

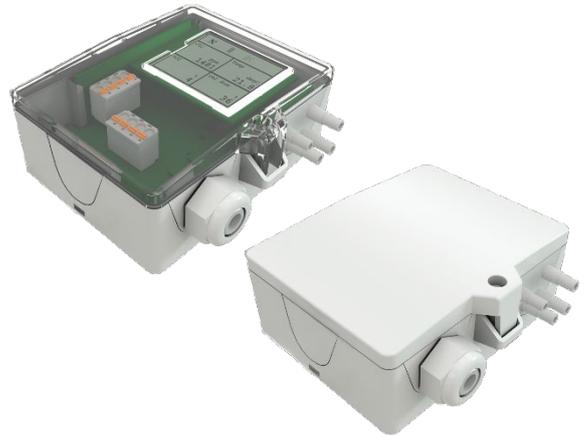
DPA+ Dual | DPA+ LCD Dual RS485 BACnet

Differential Pressure Transmitter

thermokon[®]
HOME OF SENSOR TECHNOLOGY

Datasheet

Subject to technical alteration
Issue date: 06.03.2025 • A141



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

Differential pressure and volume flow transducer optional with display – RS485 BACnet MS/TP

- DPA250+ (LCD) RS485 BACnet MultiRange <AZ>
- DPA2500+ (LCD) RS485 BACnet MultiRange <AZ>

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/direct/en-gb/categories/dpaplus>

» NOTES ON DISPOSAL



The crossed-out wheellie 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

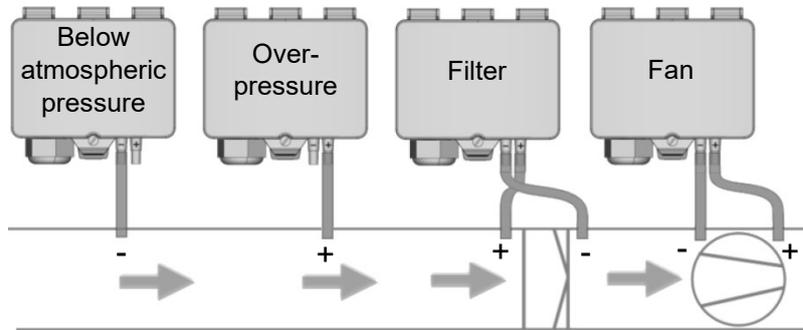
Measuring values	differential pressure, volume flow	
Medium	air or other non-flammable/non-aggressive gases	
Output voltage	0..10 V or 0..5 V, min. load 10 kΩ, (live-zero Konfiguration über Thermokon USEapp)	
Network technology	RS485 BACnet MS/TP, Fail-safe Biasing required	
Power supply	15..35 V = or 19..29 V ~	
Power consumption	max. 2,3 W (24 V =) max. 4,3 VA (24 V ~)	
Measuring range velocity	0... 750.000 m³/h (default), parametrierbar über 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
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
Zero-point adjustment <i>(manual)</i>	3 month	at range <500 Pa: 6 month at range >500 Pa: 12 month
Zero-point adjustment <i>(automatic)</i>	automatic zero-point adjustment (optional)	
Max. working overpressure	40 kPa	
Sensor	MEMS membrane 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	M25, for wire max. Ø=7 mm, seal insert for fourfold cable entry	
Connection electrical	Mainboard removable plug-in terminal, max. 2,5 mm²	Plug-in card removable plug-in terminal, max. 1,5 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

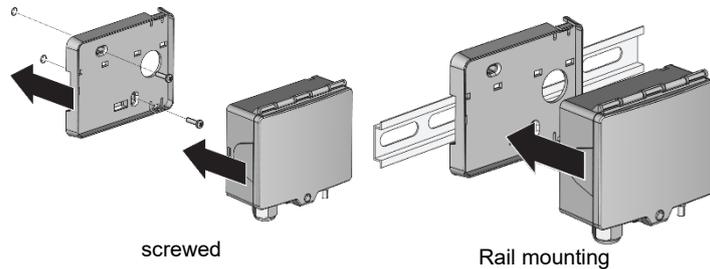
Before installing the device, please check the leak tightness of the pressure lines.

