

Modbus registers (0-based, decimal format)

Reg	Description	RW	Supported values	Default
1	Hardware version	R	0...65535	0
2	Software version	R	-----	-----
3	Product serial number	R	0...65535	0
4	Slave ID (net address)	RW*	0...247	1
5	Baudrate, baud	RW*	1200, 2400, 4800, 9600, 19200, 38400, 57600	9600
6	Response delay, ms	RW**	1...255 ms	1
7	Stop bits	RW*	1,2	1
8	Last error code	R	1...255	0
17	Technological: data age in seconds (read) / restart(write)	RW***	0...65535 s (read), 42330(write)	-----
167	Change rate limit for pressure data, pressure units	RW*	1...32000 pressure units, 0=no limit	0
168	Integrating filter time constant for pressure data, s	RW*	1...32000 s, 0=no filter	0
201	Parameter assigned to OUT1	RW**	0=none, 1=temperature, 2=pressure, 9=forced Modbus control, value set in 203	0
202	Parameter assigned to OUT2	RW**	0=none, 1=temperature, 2=pressure, 9=forced Modbus control, value set in 204	0
203	Forced value for analog OUT1	RW**	0...1000 (0.0%...100.0% of scale)	0
204	Forced value for analog OUT2	RW**	0...1000 (0.0%...100.0% of scale)	0
255	Sensor control/status	RW*	see Emergency mode paragraph	
257	Raw pressure data, pressure units	R	-32000...+32000 pressure units	
258	Measured temperature, °Cx100	R	signed integer, -4000...+12500 (-40,00...+125,00 °C)	
259	Measured pressure, pressure units	R	-32000...+32000 pressure units	
261	0% value of analog OUT1,	RW**	-32000...+32000 pressure units	
262	100% value of analog OUT1,	RW**	-32000...+32000 pressure units	
263	0% value of analog OUT2	RW**	-32000...+32000 pressure units	
264	100% value of analog OUT2, pressure units	RW**	-32000...+32000 pressure units	

* - the new value is applied after restart ** - the new value is applied immediately
 *** -writing 42330 restarts the device immediately, no response on Modbus
 Broadcast ID=0 may be used to assign a new ID to device with unknown ID

Factory settings

Pressure unit	10 Pa
OUT1 parameter and scale	2: pressure, scale set by user
OUT2 parameter and scale	2: pressure, scale set by user

E2418DP_UM_EN

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RS485 communication interface

Parameter	Supported values	Default
Supported baudrates	1200, 2400, 4800, 9600, 19200, 38400, 57600	9600
Data bits	8	8
Parity	none	none
Stop bits	1, 2	1
Supported protocols	Modbus RTU	
Supported Modbus functions	03 - read multiple registers 06 - write single register	
Supported Modbus error codes	01 - illegal function 02 - illegal data address 03 - illegal data value 04 - slave device failure (details of last error 04 can be read from register 0x0008)	

Specifications

Version	E2418DP-1K	E2418DP-10K
Detection range options	-1...+1 kPa	-10...+10 kPa
Resolution	1 Pa (0,01 mbar)	10 Pa (0,1 mbar)
Max. overpressure	10 kPa	80 kPa
Accuracy	±20 Pa	±200 Pa
Zero point drift	<5 Pa/year	<50 Pa/year
Temperature effect	compensated within -5...+65 °C range	
Analog outputs	2 × 4-20 mA or 0-10 V, user settable	
Standard output scales	E2418DP-1K	E2418DP-10K
	0-250 Pa, 0-500 Pa, 0-1,0 kPa	0-2,5 kPa, 0-5 kPa, 0-10 kPa
	-250 - +250 Pa, -500 - +500 Pa, -1,0 - +1,0 kPa	-2,5 - +2,5 kPa, -5 - +5 kPa, -10 - +10 kPa
Digital interface	RS485, Modbus RTU protocol	
Load resistance	RL < (Us - 3 V) / 22 mA for 4-20 mA RL > 100 kOhm for 0-10 V mode:	
Operating conditions	-20...+70 °C, <99 %RH, without dust, aggressive gases, mist or oil; residential or business spaces	
Power supply	11...30 VDC	
Power consumption	< 1 W	
Electromagnetic compatibility	according to 2014/30/EU, 2014/35/EU and EN61326-1 requirements	
Enclosure	light-grey ABS 82 × 80 × 55 mm, IP65	



Differential pressure transmitter E2418-DP

User Manual

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Differential pressure transmitter E2418DP is a member of new PluraSens® family of multifunctional measurement instruments. The transmitter is intended for measurement of differential pressure of clean air or nonflammable gases.

The main HVAC applications for the transmitter are monitoring of fans, filters, valves, dampers, measurement of airflow in ventilation ducts and pressure in cleanrooms.

E2418 is based on fully calibrated, linearised and temperature compensated digital differential pressure sensor with high repeatability, stability and long lifetime.

The instrument provides two independent analog outputs OUT1 and OUT2, user-selectable to 4-20 mA or 0-10 V, proportional either to differential pressure or internal temperature.

RS485 Modbus RTU digital communication interface allows easy configuration of the transmitter and its integration into various automation systems through Fieldbus network.

Safety requirements

Always adhere to the safety provisions applicable in the country of use.

Do not perform any maintenance operation with the power on. Do not let water or foreign objects inside the device.

Operating conditions

The device should be used in explosion-safe (non ATEX -rated) indoor areas, without aggressive gases, oil in the atmosphere. See Specifications table for more details.

Installation and connections

The pressure transmitter should be mounted on a wall, panel or duct in a suitable place, with the pressure ports pointing downwards.

Mounting dimensions and connection diagram are shown below.

