



Transmitter for Volume Flow or Flow Velocity

TM 169V

The transmitters of the TM 169V series are used to measure volume flow or flow velocity and pressure. A jumper enables switching between volume flow or flow velocity and pressure measurement.

Configuration of volume flow or flow velocity measurement

- 1. Select a calculation formula and enter a k-factor, both of which are dependent on the type of ventilator or measuring probe.
 - 2. Or create a reference volume flow or flow velocity, which is entered directly.
- A menu guide on the device is available for all settings.



The output signal can be changed between 0 ... 10 Volt and 4 ... 20 mA by removing a jumper. To give a switch signal at an user defined pressure level the transmitter has an adjustable transistor switching output (nnp NO) with a maximum switching capacity of 30 Vdc/100 mA. nnp NC or pnp NO / NC on request.

The response time of the output signal can be configured using a jumper. If the jumper is in place the response time is slow (factory setting), which is useful for suppressing brief pressure peaks. If the application requires a fast response time the jumper must be removed.

For TM 169VM press the left button manually in an unpressurized state to adjust the output signal to zero. The Version TM 169VA performs a zero point adjustment automatically. The transmitter can be reset to its factory setting. Can be mounted in any position. The zero offset calibration eliminates any possible position error.

Specifications

Medium:	air and non-corrosive gases
Linearity:	$\leq \pm 1 \% v. EW$, min. $\pm 1 Pa$
Working and storage temperature:	TM 169VM: $-20^{\circ}C$ to $+70^{\circ}C$ TM 169VA: $-10^{\circ}C$ to $+50^{\circ}C$
Humidity:	0 ... 95 % rel, non-condensing
Response time, selectable:	selectable between 0,2 s to 20 s
Power supply:	18-30 VAC/DC
Output signal:	0 - 10 V or 4-20 mA, 3-wire system
Option:	
Switching Output:	Transistor, maximum switching capacity of 30 VDC / 100 mA,
Load 4-20 mA:	20 - 500 Ω
Load 0-10 VDC:	$\leq 1k\Omega$ ($\leq 10 mA$)
Max. current draw:	100 mA (DC) / 230 mA (AC)
Units selctable	
Volume flow	m^3/h , m^3/s , cfm, l/s,
Flow velocity	m/s, ft/min
k-Factor	0,001... $9,9 \times 10^5$
Protection:	IP65
Process connection:	4/6 mm O.D. pipe connection
Electrical connection:	plug in terminals for wires and strands up to 1,5 mm ² or circular connectors M12 / 4-pole
Housing material:	ABS
Dimensions:	81 x 83 x 41 mm
Weight:	prox. 125 g
Cable conduit:	Cap nut conduit AF15 made of polyamide
Display:	red LED-display, 4-digit

All specifications are subject to change without notice.



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Ranges

Model	Range	Proof pressure	Burst pressure	Temperature error
TM 169V(A/M)-1	0-50 Pa	60 kPa	100 kPa	$\leq \pm 0,7\%$ v. EW/10K
TM 169V(A/M)-2	0-100 Pa	60 kPa	100 kPa	$\leq \pm 1\%$ v. EW/10K
TM 169V(A/M)-3	0-250 Pa	60 kPa	100 kPa	$\leq \pm 0,7\%$ v. EW/10K
TM 169V(A/M)-4	0-500 Pa	75 kPa	125 kPa	$\leq \pm 0,5\%$ v. EW/10K
TM 169V(A/M)-5	0-1 kPa	85 kPa	135 kPa	$\leq \pm 0,3\%$ v. EW/10K
TM 169V(A/M)-7	0-5 kPa	85 kPa	135 kPa	$\leq \pm 0,3\%$ v. EW/10K
TM 169V(A/M)-8	0-10 kPa	85 kPa	135 kPa	$\leq \pm 0,3\%$ v. EW/10K

Ordering code

Suffix

Unit of display

Volume flow: m³/h; m³/s; cfm; l/s..... A
 Flow velocity: m/s; ft/min B

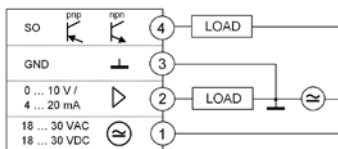
Output signals

0-10 VDC or **4-20 mA**, 3-wire, with switching output..... -1
4-20 mA or **0-10 VDC**, 3-wire, with switching output..... -3
 Factory settings printed in bold type.

