

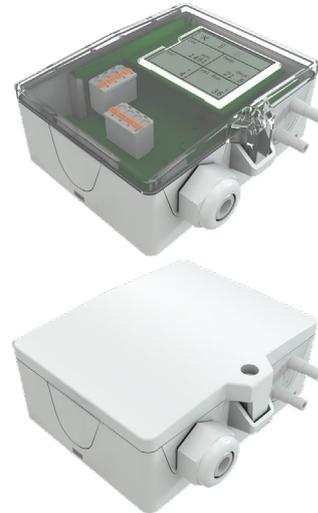
DPA+ (LCD)

Differential Pressure Transmitter

thermokon[®]
HOME OF SENSOR TECHNOLOGY

Datasheet

Subject to technical alteration
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» APPLICATION

Differential pressure and volume flow transducer for monitoring differential pressure and volume flow of air and other non-flammable and non-aggressive gases. Three types with eight different measuring ranges are available for different applications. In addition to differential pressure all variants provide the calculated volume flow as second analog output signal. LCD models with RGB background light have a transparent cover. Display configuration, k-values for flow calculation (default 1500) and threshold values for color changes can be parameterized via Thermokon USEapp. With the relay option board, 2-point controllers or with both relays 2 cascaded 2-point controllers for differential pressure or volume flow can be implemented. The mounting base (included in delivery) allows mounting on a level surface or mounting on DIN rail TS35 (35x7,5 mm) according to EN 60715.

» TYPES AVAILABLE

Differential pressure transducer, optional with display – 2x 0..10 V | optional with Relay

- DPA250+ <LCD> VV MultiRange <Relay> <AZ>
- DPA2500+ <LCD> VV MultiRange <Relay> <AZ>
- DPA7000+ <LCD> VV MultiRange <Relay> <AZ>

Differential pressure transducer, optional with display – 2x 4..20 mA + 2x 0..10 V

- DPA250+ <LCD> AA MultiRange <AZ>
- DPA2500+ <LCD> AA MultiRange <AZ>
- DPA7000+ <LCD> AA MultiRange <AZ>

MultiRange: Measuring ranges adjustable at the transducer

<AZ>: automatic zero-point adjustment (optional)

<LCD>: Display (optional)

<Relay>: Relay (optional)

» PRODUCT TESTING AND CERTIFICATION



Declaration of conformity

The declaration of conformity of the products are available on our website

<https://www.thermokon.de/direct/en-gb/categories/dpaplus>

» NOTES ON DISPOSAL



The crossed-out wheeled bin symbol indicates that the product or removable batteries must not be disposed of with household or commercial waste. Within the EU, you are legally obliged to dispose of the product separately and appropriately in accordance with the national laws of your country. Alternatively, please contact your supplier or Thermokon Sensortechnik GmbH. Further information can be found at: www.thermokon.com

» 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

Before mounting, commissioning and operation, make sure that the right pressure gauge has been selected in terms of measuring range, design and, due to the specific measuring conditions, the suitable wetted medium. Only install and maintain pressure gauges by qualified personnel authorized by the plant operator. Failure to comply with applicable regulations may result in serious personal injury and / or property damage.

