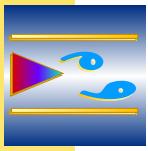




# Vortex Meter VTX2



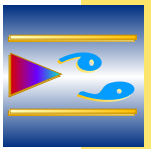


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Vortex meter from the VTX2 series,  
flange design (left) and  
sandwich design (right)



# VTX2, the new generation convincing through numerous benefits

**An excellent flow meter designed for your process:**

- Extremely rugged and stable
  - Excellent metrological characteristics
  - Smart electronics
- Measurement of the volume in the operational state

## **Patented sensor for reliable sensing of vortexes**

- Excellent vibration compensation
- Insensitive to pulsations, pressure bursts and temperature shock
- Suited for high media temperatures
- Rugged and maintenance-free
- With piezoelectric sensor
- Sensor design independent of nominal width
- Highest possible application flexibility
- No re-calibration required when replacing the sensor

## **Modern and user-friendly electronics**

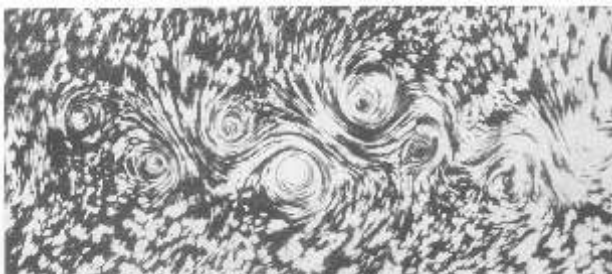
- With auto-adaptive digital signal processing
- Two-wire system, thus easy to install
- Three independent and simultaneously usable signals (analog, HART and pulses)
- With 4 - 20 mA output or current pulse output (divided / decade range) for remote counting or 1:1 (vortex frequency)
- With additional pulse output acc. to NAMUR
- With large eight digit up front
- With clearly key pad for easy operation
- Communication using modern software tools (PACTware, AMS)
- with HART - protocol

## **Principle of measurement**

When a liquid or gaseous medium flows around an object, the medium will be capable of following the contour of the object only to a limited extent and to a certain point at the object's surface. Thereafter the flow will stall and behind the object vortexes will form which are entrained in the downstream flow about the object's axis whereby the vortexes rotate in opposing directions. Thus vortex street is produced. This effect has for a long time now been known as "Karman vortex street". The frequency of the emerging vortexes is proportional to the velocity of the flow.

In the vortex meter from the VTX2 series, a trapezoidal object is used to generate the vortexes. This ensures in the instance of both fluid and gaseous media as well as vapours a precise and highly reliable generation of the vortexes.

By suitably designing the bluff body with a well-defined edge at which the vortexes form, excellent linearity can be ensured. The vortexes forming at the bluff object and rotating downstream in opposing directions to each side of the axis give rise to local changes in velocity and pressure which may be detected by a piezoelectric sensor and which are then converted by the sensor electronics with autoadaptive microprocessor controlled filtering in to standardised signals.



Vortex street observed downstream of a bluff delta-shaped object with sharp edge.



## Applications

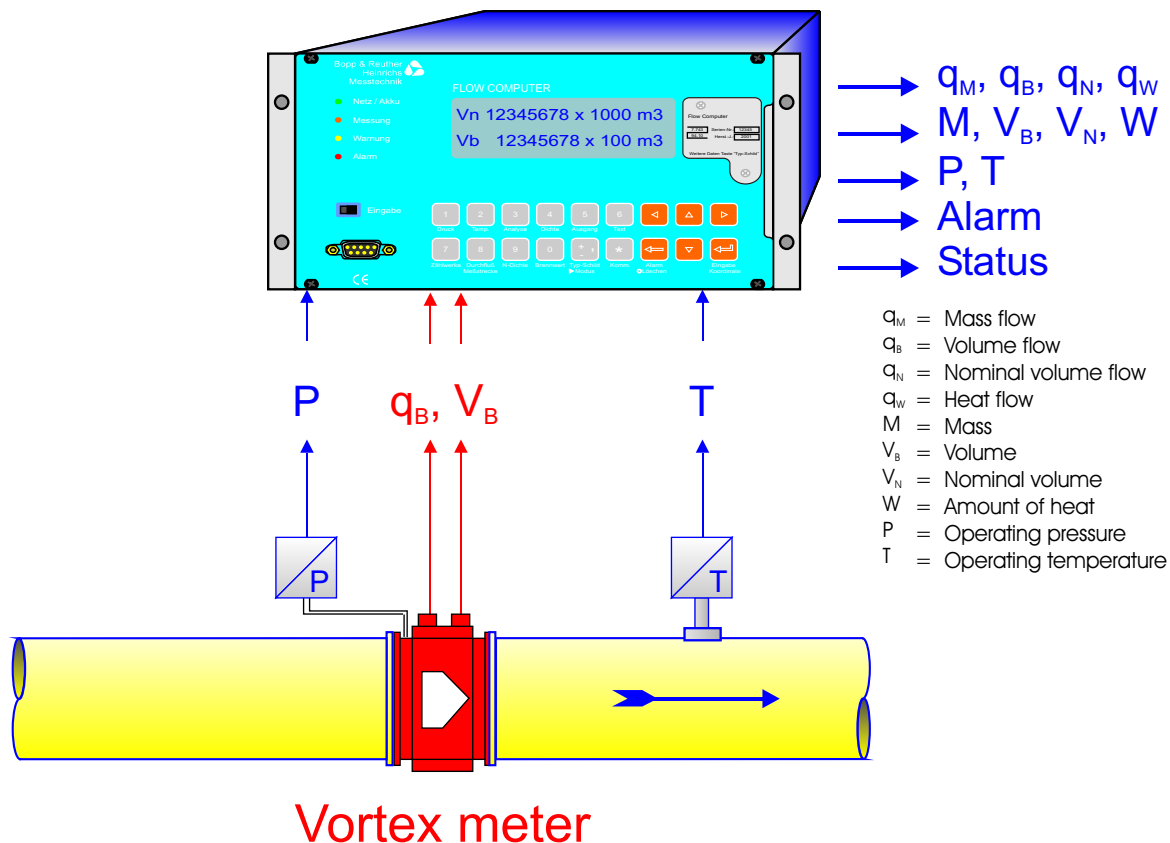
The range of applications for vortex meters is commonly quite broad. They are used in most widely differing branches of industry.

