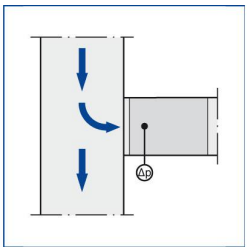

TYP VMLK

FOR THE MEASUREMENT OF VOLUME FLOW RATES IN DUCTS WITH CONTAMINATED AIR FROM LABORATORIES

Plastic circular volume flow rate measuring units for the recording or monitoring of volume flow rates

- Permanent volume flow rate measuring
- Recording of measured values and use for slave controllers
- For combination with LABCONTROL control components
- Volume flow rate control for fume cupboards by signalling to frequency converters
- Measurement accuracy ± 5 % even with unfavourable upstream conditions
- Casing made of flame-resistant polypropylene (PPs)
- Casing air leakage to EN 15727, class C

Optional equipment and accessories

- With flanges on both ends

Application

Application

- Circular LABCONTROL volume flow rate measuring units Type VMLK for the automatic measurement of volume flow rates from fume cupboards and fume hoods
- Suitable for contaminated air
- Volume flow rate control for fume cupboards by signalling to frequency converters
- Simplified commissioning, approval and maintenance
- Suitable for permanent installation because of low differential pressure

Special features

- High measurement accuracy with any upstream conditions
- Effective pressure range: approx. 5 – 250 Pa

Description

Variants

- VMLK: Volume flow rate measuring unit
- VMLK-FL: Volume flow rate measuring unit with flanges on both ends

Parts and characteristics

- Ready-to-commission unit which consists of mechanical parts and control components.
- Averaging differential pressure sensor for volume flow rate measurement; can be removed for cleaning
- Factory-assembled control component complete with tubing

Attachments

- LABCONTROL: Control components for air management systems

Accessories

- Matching flanges for both ends

Construction features

- Circular casing
- Spigot suitable for ducts according to DIN 8077
- Short casing: 392 mm without flange, 400 mm with flange

Materials and surfaces

- Casing made of flame-resistant polypropylene (PP), flame retardant (V-0) to UL 94
- Differential pressure sensor (with bluff body, or Venturi nozzle) and plain bearing made of polypropylene (PP)

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Functional description

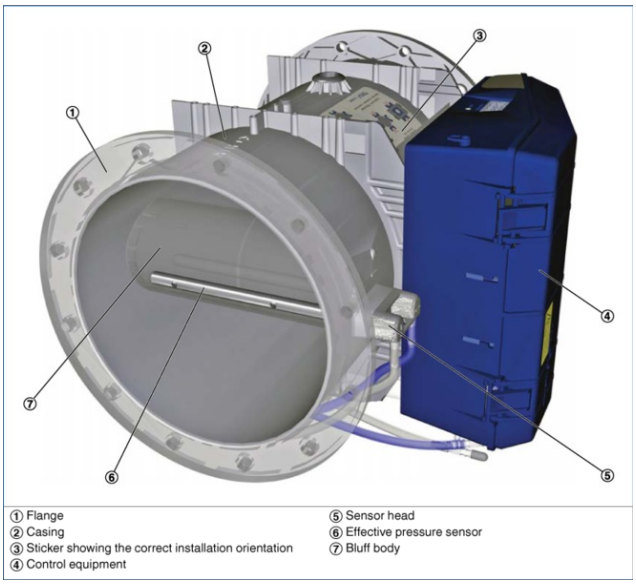
The measuring unit is fitted with a differential pressure sensor for measuring the volume flow rate.

The control components (attachments) include a differential pressure transducer that transforms the differential pressure (effective pressure) into an electric signal, and a controller.

- Fume cupboard control: The volume flow rate setpoint depends on the control strategy for the fume cupboard control and is based on the face velocity, the sash position, or a constant value.
- Volume flow control: The volume flow rate setpoint comes from an external unit or device.

The controller compares the actual value with the setpoint value and alters the control signal of the frequency converter or of the actuator if there is a difference between the two values.

