SENSE

SDP Series
Differential Pressure Transmitters

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Features

- Maintenance-free piezoresistive silicon ceramic sensor
- High accuracy, ±0.25 %FSS
- Operating voltages AC 24 V or DC 15…35 V
- Calibrated and temperature-compensated measurements
- Output types: 0-10 Vdc, 4-20 mA, 0-5 Vdc, 2-10 Vdc and 1-5 Vdc
- Simple and fast mounting
- Display option
- Modbus/RS485 option
- 2 Relay option
- Buzzer option

Applications

- HVAC supply or extract air measuring,
- Monitoring filters and controlling fans
- Check air flow
- Measuring very low differential pressures
- Clean room applications

Ordering

model	range - Pa	output 1	output 2	options
SDP	**1** ±250 **2** 1.000 **3** ±1.000 **4** 2.500 **6** 6.000 **7** ±6.000	**0** no output **1** 0…10 Vdc **2** 2…10 Vdc **3** 0…5 Vdc **4** 1…5 Vdc **5** 4…20 mA	**0** no output **1** 0…10 Vdc **2** 2…10 Vdc **3** 0…5 Vdc **4** 1…5 Vdc **5** 4…20 mA	**M** Modbus **D** Display **R** 1 Relay **RR** 2 Relays **B** Buzzer

sample ordering code: SDP.451.MDR

options: Modbus, Display, Relay

range 2.500pa, out1: 4-20mA, out2: 0-10Vdc

Sense DP Transmitter

Ordering Notes

1. Ranges stand for the maximum measuring levels
2. Relay, Buzzer and PID options should be ordered with Display option
3. All combinations are possible but some may need minimum order quantity
4. For your special needs, please request from info@senseandcontrol.com

Ranges & Sub-ranges

1. Each range has own 8 sub-ranges that can be selected by DIP switch
2. For special ranges, please contact with info@senseandcontrol.com

range - Pa	sub-ranges - Pa
0 no	no
1 ±250	-25…+25, -50…+50, -100…+100, -250…+250, 0…25, 0…50, 0…100, 0…250
2 1.000	0…100, 0…200, 0…300, 0…400, 0…500, 0…600, 0…750, 0…1.000
3 ±1.000	-250…+250, -500…+500, -750…+750, -1.000…+1.000, 0…250, 0…500, 0…750, 0…1.000
4 2.500	0…100, 0…250, 0…500, 0…750, 0…1.000, 0…1.500, 0…2.000, 0…2.500
6 6.000	0…500, 0…750, 0…1.000, 0…2.000, 0…3.000, 0…4.000, 0…5.000, 0…6.000
7 ±6.000	-1k…+1k, -2k…+2k, -3k…+3k, -6k…+6k, 0…1k, 0…2k, 0…3k, 0…6k

Zeroing

1. Press ZERO button for min. 5 seconds
2. When LED turns off, zeroing is finished

General Notes

1. Observe maximum permissible cable lengths.
2. If cable runs parallel to the mains cable: Use shielded cables.
3. The cable entry always should have to be pointing downwards.
4. The data indicated under 'Technical Data' apply only to vertically mounted transmitters.
5. Transmitters should have to be mounted in the center of clean rooms but not near to any doors or windows.

DIP Switch

1. SW1, channel #1,2,3 selects sub-ranges
2. SW1, channel #4 selects reponse time

Sub-Ranges

1. Please check your device for ranges information
2. There may be some special notes on the enclosure or inside the cover

SW1	±250 Pa	1.000 Pa	±1.000 Pa	2.500 Pa	6.000 Pa	±6.000 Pa
	-25…25	0…100	-250…250	0…100	0…500	-1.000…1.000
	-50…50	0…200	-500…500	0…250	0…750	-2.000…2.000
	-100…100	0…300	-750…750	0…500	0…1.000	-3.000…3.000
	-250…250	0…400	-1.000…1.000	0…750	0…2.000	-6.000…6.000
	0…25	0…500	0…250	0…1.000	0…3.000	0…1.000
	0…50	0…600	0…500	0…1.500	0…4.000	0…2.000
	0…100	0…750	0…750	0…2.000	0…5.000	0…3.000
	0…250	0…1.000	0…1.000	0…2.500	0…6.000	0…6.000

Response Time

SW1	Response
	FAST / 1 sec.
	SLOW / 4 sec.