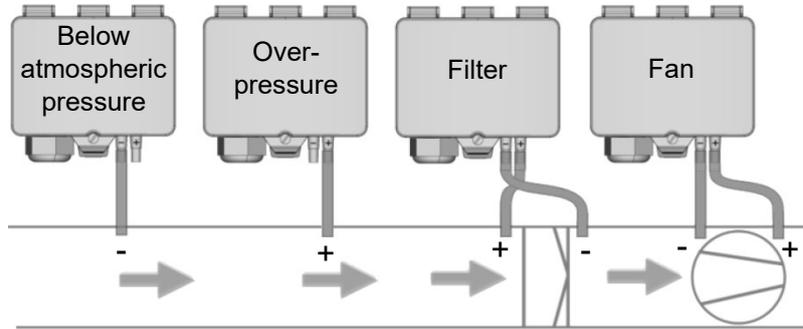
» TECHNICAL DATA

Measuring values	differential pressure, volume flow		
Medium	air or other non-flammable/non-aggressive gases		
Output voltage	0..10 V or 0..5 V, min. load 10 kΩ, (live-zero configuration via Thermokon USEapp)		
Output Amp (type-dependent)	AA 2x 4..20 mA. max. load 500 Ω		
Output switch contact (type-dependent)	Relay 2 floating contacts for 24 V ~ or 24 V = / 3 A		
Power supply	VV Relay 15..35 V = or 19..29 V ~ SELV	AA 15..35 V = SELV	
Power consumption	max. 2,3 W (24 V =) max. 4,3 VA (24 V ~)		
Measuring range velocity	0... 750.000 m ³ /h (default), optionally configured via Thermokon USEapp		
Measuring range pressure *selectable at the device	type 250 0..+1 0..+0.4 0..+0.2 0..+0.1 -0.1..+0.1 -0.2..+0.2 -0.4..+0.4 -0.6..+0.6 inchWC	type 2500 0..+10 0..+8 0..+6 0..+4 -0..+2 0..+1 0..+0.4 -0.4..+0.4 inchWC	type 7000 0..+28 0..+20 0..+16 0..+12 0..+10 0..+8 0..+6 0..+4 inchWC
Accuracy pressure *deviation from calibration reference device (calibrator)	at range <1 inchWC: typ. ±0.004 inchWC	at range ≤2 inchWC: ±0.02 inchWC, >2 inchWC: ±0.04 inchWC	at range ≤8 inchWC: ±0.04 inchWC, >8 inchWC: ±0.10 inchWC
Zero-point adjustment (manual)	3 month	at range: ≤2 inchWC: 6 month >2 inchWC: 12 month	12 month
Zero point adjustment (automatic)	automatic zero-point adjustment (optional)		
Max. working overpressure	160 inchWC		
Sensor	MEMS membrane measuring element		
Display (optional)	LCD 1.14x1.38 in. with RGB backlight, units, pressure: Pa, inchWC, volume flow: m ³ /h, cfm (configurable)		
Enclosure	enclosure USE-L, PC, pure white, with removable cable entry, with LCD: cover PC, transparent		
Protection	IP65 according to EN 60529		
Cable entry (type-dependent)	VV AA Flextherm M20, for wire max. Ø=0.18..0.35 in., removable	Relay M20, for wire max. Ø=0.4 in., seal insert for double cable entry for wire max Ø=0.24 in.	
Connection electrical	removeable plug-in terminal, max. 14AWG		
Connection mechanical	pressure connection male Ø=0.2 in / Ø=0.25 in., connection tube: PVC, soft		
Ambient condition	+14..+122 °F, max. 85% rH short term condensation		
Mounting	screw mounted onto flat surface, prepared for mounting on DIN rail TS35 (35x7,5 mm) according to EN 60715		

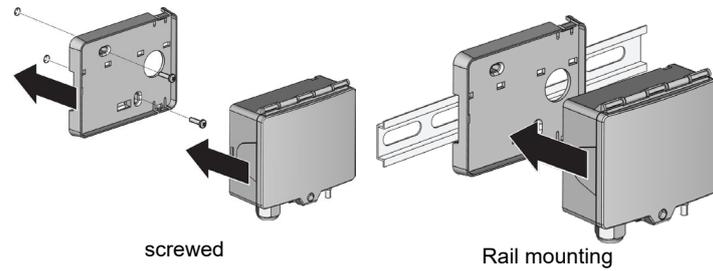
» **MOUNTING ADVICES**

Before installing the device, please check the leak tightness of the pressure lines. A prerequisite for the operation is a proper installation of all electrical supply, control and sensing leads as well as the pressurized connection line.