Schematic illustration of the VMLK



① Flange
② Casing
③ Sticker showing the correct installation orientation
④ Control equipment
⑤ Sensor head
⑥ Effective pressure sensor
⑦ Bluff body

Nominal sizes	250 mm
Volume flow rate range	30 – 360 l/s
Volume flow rate range	108 – 1296 m^3/h
Measurement accuracy	± 5 % of the measured value
Effective pressure range	approx. 5 – 250 Pa
Differential pressure	15 – 24 % of the measured effective pressure
Operating temperature	10 – 50 °C

Circular volume flow rate measuring unit made of flame-resistant plastic for the measurement of volume flow rates in variable air volume systems and fume cupboards. Suitable for the permanent monitoring of the volume flow rate (actual value signal) of extract air containing aggressive media since all components coming into contact with the airflow are made of plastic (no interior metal parts). Measurement accuracy ± 5 % even with unfavourable upstream and downstream conditions. Suitable also for volume flow rate control by signalling to frequency converters. Ready-to-commission unit consists of the casing with either averaging effective pressure sensor and bluff body or with Venturi nozzle, and an electronic controller.

Differential pressure sensor with 3 mm measuring holes (resistant to dust and pollution) Spigot connection, suitable for ducts according to DIN 8077. Casing air leakage to EN 15727, class C.

Special features

- High measurement accuracy with any upstream conditions
- Effective pressure range: approx. 5 – 250 Pa

Materialien und Oberflächen

- Gehäuse aus schwer entflammbarem Polypropylen (PP), Brennbarkeit nach UL 94, V-0
- Differenzdrucksensor (Staukörper oder Düse) und Gleitlager aus Polypropylen (PP)

Technische Daten

- Nenngrößen: 250 mm
- Volumenstrombereich: 30 – 515 l/s oder 108 – 1854 m³/h
- Messgenauigkeit (auch bei ungünstigen An- und Abströmbedingungen): ± 5 % vom Messwert
- Wirkdruckbereich: 5 – 250 Pa
- Druckdifferenz: 15 – 24 % vom gemessenen Wirkdruck

Attachments

Volume flow rate control with electronic EASYLAB controller for fume cupboards.

- Supply voltage 24 V AC
- Static differential pressure measurement
- Easy commissioning due to plug and play communication system
- Controller is a modular system and can be expanded
- Volume flow rate monitoring

VMLK with EASYLAB

VMLK – FL / 250 – 100 / GK / ELAB / FH – VS / ULZS / 200 – 900

1 2 3 4 5 6 7 8

1 Type
VMLK Volume flow rate measuring unit, plastic

2 Flange
No entry: none
FL Flanges on both ends

3 Nominal size [mm]
250-100 Bluff body 100
250-160 Bluff body 160
250-D10 Venturi nozzle D10
250-D16 Venturi nozzle D16

4 Accessories
No entry: none
GK Matching flanges for both ends

5 Attachments
ELAB EASYLAB controller TCU3 without actuator

6 Equipment function – fume cupboard control
With face velocity transducer
FH-VS Face velocity control
With sash distance sensor
FH-DS Linear control strategy
FH-DV Safety-optimised control strategy
With switching steps for on-site switch contacts
FH-2P 2 switching steps
FH-3P 3 switching steps
Without signalling
FH-F Volume flow rate constant value

7 Expansion modules
Option 1: Supply voltage
No entry: 24 V AC
T EM-TRF for 230 V AC
U EM-TRF-USV for 230 V AC, provides uninterrupted power supply (UPS)
Option 2: Communications interface
No entry: none
L EM-LON for LonWorks FTT-10A
B EM-BAC-MOD-01 for BACnet MS/TP
M EM-BAC-MOD-01 for Modbus RTU
Option 3: Automatic zero point correction
No entry: none
Z EM-AUTOZERO Solenoid valve for automatic zero point correction
Option 4: Lighting
No entry: none
S EM-LIGHT Wired socket for switching the lighting on/off using the control panel (only with EM-TRF or EM-TRF-USV)

8 Operating values [m³/h] or [l/s]
Depending on the equipment function
FH-VS: $\dot{V}_{min} – \dot{V}_{max}$
FH-DS: $\dot{V}_{min} – \dot{V}_{max}$
FH-DV: $\dot{V}_{min} – \dot{V}_{max}$
FH-2P: $\dot{V}_1 / \dot{V}_2$
FH-3P: $\dot{V}_1 / \dot{V}_2 / \dot{V}_3$
FH-F: $\dot{V}_1$

Useful additions
Control panel for fume cupboard controller for displaying the functions of the control system according to EN 14175
BE-SEG-** with 2-character display
BE-LCD-01 with 40-character display