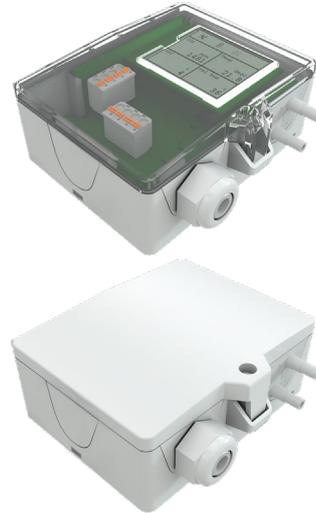# DPA+ (LCD) LRW

LoRaWAN® Differential Pressure Transmitter

thermokon®
HOME OF SENSOR TECHNOLOGY

Datasheet

Subject to technical alteration
Issue date: 22.04.2025 • A141

USEapp ✓

LoRaWAN®

» 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. The device is build with 2 0..10 V output and a LoRaWAN® radio module.

» TYPES AVAILABLE

Differential pressure transducer, optional with display, LoRaWAN + 2x 0..10 V
- DPA250+ <LCD> VV MultiRange LRW <AZ>
- DPA2500+ <LCD> VV MultiRange LRW <AZ>
- DPA7000+ <LCD> VV MultiRange LRW <AZ>
- DPA2500+ <LCD> Dual MultiRange LRW <AZ>

MultiRange: Measuring ranges adjustable at the transducer
<LCD>: Display (optional)
<AZ>: automatic zero-point calibration (optional)

» 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.

» PRODUCT TESTING AND CERTIFICATION

CE

Declaration of conformity
The declaration of conformity of the products can be found on our website.
https://www.thermokon.de/direct/en-gb/categories/dpaplus

»NOTES ON DISPOSAL

The crossed-out wheelie 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
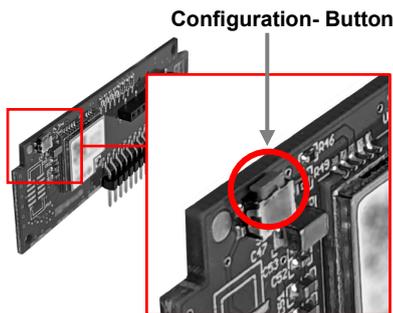
»CONFIGURATION

The Thermokon Bluetooth-Dongle (Item-No. 668262) is required for communication between USEapp and USE-M/USE-L LRW-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 on the website www.thermokon.de

Configuration- Button

1. Connect the sensor with the power supply according to wiring diagram
2. Plug in the bluetooth dongle
3. Press the button to start configuration mode.
4. Configure the sensor using the USEapp on a mobile device.
5. Disconnect the bluetooth connection.
6. Remove the bluetooth dongle off the sensor.
7. Press the button to stop configuration mode.
8. Configuration values are saved and the device is ready for use.

»USER ADVICE

The bluetooth dongle snaps in the connector, when removing the bluetooth dongle hold the board down to prevent pulling out the board.

»INFORMATION ABOUT LORAWAN SPECIFICATION

The Thermokon LoRaWAN specification can be downloaded from our website.

»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)		
Power supply	15..35 V = or 19..29 V ~ SELV		
Power consumption	max. 2,3 W (24 V =) | max. 4,3 VA (24 V ~)		
Measuring range velocity	0… 750.000 m³/h (default), optionally configured via 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	**type 7000** 0..+1000 | 0..+1500 | 0..+2000 | 0..+2500 | 0..+3000 | 0..+4000 | 0..+5000 | 0..+7000 Pa
Accuracy pressure *deviation from calibration reference device (calibrator)*	±1 Pa at range <250 Pa	±5 Pa at range <500 Pa, ±10 Pa at range >500 Pa	±10 Pa at range <2000 Pa, ±25 Pa at range >2000 Pa
Max. working overpressure	40 kPa		
Calibration	manually, automatic zero-point calibration (optional)		
Sensor	MEMS membrane measuring element		
Display *(optional)*	LCD 29x35 mm with RGB backlight units, pressure: Pa, inchWC, volume flow: m3/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)*	Flextherm M20, for wire Ø=4,5..9 mm, removable		
Connection electrical	removeable 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		
Configuration	Thermokon USEapp, LoRaWAN® Downlink, Jumper		

» LoRaWAN®

|	
Radio technology	LoRaWAN®
LoRaWAN version	1.0.3
Device class	Class A
Frequency	EU868 (863-870 MHz)
Max. transmission power	+14 dBm (25 mW)
Receiver sensitivity	-137 dBm
Antenna	Internal send- / receiver antenna, external antenna available on request
LoRaWAN Features	Over the Air Activation (OTAA), Adaptive Data Rate (ADR)
Data transmission	Configurable transmission interval, factory default value 5 min

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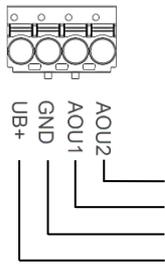
- In order to connect the device, the process lines must be unpressurized
- Consider the suitability of the device for the medium to be measured
- Consider maximum pressures

