

DPA RS485 Modbus

Differential Pressure Transmitter

thermokon®
Sensortechnik GmbH

Data Sheet

Subject to technical alteration
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Application

Differential pressure transmitter with 8 selectable ranges and RS485 Modbus interface. For monitoring the differential pressure of air and other non-flammable and non-aggressive gases. Possible applications: Monitoring for air filters, fans, industrial cooling air cycles as well as overheating protection, control of air and fire dampers. RS485 Modbus types can calculate the flow rate additionally using differential pressure. Screw mounting onto flat surface, prepared for mounting on DIN rail TS35 (35x7,5 mm) according to EN 60715.

Types available

Type	Measuring range ¹⁾
DPA 250-D RS485 Modbus ²⁾³⁾ / DPA 250 RS485 Modbus ³⁾	0..250 Pa
DPA 2500-D RS485 Modbus ²⁾³⁾ / DPA 2500 RS485 Modbus ³⁾	0..2500 Pa
DPA 7000-D RS485 Modbus ²⁾³⁾ / DPA 7000 RS485 Modbus ³⁾	0..7000 Pa

¹⁾ Details for measuring range, please refer to configuration

²⁾ Type with display

³⁾ Optional with Auto-zero function

Security Advice – Caution



The installation and assembly of electrical equipment should only be performed by authorized personnel.

The product should only be used for the intended application. Unauthorised modifications are prohibited! The product must not be used in relation with any equipment that in case of a failure may threaten, directly or indirectly, human health or life or result in danger to human beings, animals or assets. Ensure all power is disconnected before installing. Do not connect to live/operating equipment.

Please comply with

- Local laws, health & safety regulations, technical standards and regulations
- Condition of the device at the time of installation, to ensure safe installation
- This data sheet and installation manual

Notes on Disposal



As a component of a large-scale fixed installation, Thermokon products are intended to be used permanently as part of a building or a structure at a pre-defined and dedicated location, hence the Waste Electrical and Electronic Act (WEEE) is not applicable. However, most of the products may contain valuable materials that should be recycled and not disposed of as domestic waste. Please note the relevant regulations for local disposal.

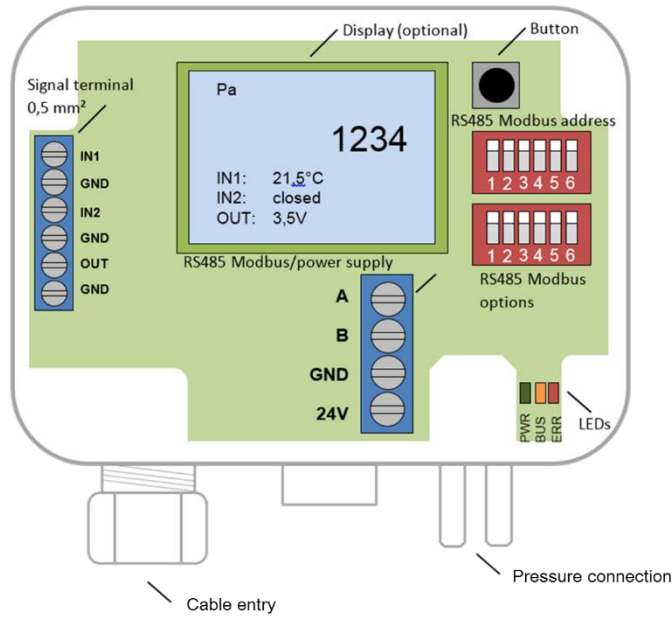
Technical Data

Measuring values		differential pressure
Medium		air and non-aggressive gases
Output voltage		0..10 V, max. 10 mA proportional to the measured value, scale configurable
Network technology		RS485 Modbus, RTU or ASCII, half-duplex
Power supply		15..24 V = ($\pm 10\%$) or 24 V ~ ($\pm 10\%$)
Power consumption		typ. 1,4 W (24 V =) 2 VA (24 V ~)
Measuring range pressure	DPA250	0..+25 0..+50 0..+100 0..+250 (default) -25..+25 -50..+50 -100..+100 -150..+150 Pa
	DPA2500	-100..+100 0..+100 0..+250 0..+500 (default) 0..+1000 0..+1500 0..+2000 0..+2500 Pa
	DPA7000	0..+1000 0..+1500 0..+2000 0..+2500 (default) 0..+3000 0..+4000 0..+5000 0..+7000 Pa
		RS485 Modbus additionally: volume flow 0..100 500 1.000 5.000 10.000 50.000 100.000 200.000 m ³ /h selectable at device, for other ranges please request
Accuracy pressure	DPA250	deviation compared to the reference device
	DPA2500	typ. ± 1 Pa at range <250 Pa
	DPA7000	measuring range ≤ 500 Pa: ± 5 Pa, measuring range >500 Pa: ± 10 Pa, measuring range ≤ 2000 Pa: ± 10 Pa, measuring range >2000 Pa: ± 25 Pa
Max. working overpressure		400 kPa
Calibration		automatic zero-point calibration (optional)
Sensor		piezo measuring element
Inputs		2 inputs for temperature sensors type NTC10k or for potential free switching contacts
Display		LCD 37,5x31,6 mm (optional) measured values: Pa, kPa, mbar, mmWC, inchWC, psi, m ³ /h, m ³ /s, cfm, l/s, scfh, f/min (configurable)
Enclosure		hinged lid enclosure, PA6, pure white
Protection		IP54 according to EN 60529, IP65 with bolted cover
Cable entry		M20 for cable max. $\varnothing=8$ mm, seal insert for double cable entry for wire max. $\varnothing=6$ mm
Connection electrical		terminal block, max. 1,5 mm ² input/output terminal block, max 0,5 mm ²
Connection mechanical		pressure connection male $\varnothing=5,0$ mm / $\varnothing=6,3$ mm, Connection tube PVC, soft
Ambient condition		-10..+50 °C, max. 95% rH non-condensing
Weight		150 g
Mounting		screw mounting onto flat surface, prepared for mounting on DIN rail TS35 (35x7,5 mm) according to EN 60715
Delivery content		2 mounting screws, 2 plastic duct flanges, 2 m PVC-connection tube