In both cases, FAST or SLOW,
- output is mean of latest 10 measurements.

Output is updated:
- every 0.1 second in FAST mode
- every 0.4 second in SLOW mode

Technical Data

Electrical	Power Supply	AC 24V (± %5), 50-60 Hz
		DC 15…35 V
	Power Consumption	< 1.5 W
Outputs	Current Output	4…20 mA, maximum 500 Ω
	Voltage Output	0…10 Vdc, minimum 1.000 Ω
		0…5 Vdc, minimum 1.000 Ω
	Relay Output	max. rating 1A @ 220 Vac
General Data	Sensing Element	Piezoresistive silicon ceramic sensor
	Media	Air or non-aggressive gasses
	Operating Temperature	-25 …+70°C
	Storage Temperature	-30 …+85°C
	Tubing	Silicone
Accuracy	all models	±0.25 %FSS
Working Pressure	all models	37.500 pascal
Over Pressure	1 / ± 250 Pa	75.000 pascal
	2 / 1.000 Pa	85.000 pascal
	3 / ± 1.000 Pa	85.000 pascal
	4 / 2.500 Pa	85.000 pascal
	6 / 6.000 Pa	85.000 pascal
	7 / ± 6.000 Pa	85.000 pascal
Burst Pressure	1 / ± 250 Pa	125.000 pascal
	2 / 1.000 Pa	100.000 pascal
	3 / ± 1.000 Pa	100.000 pascal
	4 / 2.500 Pa	100.000 pascal
	6 / 6.000 Pa	100.000 pascal
	7 / ± 6.000 Pa	100.000 pascal
Connections	Terminals	Screw terminal
	Cable	maximum 1.5mm2
	Cable Gland	M16
	Pressure Connection	∅ 6 mm
Protection	all models	IP65 or NEMA 4
Standards	EMC Directive	EN 61326-1
	CE Conformity	CE 2021-3
Dimensions	packed	151 x 85 x 50 mm
Weight Packed	basic models	168 gr
	full featured models	205 gr

Unit Conversions
1.000 Pa = 1 kPa = 10 mbar = 4 inchWC = 102 mmWC = 0,145 ps

Transcitter Hardware
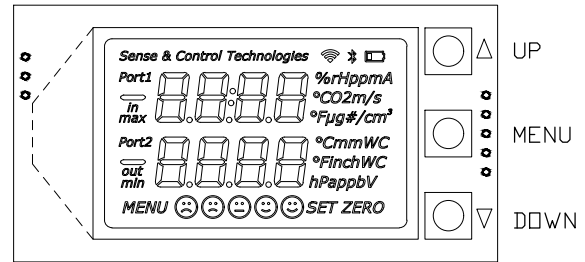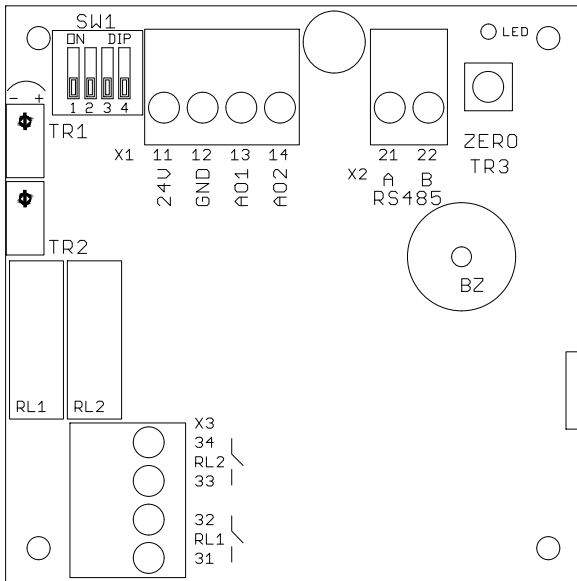
X1 TERMINAL

11	24V	15…35 Vdc or 24 Vac (± %5, 50-60 Hz)
12	GND	ground for power and reference for outputs
13	AO1	analog output 1
14	AO2	analog output 2