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

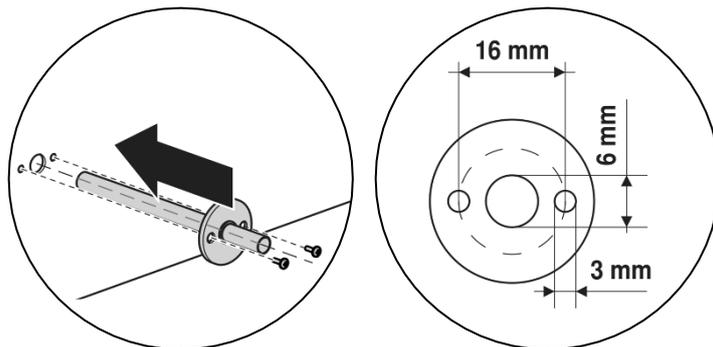
- In order to connect the device, the process lines must be unpressurized
- Consider the suitability of the device for the medium to be measured
- Consider maximum pressures



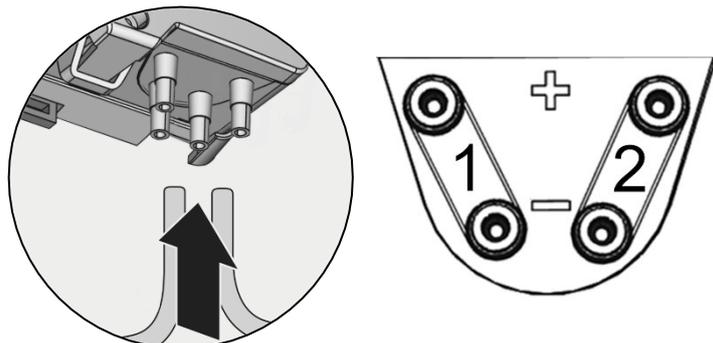
1. Mount the DPA+ mounting base in a suitable location and attach the DPA+.
Note alignment!



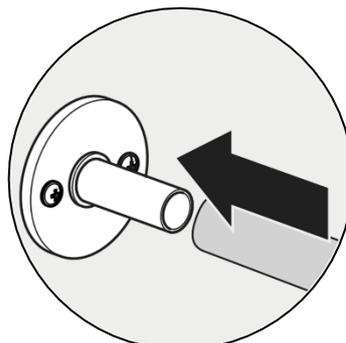
2. Prepare the duct for mounting and mount the duct connection piece.
Attention! Observe dimensions!



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



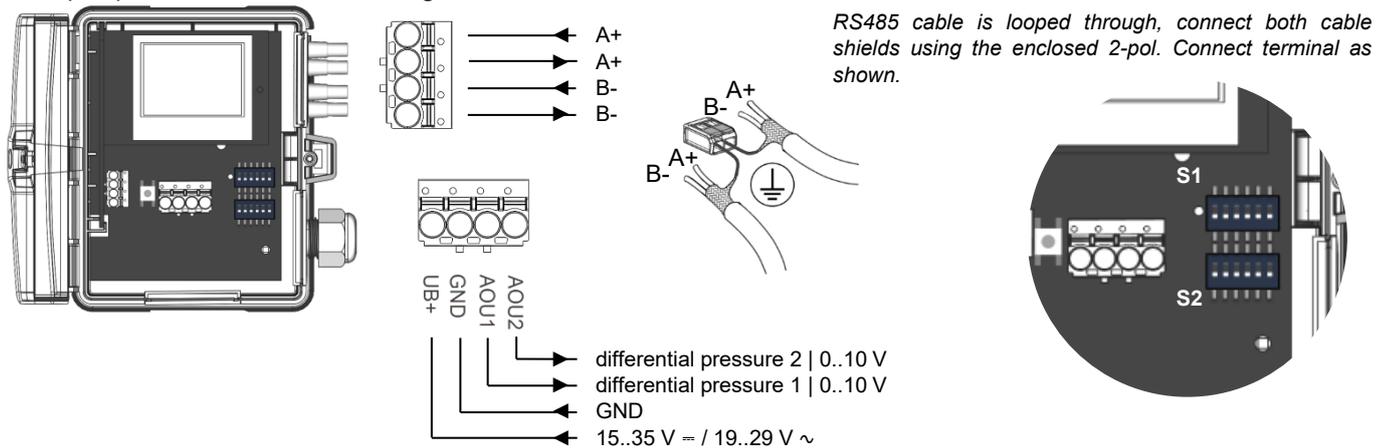
4. Connect pressure tubes to the duct connection pieces



» CONNECTION PLAN

RS485 cable is looped through, connect both cable shields using the enclosed 2-pol. Connect terminal as shown.

DPA+ (LCD) Dual RS485 BACnet Multirange



» DIP SWITCHES, MAINBOARD (S1+S2)

Measuring range adjustment – Typ 250 | 2500 | 7000

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

Measuring range adjustment – Typ 250 2500 7000								
ON	ON	ON	ON	ON	ON	ON	ON	
1 2 3	1 2 3	1 2 3	1 2 3	1 2 3	1 2 3	1 2 3	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	ON	ON	ON	ON	ON
4	4	5	5	6	6
0,8 sec	4,0 sec	0..10 V	0..5 V	Pa	inchWC
default		default		default	

» **DIP SWITCHES, PLUG-IN CARD**

The BACnet address of the device is set binary coded in the range of 1 ... 127 via 7 dip-switches. (the address 0 is reserved and cannot be selected).

