DPA+ Dual | DPA+ LCD Dual RS485 BACnet

Differential Pressure Transmitter

thermokon®
HOME OF SENSOR TECHNOLOGY

Datasheet

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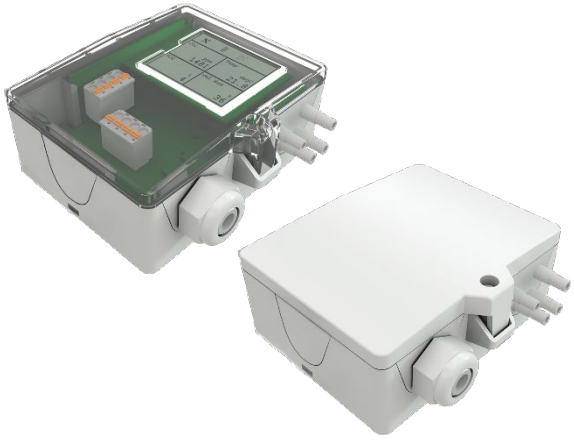


The following illustrations show the version with LCD

» 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/ .

» 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

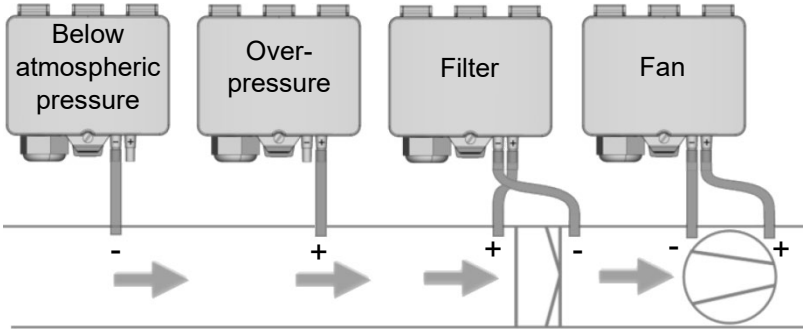
Measuring values	differential pressure, volume flow		
Medium	air or other non-flammable/non-aggressive gases		
Output voltage	0..10 V or 0..5 V, min. load 10 kΩ, (live-zero Konfiguration über Thermokon USEapp)		
Network technology	RS485 BACnet MS/TP, **Fail-safe Biasing required**		
Power supply	15..35 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 **selectable at the device*	**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 **deviation from calibration reference device (calibrator)*	at range <250 Pa: ±1 Pa	at range <500 Pa: ±5 Pa, at range >500 Pa: ±10 Pa	
Zero-point adjustment *(manual)*	3 month	at range <500 Pa: 6 month at range >500 Pa: 12 month	
Zero-point adjustment *(automatic)*	automatic zero-point adjustment (optional)		
Max. working overpressure	40 kPa		
Sensor	piezo measuring element		
Display (optional)	LCD 29x35 mm with RGB backlight units, pressure: Pa, inchWC, volume flow: m3/h, cfm (configurable)		
Enclosure (type-dependent)	**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

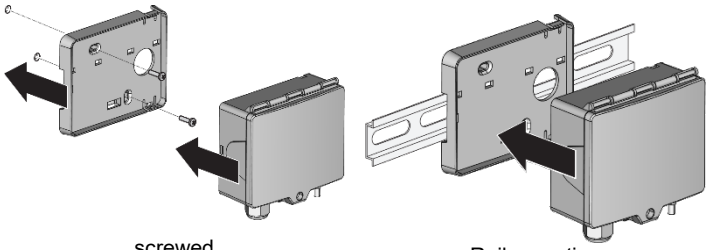
Before installing the device, please check the leak tightness of the pressure lines.

