

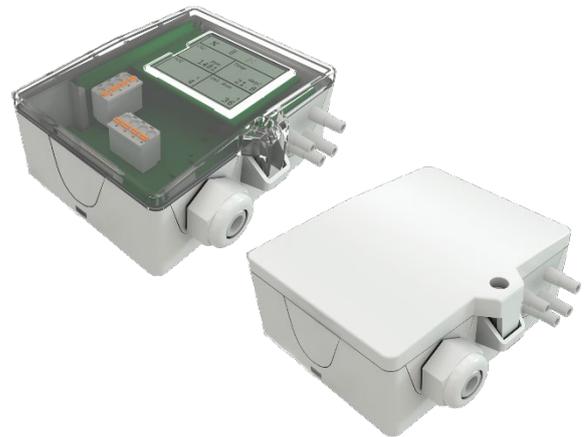
DPA+ Dual | DPA+ LCD Dual

Differential Pressure Transmitter

thermokon[®]
HOME OF SENSOR TECHNOLOGY

Datasheet

Subject to technical alteration
Issue date: 20.02.2023 • A123



The following illustrations show the version with LCD

» APPLICATION

Differential pressure and volume flow transducer for monitoring differential pressure and volume flow of air and other non-flammable and non-aggressive gases. 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. 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

Dual differential pressure transducer – active 2x 0..10 V | 2x 4..20 mA | LCD

- DPAX+ Dual VV MultiRange <AZ>
- DPAX+ Dual AA MultiRange <AZ>
- DPAX+ LCD Dual VV MultiRange <AZ>
- DPAX+ LCD Dual AA MultiRange <AZ>

Dual differential pressure and volume flow transducer – active 4x 0..10 V | LCD

- DPAX+ Dual 4xV MultiRange <AZ>
- DPAX+ LCD Dual 4xV MultiRange <AZ>

x: 250 | 2500 | 7000

MultiRange: Measuring ranges adjustable at the transducer

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

» PRODUCT TESTING AND CERTIFICATION



Declaration of conformity

The declaration of conformity of the products are available on our website <https://www.thermokon.de/>.

» 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.

» 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

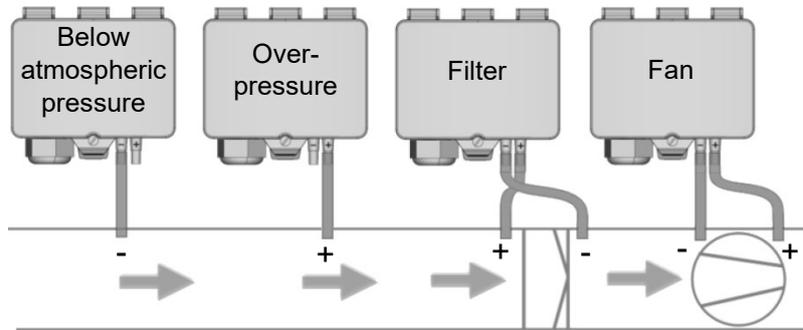
Measuring values	differential pressure, volume flow		
Medium	air or other non-flammable/non-aggressive gases		
Output voltage <i>(type-dependent)</i>	1..4x 0..10 V or 0..5 V, min. load 10 kΩ (live-zero configuration via Thermokon USEapp)		
Output Amp <i>(type-dependent)</i>	Dual AA 2x 4..20 mA. max. load 500 Ω		
Power supply <i>(type-dependent)</i>	Dual VV 4xV 15..35 V = or 19..29 V ~ SELV	Dual AA 15..35 V =	
Power consumption	max. 2,3 W (24 V =) max. 4,3 VA (24 V ~)		
Measuring range velocity	0... 750.000 m³/h (default), optionally onfigurable via Thermokon USEapp		
Measuring range pressure <i>*selectable at the device</i>	type 250 0..+25 0..+50 0..+100 0..+250 -25..+25 -50..+50 - 100..+100 -150..+150 Pa	type 2500 -100..+100 0..+100 0..+250 0..+500 0..+1000 0..+1500 0..+2000 0..+2500 Pa	type 7000 0..+1000 0..+1500 0..+2000 0..+2500 0..+3000 0..+4000 0..+5000 0..+7000 Pa
Accuracy pressure <i>*deviation from calibration reference device (calibrator)</i>	at range <250 Pa: ±1 Pa	at range <500 Pa: ±5 Pa, at range >500 Pa: ±10 Pa	at range <2000 Pa: ±10 Pa, at range >2000 Pa: ±25 Pa
Zero-point adjustment <i>(manual)</i>	3 month	at range <500 Pa: 6 month at range >500 Pa: 12 month	12 month
Zero-point adjustment <i>(automatic)</i>	automatic zero-point adjustment (optional)		
Max. working overpressure	40 kPa		
Sensor	piezo measuring element		
Display <i>(optional)</i>	LCD 29x35 mm with RGB backlight units, pressure: Pa, inchWC, volume flow: m3/h, cfm (configurable)		
Enclosure <i>(type-dependent)</i>	without LCD enclosure USE-L, PC, pure white, with removable cable entry	with LCD enclosure USE-L, PC, pure white, cover PC, transparent, with removable cable entry	
Protection	IP65 according to EN 60529		
Cable entry	VV Flextherm M20, for wire Ø=4,5..9 mm, removable	4xV M20, for wire max. Ø=10 mm, seal insert for double cable entry for wire max Ø=6 mm	
Connection electrical	removable plug-in terminal, max. 2,5 mm²		
Connection mechanical	pressure connection male Ø=5,0 mm / Ø=6,3 mm, connection tube: PVC, soft		
Ambient condition	-10..+50 °C, 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**