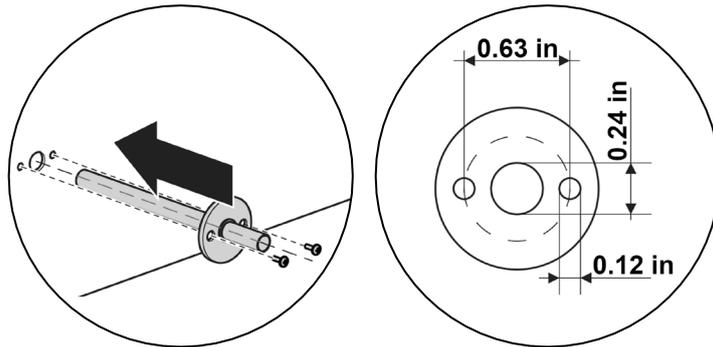
- In order to connect the device, the process lines must be unpressurized
- Consider the suitability of the device for the medium to be measured
- Consider maximum pressures



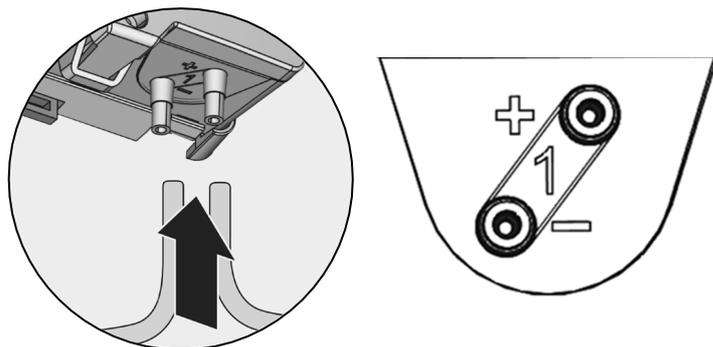
1. Mount the DPA+ mounting base in a suitable location and attach the DPA+. **Note alignment!**



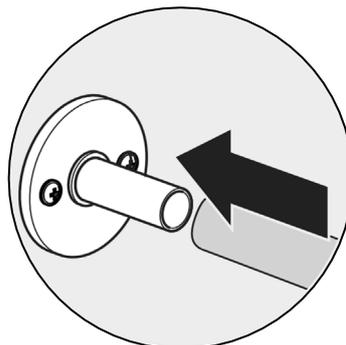
2. Prepare the duct for mounting and mount the duct connection piece. **Attention! Observe dimensions!**



3. Connect pressure tubes to the device. **Attention! Observe labeling!**

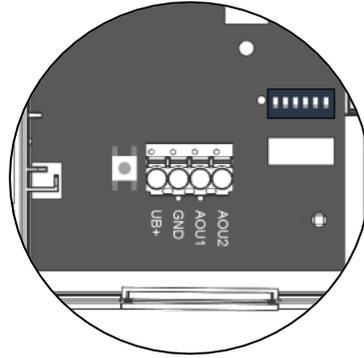
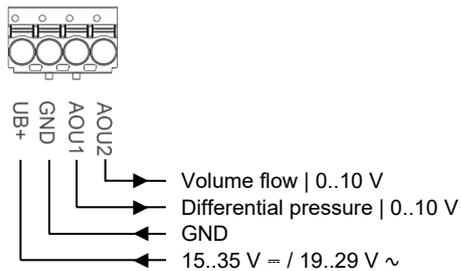


4. Connect pressure tubes to the duct connection pieces

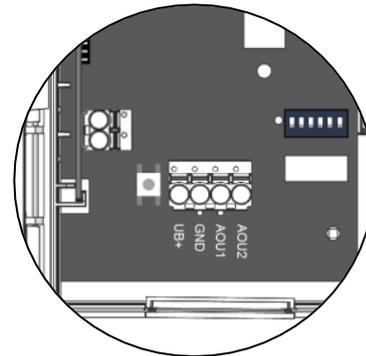
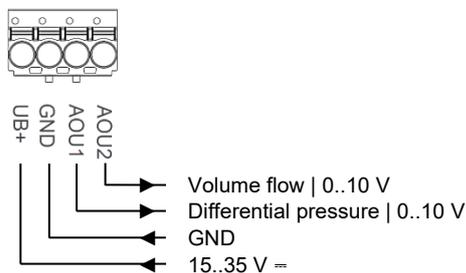
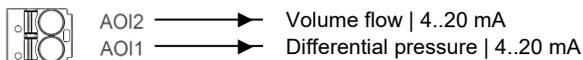