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

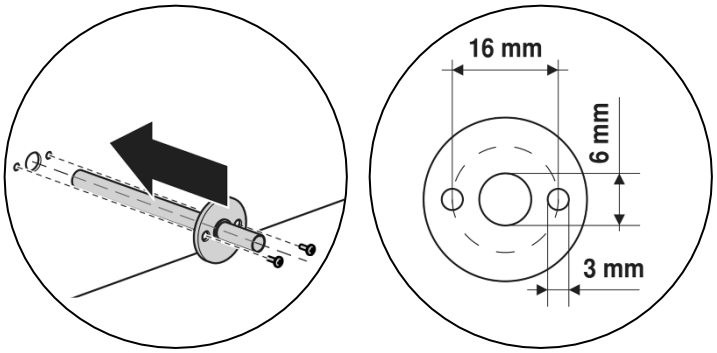


1. Mount the DPA+ mounting base in a suitable location and attach the DPA+. ***Note alignment!***

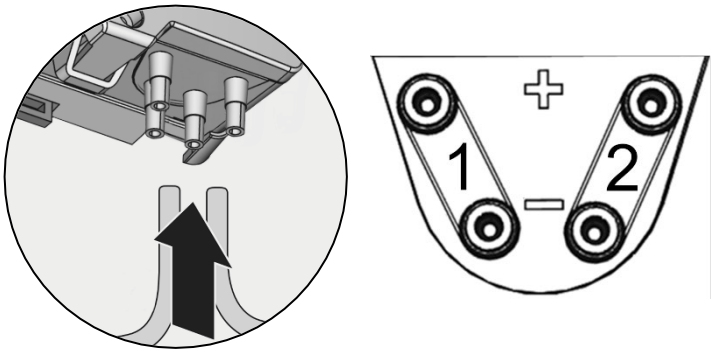


screwed Rail mounting

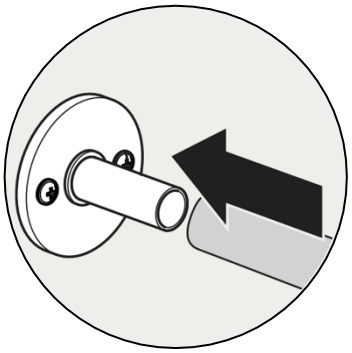
2. Prepare the duct for mounting and mount the duct connection piece. ***Attention! Observe dimensions!***



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



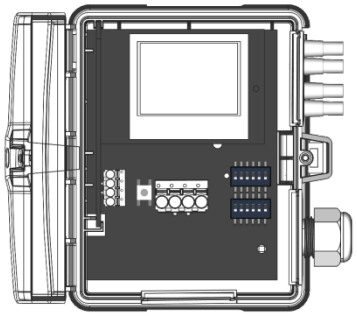
4. Connect pressure tubes to the duct connection pieces

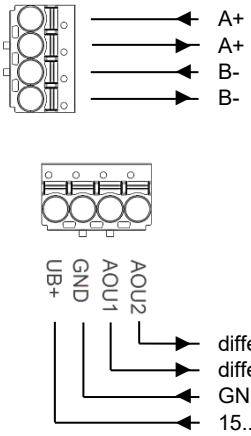


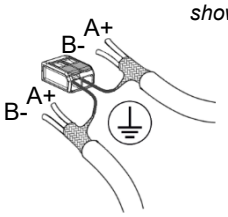
»CONNECTION PLAN

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

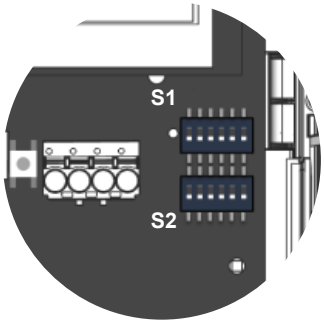
DPA+ (LCD) Dual RS485 BACnet Multirange







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



»DIP SWITCHES, MAINBOARD (S1+S2)

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

Measuring range adjustment – Typ 250 | 2500 | 7000

ON 1 2 3	ON 1 2 3	ON 1 2 3	ON 1 2 3	ON 1 2 3	ON 1 2 3	ON 1 2 3	ON 1 2 3	= 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