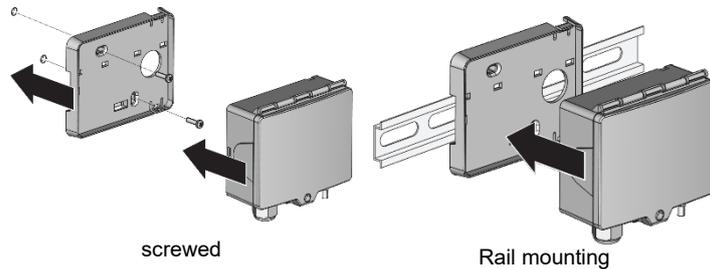
Before installing the device, please check the leak tightness of the pressure lines.

A prerequisite for the operation is a proper installation of all electrical supply, control and sensing leads as well as the pressurized connection line.

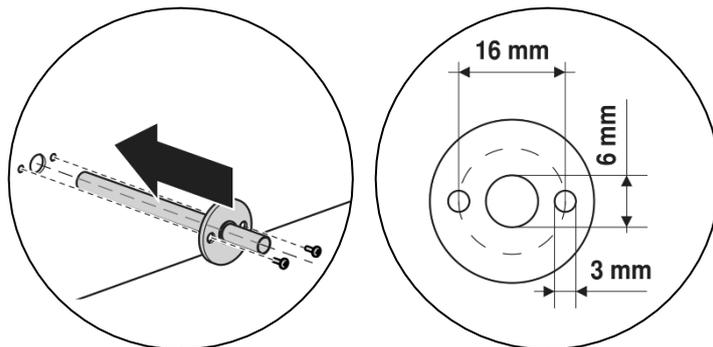
- In order to connect the device, the process lines must be unpressurized
- Consider the suitability of the device for the medium to be measured
- Consider maximum pressures



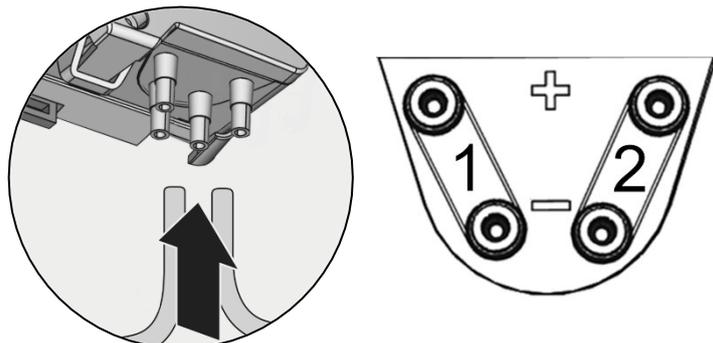
1. Mount the DPA+ mounting base in a suitable location and attach the DPA+. **Note alignment!**



