

Operating Instructions

μP-Vortex VTP-VA VT-VA and VP-VA

The software description for the above mentioned evaluation units can be found in the Data Sheet Software VA

for 1-channel instruments μP-Vortex
for 1-channel instruments μP-Vortex
for multi-channel instruments μP-Vortex
for instruments VTP-VA, VT-VA and VP-VA determining standard volume flow

Menu

Key | → | Operating instructions

By using the | → | key the effective instrument settings can be scanned without altering anything. Before each initial operation and after each alteration made to a setting, we recommend that the instrument configuration be checked for accuracy. Also by operating the | → | key the instrument displays which of the following software possibilities is installed.

● Standard ○ Option

1V	2V	xV	NV
●	●	●	●

Menu normal status:
measured value display

Key | 1 | Commutation display

Selective display of flow velocity v or volume flow V/t .
Simultaneous display of a measurable variable of choice from two measurement points:
At the same time display of a measurable variable of choice with the measurement point number: flow velocity v or volume flow V/t .

Key | 2 | Coefficient / Profile Factor (PF = BW)

Input of velocity coefficient. Should the local velocity be displayed, then the coefficient 1.000 must be set!
Commutation of coefficient input for measurement points 1 and 2.
Commutation of coefficient input see also key | 6 | measurement point commutation.

Key | 3 | Inside diameter Di of measuring tube / measurement cross section

Input of inside diameter D_i / measurement cross section for determining the flow rate. tube $D_i = 1$, area = 2, rectangle = 3 appears on the display.

- | 1 | Input of **inside diameter D_i of measuring tube** differentiating between D_i up to 1 m and D_i up to 10 m
Commutation of D_i for measurement points 1 and 2.
Commutation of D_i see also key | 6 | measurement point commutation.
- | 2 | Input of **measuring area** differentiating between areas up to 0.1 m², up to 1 m², up to 10 m² and up to 100 m².
- | 3 | Input of the **side lengths of a rectangular measuring area** differentiating between side lengths of up to 1 m and up to 10 m.

●	●	●	●
●	●	●	●
●	●	●	●
●	+	+	+
●	+	+	+

Key | 4 | KKZ, Conversational communication language

- | 1 | Input of calibration code KKZ. The KKZ is found on each vortex flow sensor, as a rule on the connection cable or nameplate.
Commutation of calibration code for measurement points 1 and 2
Commutation of input KKZ see also key | 6 | measurement point commutation.
- | 2 | **Conversational communication language**
D = German, EN = English, F = French commutable
others: I = Italian, NL = Dutch, E = Spanish

Key | 5 | Scaling, expanding, configuration of analog output(s)

- Required hardware: analog output.
- Scaling as for example 20 mA = xx.xx m/s
- Configuration as for example signal range 0-20 mA or 4-20 mA
- Expanding analog output signal
- Commutation of measurement points 1 and 2
- Commutation see also key | 6 | measurement point commutation

Key | 6 | Quantity measurement/quantity meter

- Required software: quantity measurement "on" key | 6 |
- | 1 | ON/OFF
Switching quantity display on and off. The quantity is always registered with 12 digits, even when the display is turned off
- | 2 | RESET
Zero setting of quantity meter

Key | 6 | Commutation of measurement point

- Required software: commutation of measurement points/measuring channel "on" key | 6 |. Commutation key | 6 | only for display.
- | → | Selection of measuring channel proposed by evaluation unit.
- | x | By entering measurement point x not only the proposed channel but also every other channel can be selected.
- | C | Returns to measured value display.
- | 0 | Display of average from measuring channel 1 to N in a combined complete flow cross section. Required software: averaging from measuring channel 1 to N.