Electrical Connection

via plug in terminals.....-4b
 via M12 connector.....-8b

Wiring

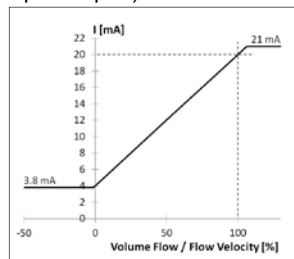
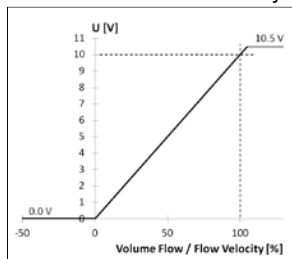


Plug-in terminals 4-pole	
4	Switching output (SO)
3	Ground (GND)
2	Output signal (0...10 V / 4...20 mA)
1	Supply voltage (18...30 VAC / VDC)

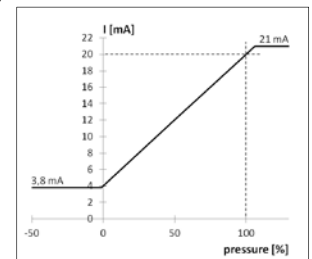
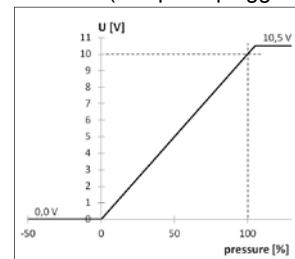
Circular connectors M12 4-pole	
2	Switching output (SO)
3	Ground (GND)
4	Output signal (0...10 V / 4...20 mA)
1	Supply voltage (18...30 VAC / VDC)

Analog output signal

Volume flow or flow velocity (Jumper 3 open)



Pressure (Jumper 3 plugged in)



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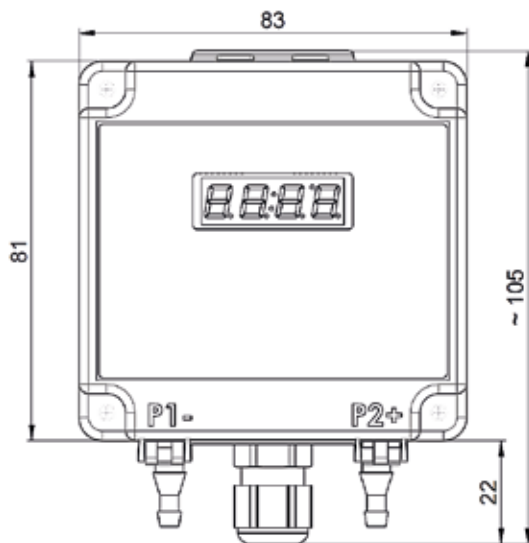
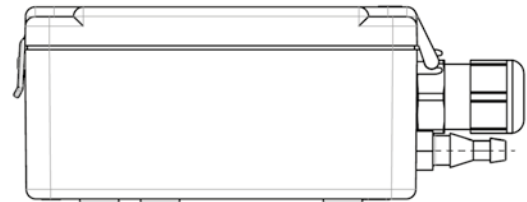
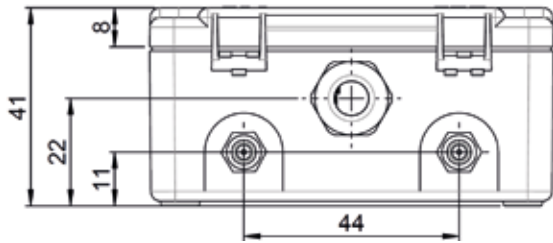
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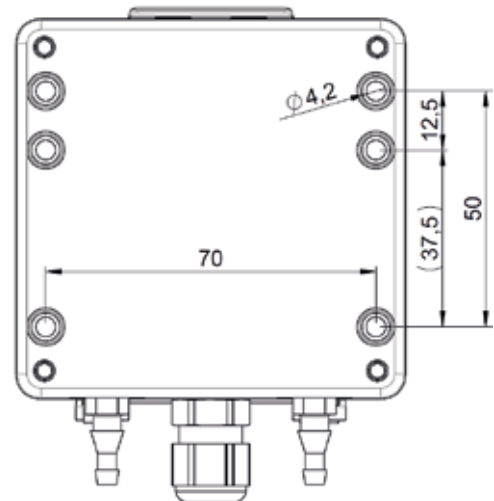
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Dimensions



Bohrbild / Rückseite



Configuration of volume flow or flow velocity

1. **Jumper 1 open** : Select a calculation formula and enter the k-factor. This procedure is used when the k-factor is known. The k-factor can be found, for example, in documentation provided by the manufacturer of the ventilator or the probe. Use the menu guide on the device for configuration.

2. **Jumper 1 plugged in**: Creating reference volume flow or flow velocity. Create a reference volume flow or flow velocity to configure the device without selecting a formula and without entering the kfactor. Use in the menu guide for entry - see description in the operating instructions.

Selection on device	Manufacturer, e.g.	Formula in data sheet of manufacturer
F 1	Ebm-Papst, Ziehl-Abegg	$q = k \cdot \sqrt{\Delta p}$
F 2	Ziehl-Abegg	$q = \sqrt{\frac{\rho_{20}}{\rho}} \cdot k \cdot \sqrt{\Delta p}$
F 3	Nicotra-Gebhardt, Rosenberg	$q = k \cdot \sqrt{\frac{2}{\rho} \cdot \Delta p}$
F 4	Fläkt Woods	$q = \frac{1}{k} \cdot \sqrt{\Delta p}$

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