are set with the operation terminal OPA-S. The OPA-S may be used as remote indicator.

Pressure input configuration

Parameter	Description	Range	Standard
IP 00	Display of pressure signal: OFF = no unit, ON = %	ON/OFF	ON
IP 01	Samples taken for averaging control signal	1…255	1
IP 02	Calibration	-10…10%	0
IP 03	Minimum pressure range in % full scale (Pressure when output is at its minimum.	0…IP04	0%
IP 04	Maximum pressure range in % full scale (Pressure when output is at its maximum.	IP03…100%	100%
IP 05	Square root measurement functions OFF = Linear measurement ON = the input signal is processed with a square root function.	ON/OFF	OFF

Analog output configuration

Parameter	Description	Range	Standard
OP 00	Configuration output Signal: 0 = Feedback pressure input 1 = Feedback pressure minimum value 2 = Feedback pressure maximum value	0…2	0
OP 01	Minimum limitation of output signal	0…Max %	0%
OP 02	Maximum limitation of output signal	Min…100%	100%

**Smart Sensors and Controls
Made Easy**

Quality - Innovation – Partnership

Vector Controls GmbH
Switzerland

info@vectorcontrols.com
www.vectorcontrols.com