ON 4	ON 4
0,8 sec	4,0 sec

default

Output voltage

ON 5	ON 5
0..10 V	0..5 V

default

Unit

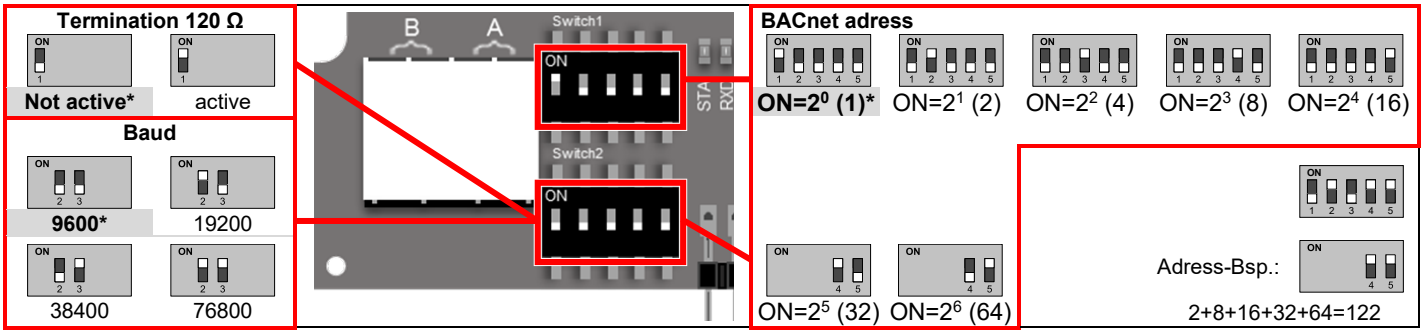
ON 6	ON 6
Pa	inchWC

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 AV-38 = 1 (Unit SI)		Object AV-38 = 2 (Unit Imperial)	
Object	**Access**	**Description**	**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.

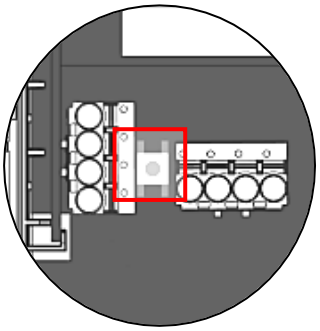
»APPLICATION NOTICE

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)

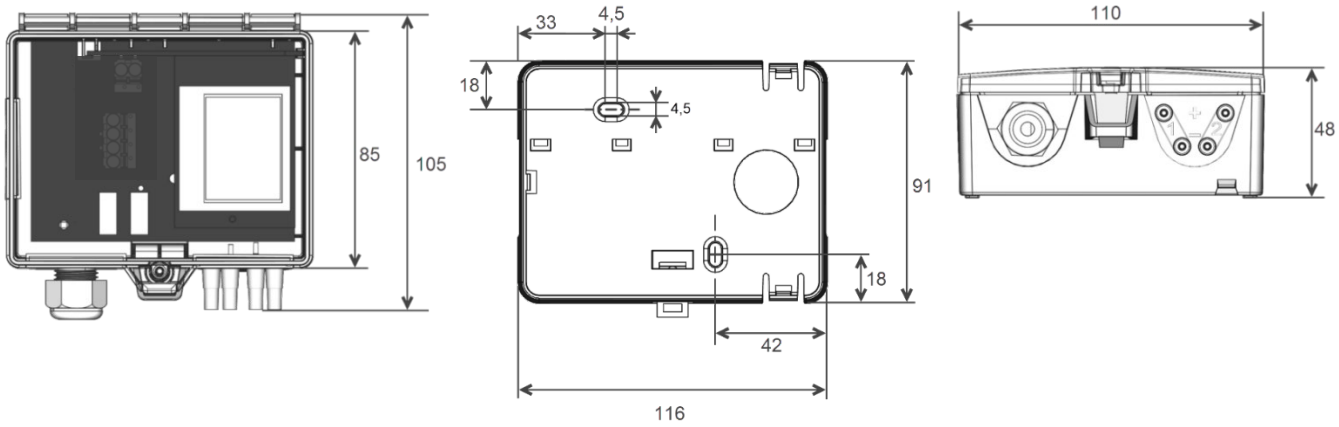


In normal operation zero point adjustment should be executed depending on the device and the measuring range.

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 -)

»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 • 2 plastic duct flanges • 4 mounting screws 4x20	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	Item No. 668262
RS485 Biasing Adapter	Item No. 811378
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