X2 TERMINAL

21	A / RS485	modbus communication positive pair
22	B / RS485	modbus communication negative pair

X3 TERMINAL

31-32	NO - RL1	relay 1 dry contact max. rating 1A @ 220 Vac
33-34	NO - RL2	relay 2 dry contact max. rating 1A @ 220 Vac

|		
LED	working	bead LED, periodically lights ON and OFF
	zero	ON while zeroing, OFF after zeroing
	modbus	modbus communication, blinks when there is a communication
ZERO		press min. 5 sec. for setting ZERO
RELAYS	RL1	relay 1
	RL2	relay 2
BUZZER	alarm	sounds continuous
	pre-alarm	sounds intermittent
	=r1 / =r2	sounds continuous while Relay 1/2 contact is closed
COM	COM 1	service port
	COM 2	service port
	COM 3	service port
SW 1	# 1-2-3	sub-range selection for DP 1, see page 3
	# 4	response time selection, see page 3
TR1 & TR2		not used

Electrical Connections
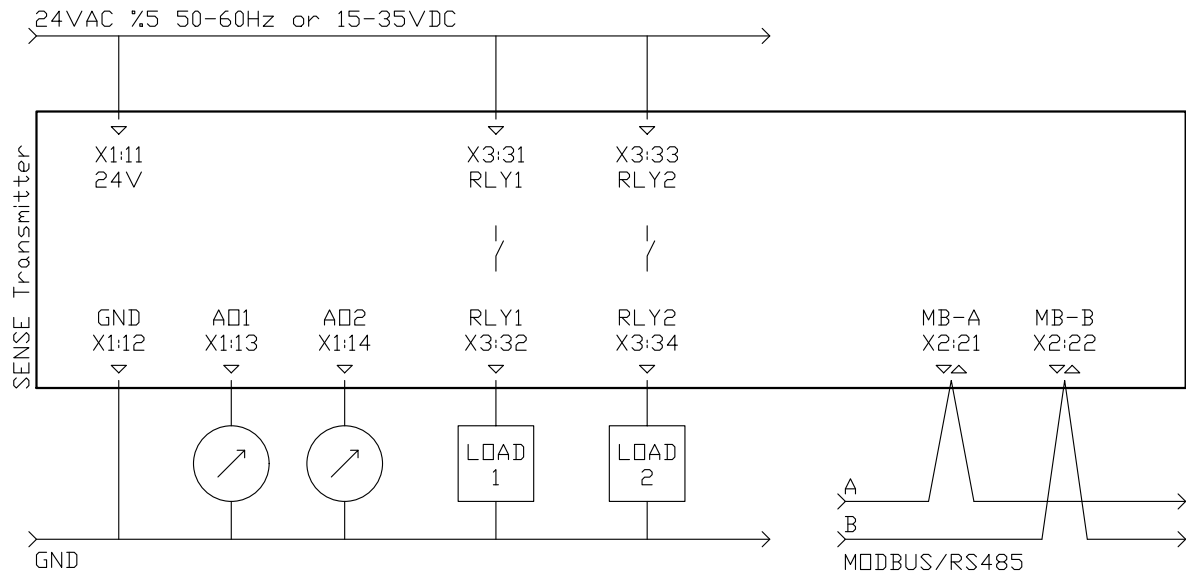
Relay contact rating is max. 1A at 230VAC

We kindly advise using 24V for avoiding high voltage harmonics and external power relay for bigger loads

Please use shielded and twisted paired cables for Modbus connections

Accessories

Probes and tubes are not included to SDP transmitters pack.
Probes and Tubes can be ordered individually or as sets depending on your needs.

Probes	SDP.PR1	probe, 80mm immersion length, 6mm tubing diameter
	SDP.PR2	probe, 120mm immersion length, 6mm tubing diameter
Tubes	SDP.HS1	tube, PVC, 5mm inner diameter, 8mm outer diameter
	SDP.HS2	tube, silicone, 4mm inner diameter, 7mm outer diameter, longer service-life
Sets	SDP.PS11	2x 80mm probe, 2mt PVC tube
	SDP.PS12	2x 80mm probe, 2mt silicone tube
	SDP.PS21	2x 120mm probe, 2mt PVC tube
	SDP.PS22	2x 120mm probe, 2mt silicone tube