» CONNECTION PLAN

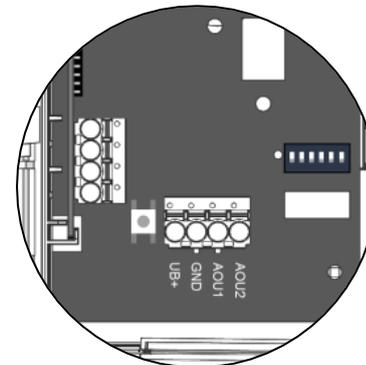
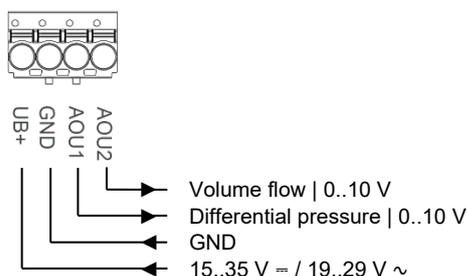
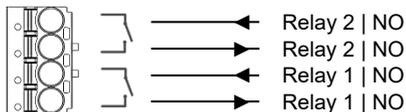
DPA+ LCD VV MultiRange



DPA+ LCD AA MultiRange



DPA+ LCD VV MultiRange Relay



» USE ENCLOSURE WITH UV AND WEATHER RESISTANCE

After some time, outdoor mounted plastics can lose their color and quality. Therefore, all USE housings are made of special white polycarbonate (PC). The light-stable colorants and additives are used to achieve optimum protection of the polymer while maintaining color stability. The titanium dioxide used is specially developed for polycarbonate and offers excellent UV protection through the reflection of the entire light spectrum including the UV component by 340 nm. This effectively counteracts the otherwise occurring photochemical polymer degradation. The colors stay full for a long time without fading. The material is also resistant to cold and frost.

» **DIP-SWITCHES MAINBOARD**

Measuring range adjustment – type 250 | 2500 | 7000

ON 1 2 3								
0..+250	0..+100	0..+50	0..+25	-25..+25	-50..+50	-100..+100	-150..+150	Pa
0..+2500	0..+2000	0..+1500	0..+1000	0..+500	0..+250	0..+100	-100..+100	Pa
0..+7000	0..+5000	0..+4000	0..+3000	0..+2500	0..+2000	0..+1500	0..+1000	Pa
0..+1	0..+0.4	0..+0.2	0..+0.1	-0.1..+0.1	-0.2..+0.2	-0.4..+0.4	-0.6..+0.6	inchWC
0..+10	0..+8	0..+6	0..+4	0..+2	0..+1	0..+0.4	-0.4..+0.4	inchWC
0..+28	0..+20	0..+16	0..+12	0..+10	0..+8	0..+6	0..+4	inchWC
default								

Response time		Output voltage		Unit	
ON 4	ON 4	ON 5	ON 5	ON 6	ON 6
0,8 sec	4,0 sec	0..10 V	0..5 V	Pa	inchWC
default		default		default	

Flow calculation: (factory default)

$$q = k * \sqrt{2 * \frac{\Delta p}{\rho}}$$

with k=1500, fan manufacturer Rosenberg, Comefri, Nicotra Gebhardt, default measuring range 0..750.000 m³/h.

Further calculation formulas, fan manufacturers and k-values can be selected via the USEapp.

Rosenberg · Comefri · Gebhardt · Nicotra	Ziehl-Abegg · EBM-Papst	Fläkt Woods
$q = k * \sqrt{2 * \frac{\Delta p}{\rho}}$	$q = k * \sqrt{\Delta p}$	$q = \frac{1}{k} * \sqrt{\Delta p}$

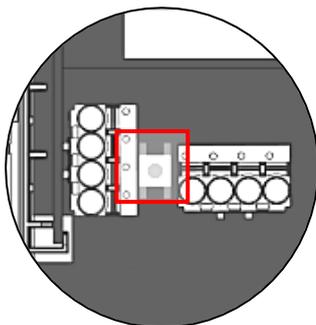
» **AUTOMATIC ZERO-POINT ADJUSTMENT - (OPTIONAL)**



Transmitters equipped with the auto-zero adjustment are maintenance free.