● Standard ○ Option

	1V	2V	xV	NV
	●	●	●	●
		●		
			●	
	●	+	+	+
	+	+	+	+
	●	●	●	●
	●	●	●	●
	+	+	+	+
		●		
			●	
	○	+		
	○	+		
			●	
		○	○	

Key | 7 | Long-term measurement, instantaneous value time constant

Required software: long-term measurement and/or setting of instantaneous value time constant "on" key | 7 |

| 1 | **Commutation LM/SM**

LM = long-term measurement
SM = short-term measurement/instantaneous value measurement

| 2 | **Setting measuring times**

| 1 | **SM time constant**

The time constant is adjustable within the measurement period of the processing cycle in multiples of 1 ... 20 cycles or 1 ... 99 s respectively, effecting the instantaneous values on the display, at analog output(s) and at the RS 232/V24 output

| 2 | **LM measuring time**

Setting the long-term measurement period in steps of 1 s. Setting range 1 s to 9999 s. Setting only for display.

Key | 7 | Quantity measurement/quantity meter

Required software : quantity measurement „on“ key | 7 |
See also quantity measurement key | 6 |.

Commutation of quantity measurement see also key | 6 | measurement point commutation.

Key | 8 | Limit value setting

Required hardware: relay output.

Required software: limit value setting "on" key | 8 |

Commutation of limit value setting see also key | 6 | measurement point commutation.

● Standard ○ Option

1V	2V	xV	NV
●	+	+	+
○	+	○	○
○	+	○	+
		+	
●	●	●	●

ON / OFF

various possibilities depending on hardware.

1. For instruments with power supply by rechargeable battery :
Key | → | : ON
Key | C | : OFF
2. For instruments without rear ON / OFF switch: by connection/disconnection from the mains supply
3. For instruments with rear ON / OFF switch: by operating the rear ON / OFF switch.

Operating Instructions for standard volume flow determining VTP-VA instruments

● Standard ○ Option

The operating instructions for these instruments are essentially the same as those found under NV in the instructions for µP-Vortex, see pages 1-3.
NV = standard volume flow with Vortex flow sensors

Key | 3 | **Inside diameter Di of measuring tube / measurement cross section, standard volume flow dry**

After input of inside diameter Di / measurement cross section for determining the flow rate the inquiry follows whether display, processing and output as standard volume flow wet NV/t or as standard volume flow dry TV/t should follow: | 1 | NV/t | 2 | TV/t
permissible working temperature range 0...+100 °C

Key | 4 | **Type of sensor**
Flow sensor

with hardware input v/VA: see previous description:

Temperature probe

with hardware input t/PT 100 no inputs necessary. The standard software takes over linearization of the measurement signal from PT100 in 4 wire configuration.

With hardware input t/4-20mA the inquiry about the measuring range of the temperature probe follows. Necessary input:

temperature value according to 4 mA
temperature value according to 20 mA

permissible value range: -100.0 °C ... +999.9 °C

The higher temperature value is to be allocated to the 20 mA value!

Pressure sensor for absolute pressure

with hardware input p/4-20 mA the inquiry about the nominal flow value of the pressure sensor follows. Choice between the measurement ranges 0...9999 hPa or 0...9999 kPa respectively.

20 mA according to the nominal flow value
4 mA always relates to vacuum, i.e. 0 hPa or 0 kPa respectively

Key | 6 | **Operating and standard conditions**

| 1 | **Operating conditions**

1. Choice, whether the **temperature** should be considered as measurable variable or as input variable

| 1 | Temperature measurable variable t

| 2 | Temperature input variable T

Input range -100.0...+999.9 °C

2. Choice, whether the **absolute pressure** should be considered as measurable variable or as input variable

| 1 | Pressure measurable variable p

| 2 | Pressure input variable P

Input range 0...999, hPa or 0...9999 kPa

| 2 | **Standard conditions**

Input of standard conditions.

1. Standard temperature e.g. +000.0 °C

2. Standard pressure e.g. 1013 hPa

3. Standard density in kg/m³ at standard temperature and standard pressure. This input serves to convert the standard volume flow to mass flow.

1V	2V	xV	NV
			○
			●
			●
			○
			●
			●
			●
			○