Display & Buttons
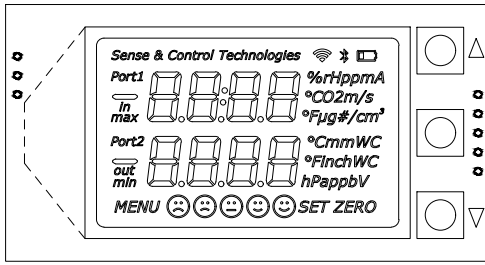
UP — *press for increasing the value or choosing the next parameter*

MENU — *press and wait to enter MENU,*
click to navigate between sub menus one by one

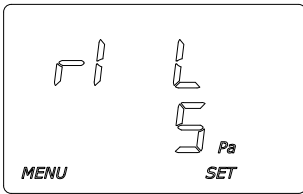DOWN — *press for decreasing the value or choosing the previous parameter*
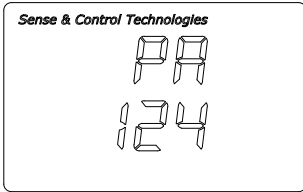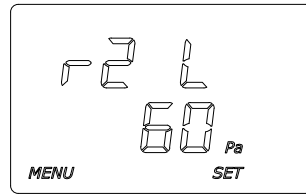

main screen
transmitter is working

keep pressing MENU button until seeing SET
transmitter is not working in MENU mode
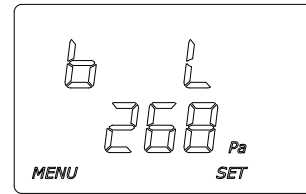
Parameters for Relay & Buzzer

Main Screen   >> r1 P >> r1 L >> r1 H >> r1 A >>
                    >> r2 P >> r2 L >> r2 H >> r2 A >>
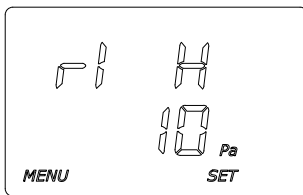   >> B P >> B L >> B H >> B A >>   Main Screen
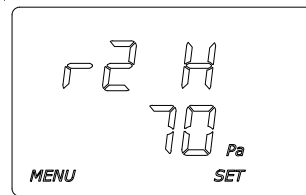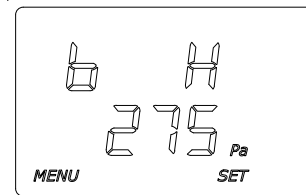

LOW set point for Relay 1

LOW set point for Relay 2
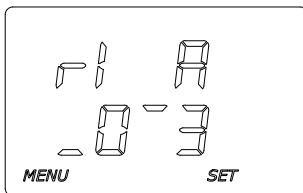

LOW set point for Buzzer
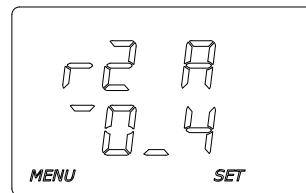

HIGH set point for Relay 1

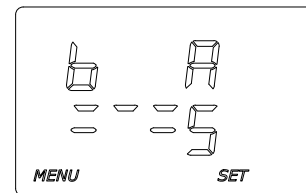*HIGH set point for Relay 2*

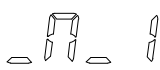*HIGH set point for Buzzer*

ACTION selection for Relay 1

ACTION selection for Relay 2

ACTION selection for Buzzer

action 0, valid for relays and buzzer,
relay contact is always OPEN
buzzer is always SILENCE

action 1, valid for relays and buzzer,
relay contact is CLOSED between points, OPEN under LOWpoint and OPEN over HIGHpoint
buzzer is WARNING between points, SILENCE under LOWpoint and SILENCE over HIGHpoint

action 2, valid for relays and buzzer,
relay contact is OPEN between points, CLOSED under LOWpoint and OPEN over HIGHpoint
buzzer is SILENCE between points, WARNING under LOWpoint and SILENCE over HIGHpoint

action 3, valid for relays and buzzer,
relay contact is CLOSED over HIGHpoint, OPEN under LOWpoint, hysterisis between points
buzzer is WARNING over HIGHpoint, SILENCE under LOWpoint, hysterisis between points