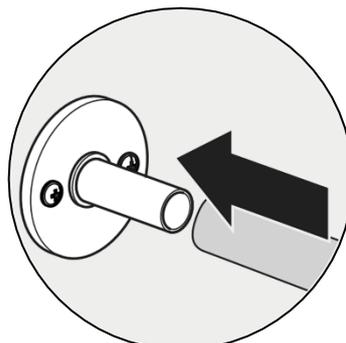
2. Prepare the duct for mounting and mount the duct connection piece. **Attention! Observe dimensions!**



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

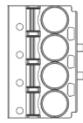
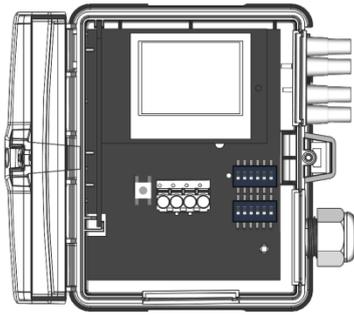


4. Connect pressure tubes to the duct connection pieces

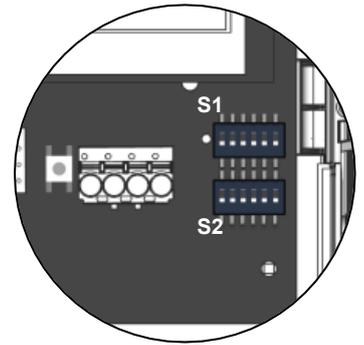


» **CONNECTION PLAN**

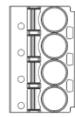
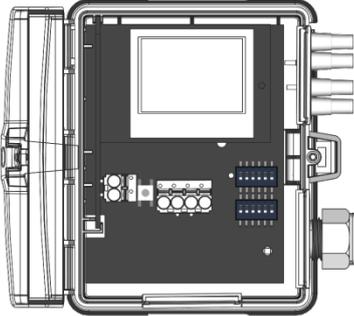
DPA+ (LCD) Dual VV MultiRange



AOU2 } (differential pressure 2 | 0..10 V)
 AOU1 } (differential pressure 1 | 0..10 V)
 GND }
 UB+ } (15..35 V = or 19..29 V ~)



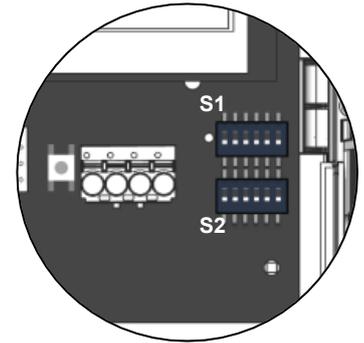
DPA+ (LCD) Dual AA MultiRange



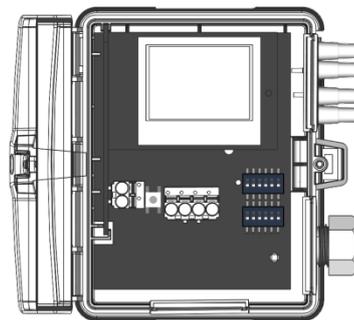
AOU2 } (differential pressure 2 | 0..10 V)
 AOU1 } (differential pressure 1 | 0..10 V)
 GND }
 UB+ } (15..35 V =)



AOI2 } (differential pressure 2 | 4..20 mA)
 AOI1 } (differential pressure 1 | 4..20 mA)



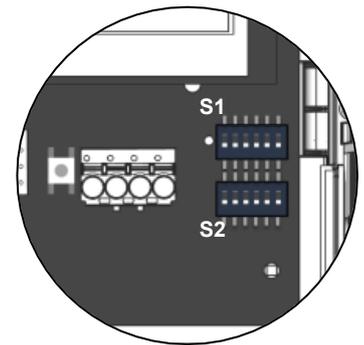
DPA+ (LCD) Dual 4xV MultiRange



AOU2 } (differential pressure 2 | 0..10 V)
 AOU1 } (differential pressure 1 | 0..10 V)
 GND }
 UB+ } (15..35 V = or 19..29 V ~)