1. Detach the lid from the enclosure. Fix the instrument on the wall with two to four screws.

2. Plug the power cable and connect the analog outputs and/or digital interface terminals to the relevant devices according to the connection diagram.

Make certain that the cable gland is properly tightened to ensure the conformity to IP65 protection class.

The screwless quick connect spring terminals on the PluraSens® instruments are suitable for a wide range of wires with cross-section 0,2...1,5 mm². The recommended wire stripping length is 8...9 mm. Push the spring loaded terminal lever, insert the wire end into terminal hole and release the lever.

Use twisted pair cable, e.g. LiYY TP 2x2x0,5 mm² or CAT 5, to connect the device to RS485 network. Use one pair for A and B wires and the second pair for common 0 V and power +U wires. To connect the transmitter to Fieldbus network. Respect polarity. Overall length of all connections via RS485 interface should not exceed 1200 m.

3. Place the lid back and tighten it with the four screws

4. To connect the device with measurement point use tubes of appropriate diameter (4 or 6 mm) and length.

NB! The connecting tubes should not be squeezed or folded.

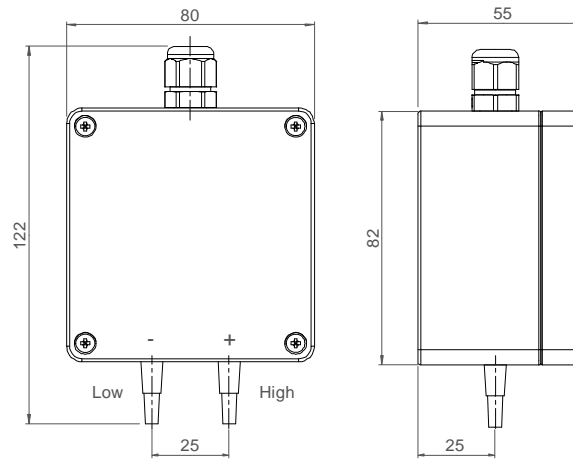
The type of each analog output can be independently changed between 4-20 mA and 0-10 V with jumpers J1 (OUT1) and J2 (OUT2). With closed jumper the output is 0-10 V, with open jumper the output is 4-20 mA.

By default both outputs OUT1 and OUT2 are assigned to the different pressure. The device has built-in temperature sensor which may be connected to any of the outputs.

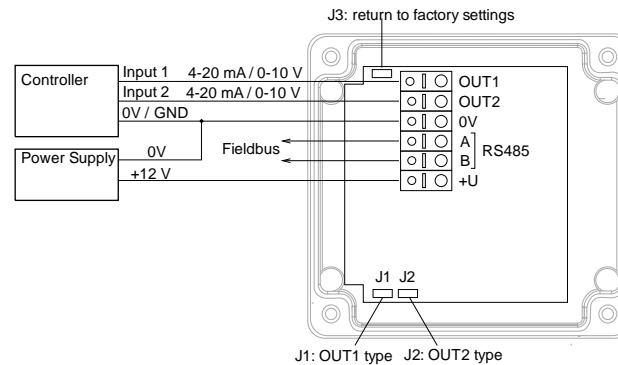
The output assignments and scales can be changed by Modbus commands.

NB! The outputs are not galvanically isolated from 24 V power supply and share common 0V. Allowed load resistance limits are stated in Specifications table.

E2418DP. Dimensions



E2418DP. Connection diagram.



Configuring

Differential pressure transmitter-regulator E2418DP shares all functionalities of the PluraSens® multifunctional transmitter platform. The features and options include:

- digital output change rate limiting filter
- digital integrating (averaging) filter
- temperature measurement channel with internal sensor
- free assignment of each analog output to chosen parameter
- flexible setting of analog output scales for each output

E2418 can be configured through its RS485 interface by Modbus RTU commands.

Emergency mode

The current outputs of the detector may be programmed via Modbus commands (register 255) to signal if the connection with the sensor is lost. The signal may be set to 3,8 mA (low current) or 21,5 mA (high current).

Bit	Function	Notes	Default
bit[0]=0/1	sensor present/absent	read-only	
bit[1]=0/1	analog outputs deactivated/activated		1
bit[2]=0/1	in case of sensor absence, turn signaling off/on (OUT1)		1
bit[3]=0/1	in case of sensor absence, turn on signaling with low / high current on OUT1	if bit[2]=0 this bit is ignored	0
bit[4]=0/1	in case of sensor absence, turn signaling off/on (OUT2)		1
bit[5]=0/1	in case of sensor absent, turn on signaling with low / high current on OUT2	if bit[4]=0 this bit is ignored	0
bit[6]=0/1	current/voltage output detected on OUT1	read-only	user defined
bit[7]=0/1	current/voltage output detected on OUT2	read-only	user defined
bit[8]=0/1	LED deactivated/activated	always 0 for E2418DP	0
bit[9]=0/1	buzzer deactivated/activated	always 0 for E2418DP	0

Return to default settings

To reset the device's Slave ID, baudrate and sbit number to factory settings, proceed as follows:

1. De-energize the device
2. Connect the J3 jumper
3. Turn on the device
4. De-energize the device
5. Disconnect the J3 jumper
6. Turn on the device

Delivery set

- Differential pressure transmitter E2418DP
- Mounting accessories: 4 screws with plastic dowels

Warranty

This product is warranted to be free from defects in material and workmanship for a period of one year from the date of original sale. During this warranty period Manufacturer will, at its option, either repair or replace product that proves to be defective. This warranty is void if the product has been operated in conditions outside ranges specified by Manufacturer or damaged by customer error or negligence or if there has been an unauthorised modification.