*factory default settings

» **BACNET CONFIGURATION**



BACnet Objects, PICS and BIBBs:
USE-RS485 BACnet interface

A detailed description of the BACnet interface can be found at the following link: [Download](#)

Object	Access	Description	Object AV-38 = 1 (Unit SI)		Object AV-38 = 2 (Unit Imperial)	
			COV Increment	Unit	COV Increment	Unit
AI-8	R	Differential pressure 1	0..7000	Pa	0..28	inWC
AI-9	R	Volumetric flow 1 (16 Bit) (if the Present Value in Objekt AV-41 is set to the value 2, the value scales the unit m³/s)	0..999 999	m³/h m³/s	0..999 999	Cfm
AI-10	R	Differential pressure 2	0..7000	Pa	0..28	inWC
AI-11	R	Volumetric flow 2 (16 Bit) (if the Present Value in Objekt AV-41 is set to the value 2, the value scales the unit m³/s)	0..999 999	m³/h m³/s	0..999 999	cfm

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

» **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.

» **APPLICATION NOTICE**



The Bluetooth dongle snaps into the socket easily. When removing, please fix the plug-in card (option PCB) so that it is not unintentionally pulled out.

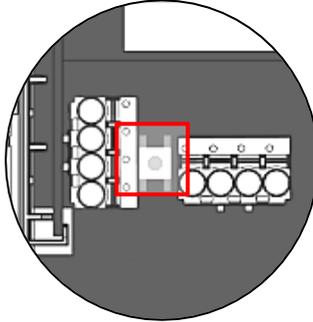
» AUTOMATIC ZERO-POINT ADJUSTMENT - (OPTIONAL)



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.

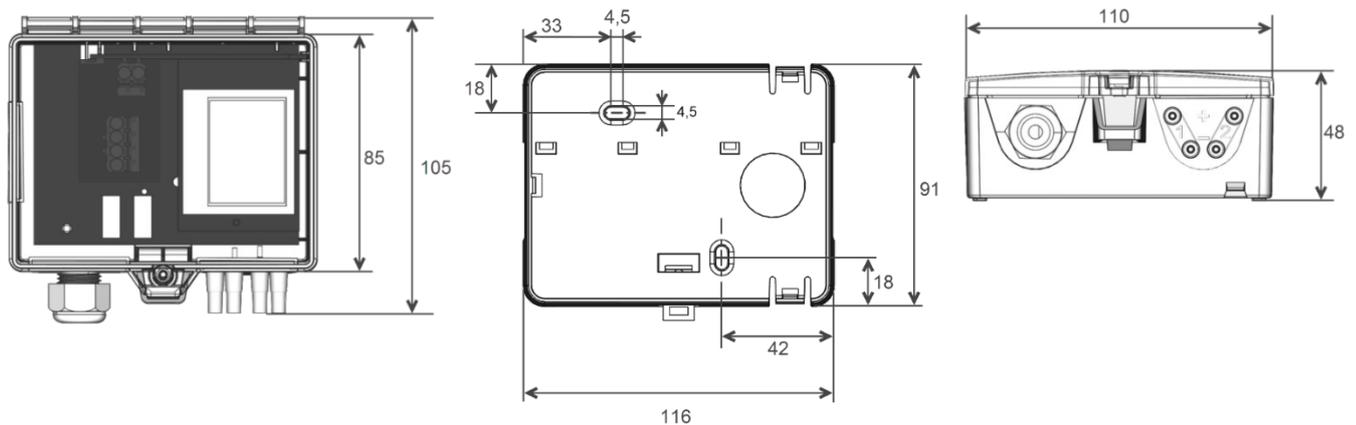
Attention! For executing zero point adjustment the power supply must be connected one hour before.

- 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 -)

» 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.

» DIMENSIONS (MM)



» ACCESSORIES (INCLUDED IN DELIVERY)

Mounting base enclosure USE-L
2x 2 m PVC connection tube
2x KKS40 kit
• 2 plastic duct flanges • 4 mounting screws 4x20

Item No. 668361
Item No. 484268
Item No. 430135

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

Item No. 698511

» ACCESSORIES (OPTIONAL)

Bluetooth dongle USE for USEapp
RS485 Biasing Adapter

Item No. 668262
Item No. 811378

T-hose connector for pressure hoses $\varnothing=4$ mm (10 pcs)
Adapter 90° angle for pressure hoses $\varnothing=4$ mm
Metal duct connectors 40 mm
Metal duct connectors 100 mm

Item No. 668323
Item No. 668330
Item No. 265138
Item No. 302531