The auto-zero adjustment electronically adjusts the transmitter to 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 correction period, the output and display values will freeze to the latest measured value.

» **MANUAL ZERO-POINT ADJUSTMENT (FOR DEVICES WITHOUT AUTO-ZERO FUNCTION)**



In normal operation zero point adjustment should be executed depending on the device and the measuring range.

Attention! For executing zero point adjustment 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 -)

» CONFIGURATION



The Thermokon bluetooth dongle with micro-USB (Item No.: 668262) is required for communication between USEapp and USE-M / USE L products. Commercial bluetooth dongles are not compatible.

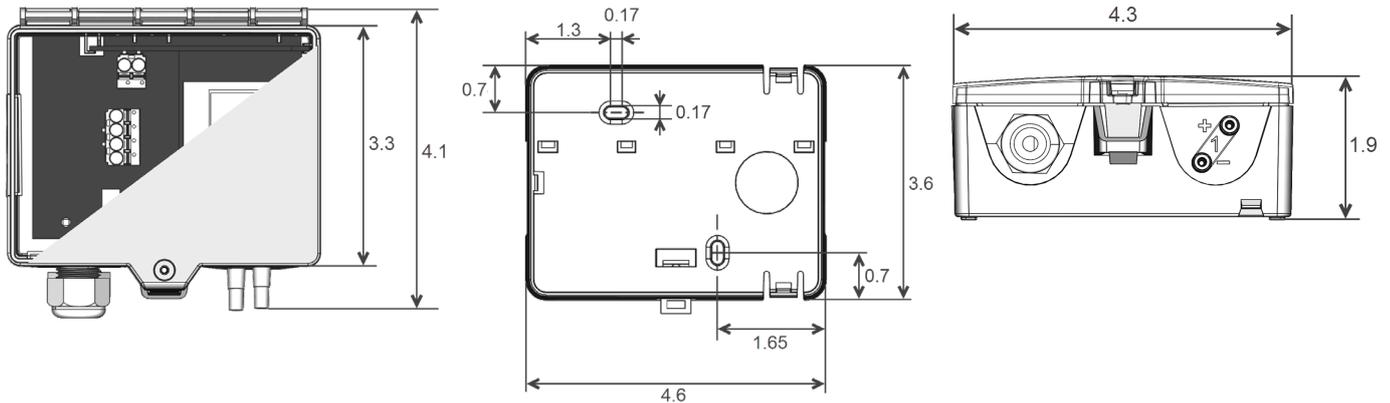


Application-specific reconfiguration of the devices can be carried out using the Thermokon USEapp. The configuration is carried out in the voltage-supplied state.



The configuration-app and the app description can be found in the Google Play Store or in the Apple App Store.

» DIMENSIONS (IN.)



» ACCESSORIES (INCLUDED IN DELIVERY)

Mounting base enclosure USE-L

Item No. 668361

2 m PVC connection tube

Item No. 484268

KKS40 kit

Item No. 430135

• 2 plastic duct flanges • 4 mounting screws 4x20

Mounting kit universal

Item No. 698511

• Cover screw + screw cover • 2 Rawlplugs • 2 Screws (countersunk head) • 2 Screws (rounded head)

» ACCESSORIES (OPTIONAL)

Bluetooth dongle USE for USEapp

Item No. 668262

Cable entry M25 USE white, sealing insert 4x Ø=0.28 in. (4 pcs)

Item No. 641364

T-hose connector for pressure hoses Ø=0.16 in. (10 pcs)

Item No. 668323

Adapter 90° angle for pressure hoses Ø=0.16 in.

Item No. 668330

Metal duct connectors 1.6 in.

Item No. 265138

Metal duct connectors 4 in.

Item No. 302531

Sealing insert M20 USE white, 2x Ø=0.28 in. (for 2 wire; PU 10 pieces)

Item No. 641333