action 4, valid for relays and buzzer,
relay contact is OPEN over HIGHpoint, CLOSED under LOWpoint, hysterisis between points
buzzer is SILENCE over HIGHpoint, WARNING under LOWpoint, hysterisis between points

action 5, valid only for buzzer,
buzzer is WARNING over HIGHpoint, SILENCE under LOWpoint,
buzzer is WARNING intermittently between points,

action 6, valid only for buzzer,
buzzer is WARNING under LOWpoint, SILENCE over HIGHpoint,
buzzer is WARNING intermittently between points,

action 7, valid only for buzzer,
buzzer is following relay 1 contact,
buzzer is WARNING when relay 1 contact is CLOSED, SILENCE when the contact is OPEN

action 8, valid only for buzzer,
buzzer is following relay 2 contact,
buzzer is WARNING when relay 2 contact is CLOSED, SILENCE when the contact is OPEN

ACTIONS	under LOW	between LOW & HIGH	over HIGH
0 : 0.0.0	Open / Silence	Open / Silence	Open / Silence
1 : 0.I.0	Open / Silence	Closed / Warning	Open / Silence
2 : I.0.I	Closed / Warning	Open / Silence	Closed / Warning
3 : 0.X.I	Open / Silence	Hysteresis	Closed / Warning
4 : I.X.0	Closed / Warning	Hysteresis	Open / Silence
5 : 0.-.I	Silence	Pre Alarm	Warning
6 : I.-.0	Warning	Pre Alarm	Silence
7 : =r1	Silence when RL1 is Open, Warning when RL1 is Closed		
8 : = r2	Silence when RL2 is Open, Warning when RL2 is Closed		

0 : Relay Contact is OPEN, Buzzer is in Silent mode
I : Relay Contact is CLOSED, Buzzer is in Warning mode
X : Relay Contact is at HYSTERESIS position, OPEN if previous position open, CLOSED if previous position closed
   : Buzzer is in HYSTERESIS mode, Silent if previous mode is silent, Warning if previous mode is warning
- : Buzzer is in PRE ALARM mode, Buzzer is warning intermittently

Modbus RS485 Protocol

Default Settings: Modbus ID:1, 9600, 8bit, None, 1. Register Table starts from Base 1.

Use Function 3 for Reading and Function 6 for Writing Holding Registers. Whenever writing to any Modbus Parameter, new parameter is activated instantly and you should have to configure master device according to new parameters. For every reboot/initializing, Modbus is activated with default parameters for 3 seconds. After 3 seconds, Modbus is reconfigured according your parameter settings.

Unlisted registers are for analog output calibrations and some system parameters. Please do not change unlisted registers.

Register	R/W	Range	Description
1	R & W	1…254	Modbus Address
2	R & W	0…1	Baudrate, 0: 9.600, 1: 19.200
3	R & W	0…3	Bit_Parity_Stop, 0: 8bit_None_1, 1: 8bit_None_2, 2: 8bit_Even_1, 3: 8bit_Odd_1
4	R		Differential Pressure value as Pascal
5	R		Blank
6	R	0 or 1	Relay 1, contact position, 0: OFF - Contact is Open, 1: ON - Contact is Closed
7	R	0…1.000	Relay 1, LOW point
8	R	0…1.000	Relay 1, HIGH point
9	R	0…4	Relay 1, ACTION
10	R	0 or 1	Relay 2, contact position, 0: OFF - Contact is Open, 1: ON - Contact is Closed
11	R	0…1.000	Relay 2, LOW point
12	R	0…1.000	Relay 2, HIGH point
13	R	0…4	Relay 2, ACTION
14	R	0 or 1	Buzzer, 0: OK-Silence, 1: PreAlarm - warning intermittently, 2: WARNING continuously
15	R	0…1.000	Buzzer, LOW point
16	R	0…1.000	Buzzer, HIGH point
17	R	0…4	Buzzer, ACTION
18-30			set-up parameters, never use, never change..!
31	R		Differential Pressure value as Pascal
32	R		Differential Pressure value as mbar
33	R		Differential Pressure value as inchWC
34	R		Differential Pressure value as mmWC x10, divide by 10 for exact values
35	R		Differential Pressure value as psi x1.000, divide by 1.000 for exact values

Drawings

45,50

Ø 3 Ø 6,77

81,50

121,80 **98**

79,50 **101**

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