AOU4 } (volume flow 2 | 0..10 V)
 AOU3 } (volume flow 1 | 0..10 V)



» **DIP SWITCHES, MAIN BOARD (S1+S2)**

S1 – Dip-switch 1 (pressure sensor 1)
S2 – Dip-switch 2 (pressure sensor 2)

Measuring range adjustment – Typ 250 | 2500 | 7000

Measuring range adjustment – Typ 250 2500 7000								☐ = ON ☑ = OFF
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	
0,8 sec	4,0 sec	0..10 V	0..5 V	Pa	inchWC
default		default		default	

» **FLOW CALCULATION: (DEFAULT PARAMETERS)**

$q = k * \sqrt{2 * \frac{\Delta p}{\rho}}$ 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
$q = k * \sqrt{2 * \frac{\Delta p}{\rho}}$	$q = k * \sqrt{\Delta p}$	$q = \frac{1}{k} * \sqrt{\Delta p}$

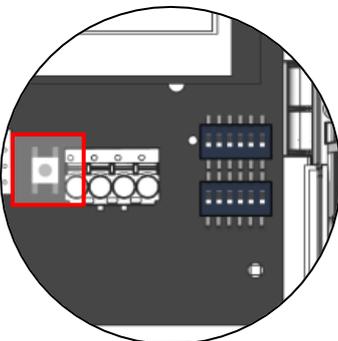
» **AUTOMATIC ZERO-POINT ADJUSTMENT - (OPTIONAL)**



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.

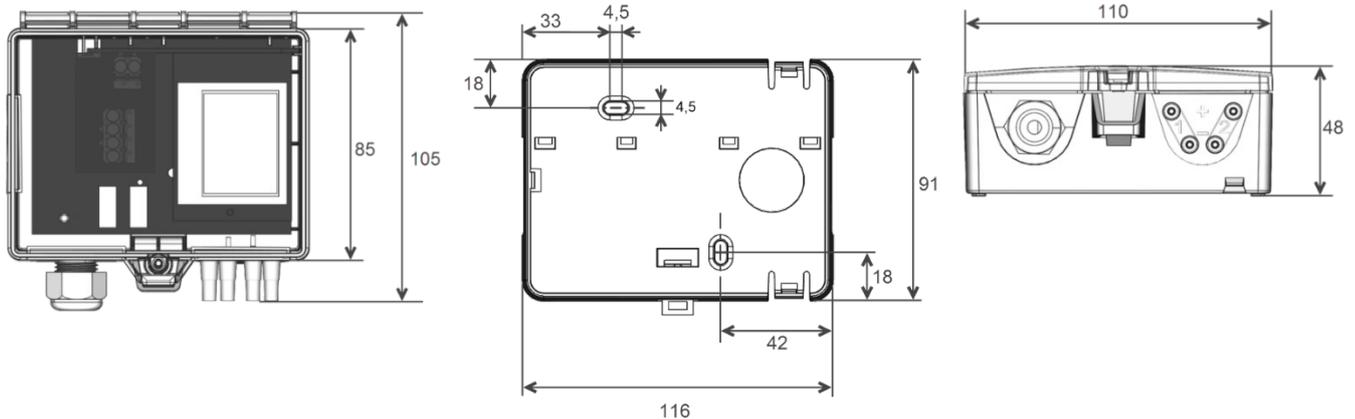


Application-specific reconfiguration of the devices can be carried out using the Thermokon USEapp. The configuration is carried out in the voltage-supplied state.



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

» DIMENSIONS (MM)



» ACCESSORIES (INCLUDED IN DELIVERY)

Mounting base enclosure USE-L

Item No. 668361

2x 2 m PVC connection tube

Item No. 484268

2x 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=7 mm (4 pcs)

Item No. 641364

T-hose connector for pressure hoses Ø=4 mm (10 pcs)

Item No. 668323

Adapter 90° angle for pressure hoses Ø=4 mm

Item No. 668330

Metal duct connectors 40 mm

Item No. 265138

Metal duct connectors 100 mm

Item No. 302531

Sealing insert M20 USE white, 2x Ø=7 mm (for 2 wire; PU 10 pieces)

Item No. 641333