16 mm
6 mm
3 mm
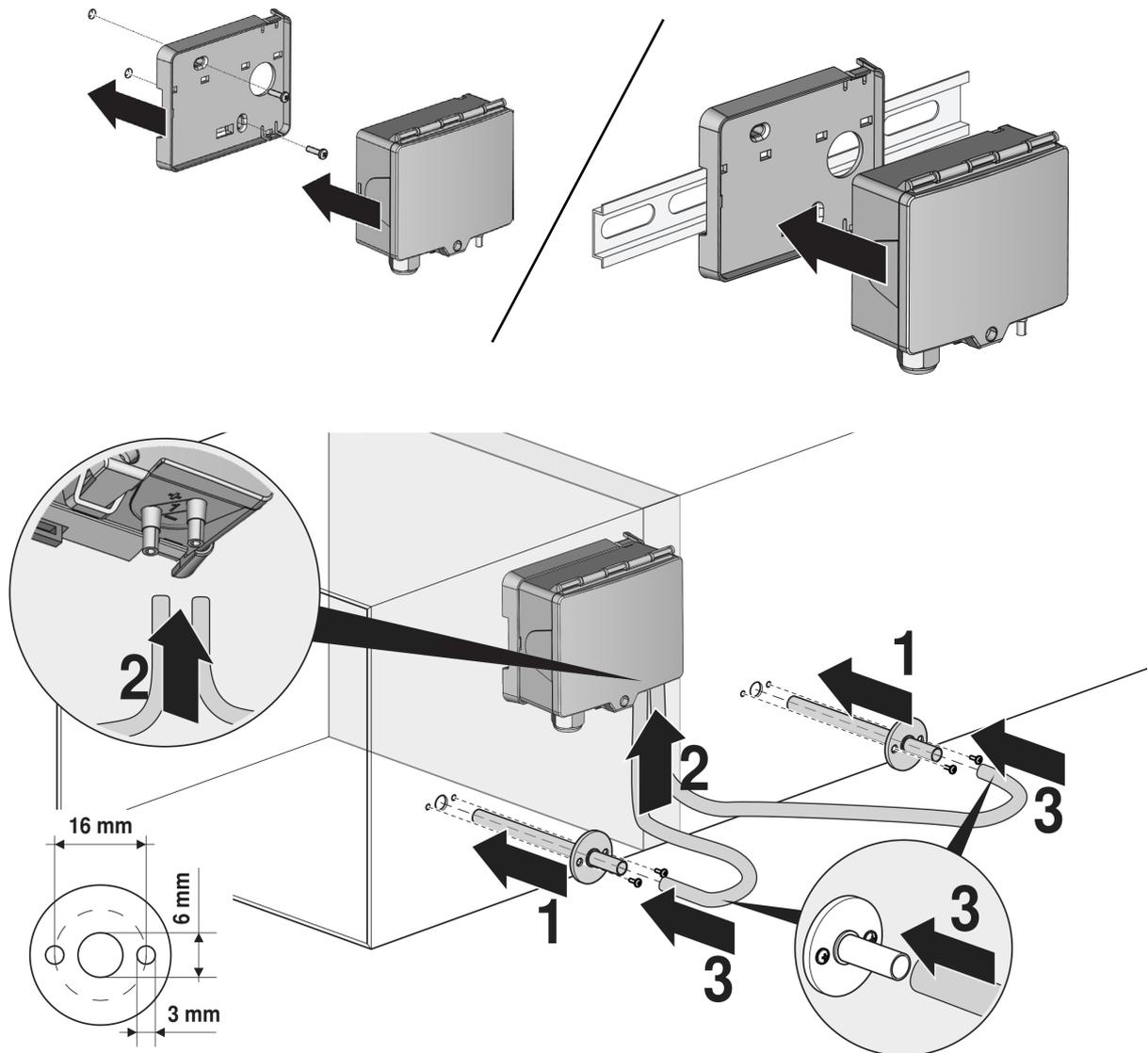
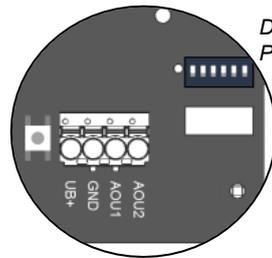## »DIFFERENTIAL PRESSURE IN HVAC SYSTEMS
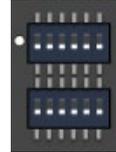