Mounting Advices

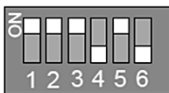
Before installing the device, please check the leak tightness of the pressure lines.

Terminal Connection Plan



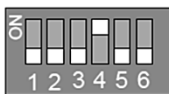
Configuration

e.g.: Address 23



Dip switch	1	2	3	4	5	6
Rating	2 ⁰ (1)	2 ¹ (2)	2 ² (4)	2 ³ (8)	2 ⁴ (16)	2 ⁵ (32)

Factory setting



Modbus Options

1	Modus
off	RTU (factory setting)
on	ASCII

2	3	Baud rate
off	off	9600 (factory setting)
on	off	19200
off	on	38400
on	on	57600

4	5	Parity
off	off	(None)
on	off	(Even) (factory setting)
off	on	(Odd)

RS485 Modbus Register

The description of RS485 Modbus Register and information concerning software are ready for download from our website.

http://www.thermokon.de/download-archive/Druck%20&%20Str%C3%B6mung/Gas%C3%B6rmige%20Medien/DPA/Software/DPA_RS485_Modbus.zip



Automatic Zero-Point Calibration - (optional)



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.

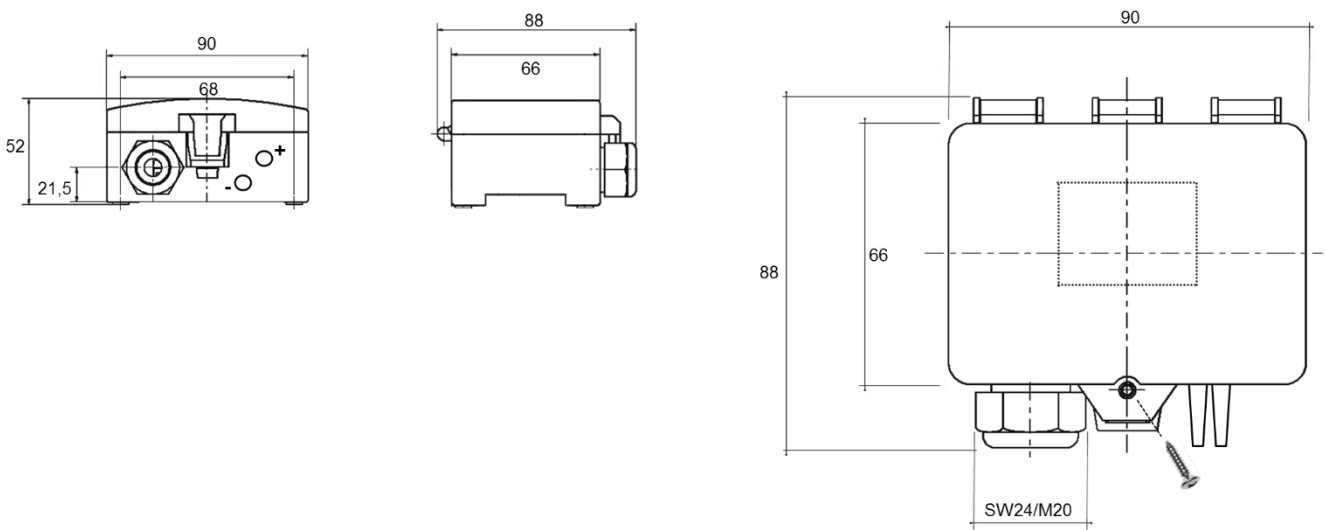
Manual zero-point calibration (for devices without auto-zero function)

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 S1 until the LED lights permanently
- Wait until the LED flashes again and reinstall the connection tubes to the pressure ports (note + and -)

Dimensions (mm)



To gain protection IP 65 according to EN 60527 the cover has to be bolted at the prepared position, e.g. using a screw 3,5x10 mm according to EN 7981.

Accessories (enclosed in shipment)

2 fixing screws	Item No. 289870
2 plastic duct flanges	Item No. 484596
2 m PVC connection tube \varnothing 4/7 mm	Item No. 484268
Spring for mounting on DIN rail TS35	Item No. 255165