Differential pressure transducers for volume flow rate measuring units

Dynamic differential pressure transducers

For the dynamic measurement of effective and differential pressures

Differential pressure transducers based on the dynamic measurement principle for volume flow rate measuring units Type VMR or VME

- Linear volume flow rate actual value 0 – 10 V DC or 2 – 10 V DC
- Recording of measured values for the display of volume flow rates or for the control of slave controllers
- Any installation orientation
- Parameters are factory set

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Application

Application

- Electronic volume flow controller Universal with dynamic differential pressure transducer for use with volume flow rate measuring units
- Parameters are factory set
- On-site adjusting is not required

Standard filtration in comfort air conditioning systems allows for use of the transmitter in the supply air without additional dust protection. Since a partial volume flow is passed through the differential pressure transducer in order to measure the volume flow rate, please note:

- With heavy dust levels in the room, suitable extract air filters must be provided.
- If the air is polluted with fluff or sticky particles, or if it contains aggressive media, dynamic pressure transducers cannot be used

For this application the Universal controller is only used for measuring the differential pressure and for transforming the measured value into a linear voltage signal. Connections for setpoint value signal and actuator are not relevant, and neither are the corresponding technical data.

- Volume flow rate actual value is available as linear voltage signal

Description

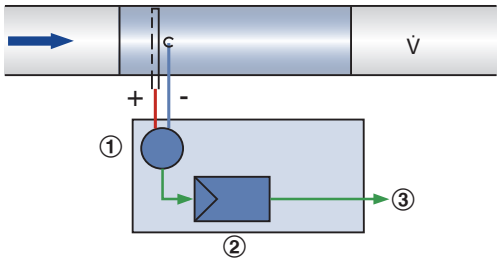
Parts and characteristics

- Sensor for dynamic differential pressure measurements

Functional description

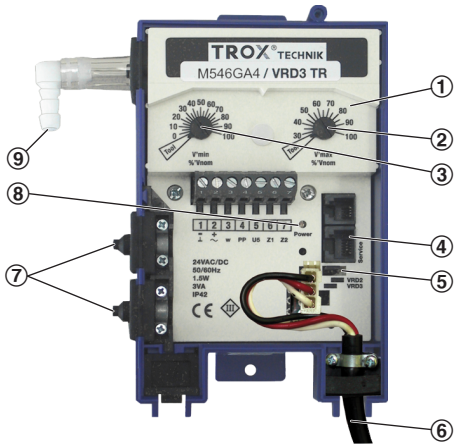
The volume flow rate is determined by measuring the effective pressure. For this reason the measuring unit is fitted with an effective pressure sensor.
The integral differential pressure transducer transforms the effective pressure into a voltage signal. The volume flow rate actual value is hence available as a voltage signal. The factory setting is such that 10 V DC always corresponds to the nominal volume flow rate ($\dot{V}_{nom}$).
Voltage ranges are factory stored in the controller. Changes on the customer's site can easily be carried out using an adjustment device or a notebook with service tool.

Principle of operation – dynamic differential pressure transducer



① Differential pressure transducer
② Volume flow controller
③ Actual value signal

B1*



① Regler VRD3
② $\dot{V}_{max}$-Potentiometer
③ $\dot{V}_{min}$-Potentiometer
④ Servicebuchse
⑤ Jumper für Eingang w
⑥ Anschlussleitung Stellantrieb
⑦ Leitungsdurchführungen für Versorgungsspannung, Sollwertsignal und Istwertsignal
⑧ Kontrollleuchte
⑨ Schlauchanschlüsse Differenzdrucksensor

Volume flow controller VRD3

Supply voltage (AC)	24 V AC ± 20 %, 50/60 Hz
Supply voltage (DC)	24 V DC –10/+20 %
Power rating (AC)	without actuator max. 3.5 VA
Power rating (DC)	without actuator max. 2 W
Setpoint value signal input	0 – 10 V DC, R_a > 100 kΩ
Actual value signal output	0 – 10 V DC, 0.5 mA max.
IEC protection class	III (protective extra-low voltage)
Protection level	IP 40
EC conformity	EMC according to 2014/30/EU
Weight	0.440 kg

Universalregler VRD3

Any attachments are to be defined with the order code of the volume flow rate measuring unit.

B10

Application
- Electronic volume flow controller VRD3 with dynamic differential pressure transducer for use with volume flow rate measuring units
- Differential pressure transducer and controller electronics are fitted together in one casing

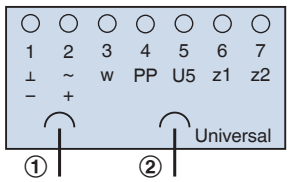
Signal voltage range
- 0: 0 – 10 V DC
- 2: 2 – 10 V DC

Parts and characteristics
- Sensor for dynamic differential pressure measurements

Dynamic differential pressure transducers for volume flow rate measuring units

Order code detail	Attachment	Controller	Volume flow rate measuring unit
	Part number	Type	
B10	M546GA4	VRD3	VMR, VME

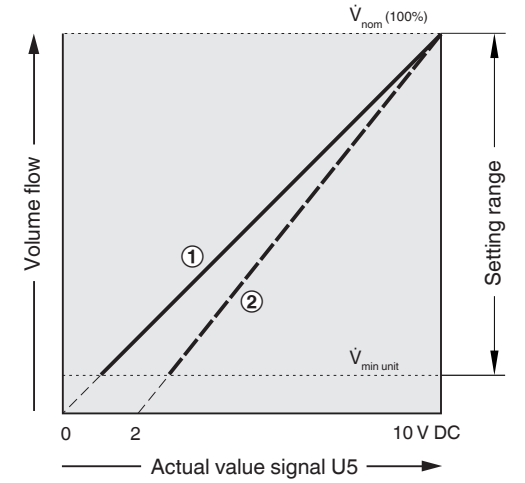
B1*, Klemmenbelegung



① Steckverbindung Stellantrieb
② Steckverbindung Einstellgerät
1 ⊥, –: Masse, Null
2 ~, +: Versorgungsspannung
3 w: Sollwertsignal
4 PP: Anschluss Einstellgerät
5 U5: Istwertsignal
6 z1: Zwangssteuerung 1 (AUF)
7 z2: Zwangssteuerung 2 (ZU, $\dot{V}_{min}$, $\dot{V}_{max}$)

Universal: VRD3

BC0, BP*, B1*, Kennlinie des Istwertsignals



LMV-D3-MP, NMV-D3-MP, NMV-D3LON, VRD3, VRP-M

Volumenstrom-Istwert

0 – 10 V DC
$\dot{V}_{actual} = \frac{U5}{10} \dot{V}_{nom}$

BC0, BL0, BP*, B1*

Volumenstrom-Istwert

2 – 10 V DC
$\dot{V}_{actual} = \frac{U5 - 2}{8} \dot{V}_{nom}$

BC0, BL0, BP*, B1*, BB*