| Overpressure | FAN | Filter |
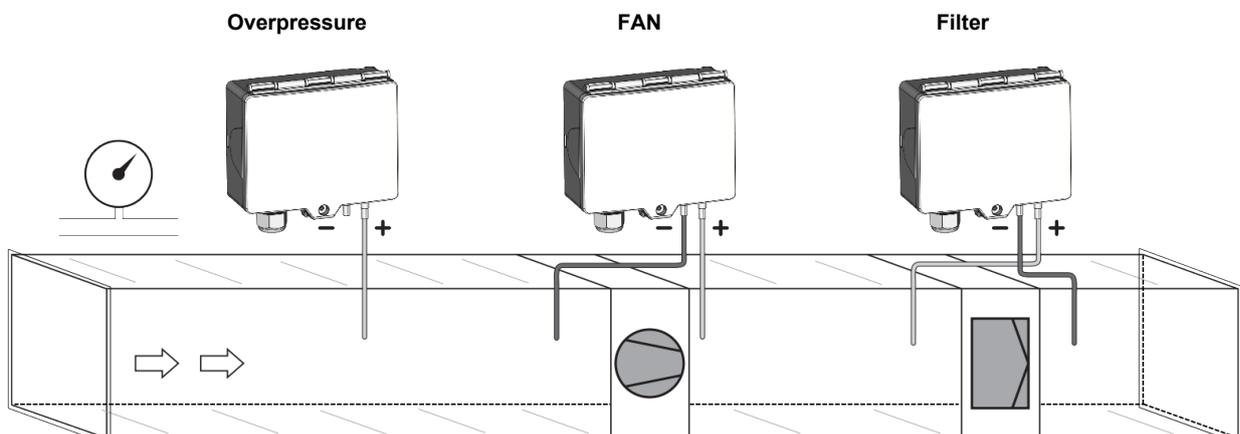
»CONNECTION PLAN

▶ Output 2* | 0..10 V
▶ Output 1* | 0..10 V
◀ GND
◀ 15..35 V ⎓ / 19..29 V ∼

*differential pressure, volume flow

Dip-switch Pressure sensor

Dual-Variant:

Dip-switch Pressure sensor 1

Pressure sensor 2

Measuring range adjustment – type 250 | 2500 | 7000

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

■ = ON
■ = OFF

Response time　　**Output voltage**　　**Unit**

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 CORRECTION - (OPTIONAL)

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

The auto-zero correction 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 correction 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 CORRECTION (FOR DEVICES WITHOUT AUTO-ZERO FUNCTION)
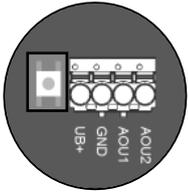
In normal operation zero point correction should be executed every 12 months.
Attention! For executing zero point correction the power supply must be connected one hour before.
• Release both connection tubes from the pressure terminals + and -
• Press the button until the LED lights permanently
• Wait until the LED flashes again and reinstall the connection tubes to the pressure ports (note + and -)

»DIMENSIONS (MM)

Dual variant

Dual variant
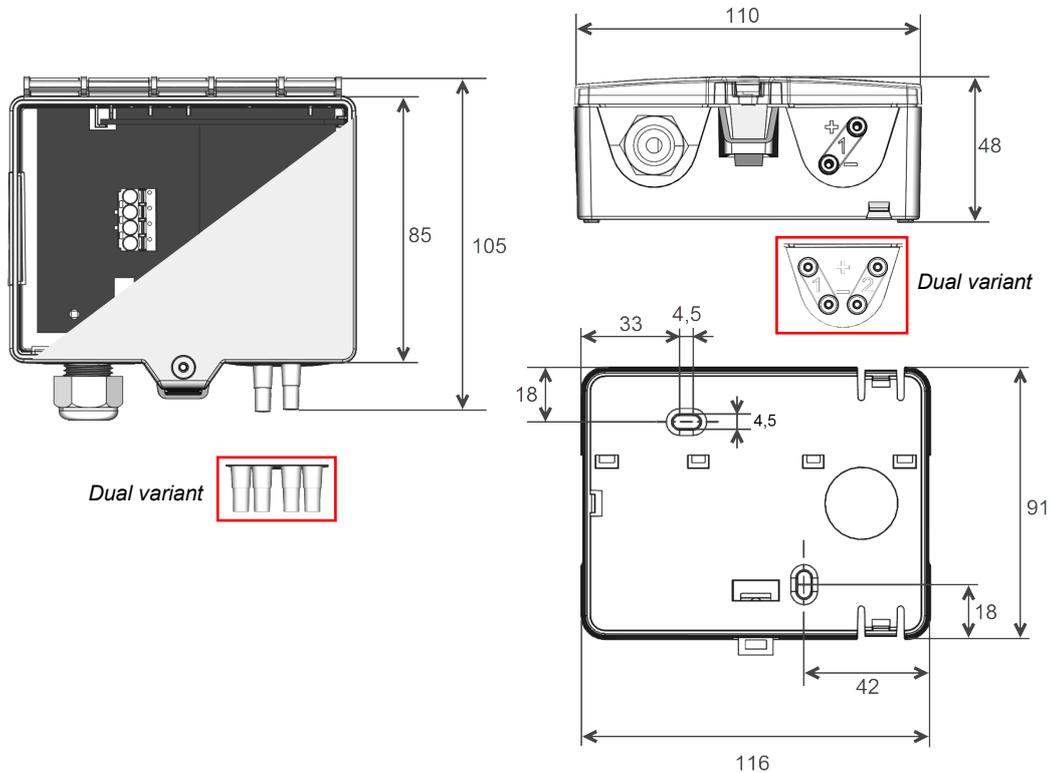
»ACCESSORIES (INCLUDED IN DELIVERY)

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
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