Application examples:

- Flow measurements on gases and vapours
- Flow measurements on conducting and non-conducting liquids
- Use at locations which require a particularly rugged method of measurement
- Measurement of quantities for balancing  
(for example, compressed air systems, heat carriers, steam, chemical products)
- Process control
- High throughput applications

A well-proven method of improving the accuracy of the measurements in practice is to calibrate the vortex meter including its inlet and outlet. The working section may then also include other sensors for measuring the pressure and the temperature (gas, vapour measurements).

By means of a flow computer it will then be possible to balance the mass or the amount of energy. This solution often will be of a great advantage to the user, since this represents a solution offering a high degree of reliability as to the measurements.



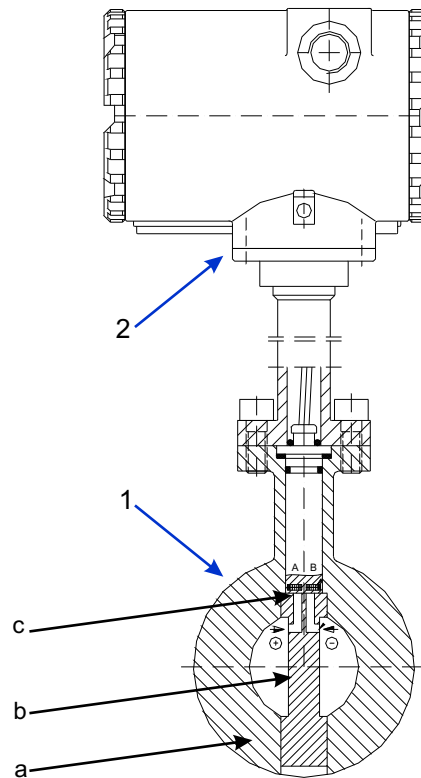
## Design

The vortex meter is composed of a sensor (measuring ring, bluff body, piezoelectric sensor) and the measurement transducer. The measuring ring is available as standard for nominal widths 15 to 300; larger nominal widths upon request. As a recommended option the vortex meter can be manufactured and tested complete with inlet and outlet.

- 1 Sensor unit consisting of
- a Measuring ring
  - b Bluff body
  - c Piezoelectric sensor

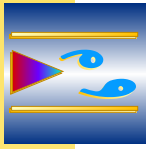
and

- 2 Measurement transducer



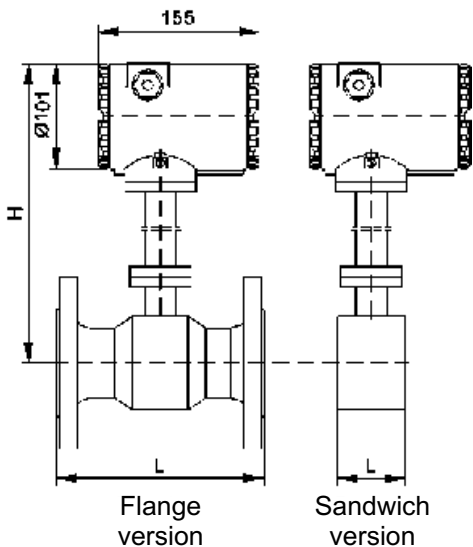
## Table of measurement ranges

DN mm	Gas / vapour [m <sup>3</sup> /h]		Liquid [m <sup>3</sup> /h]	
	Starting value	Full scale value	Starting value	Full scale value
15	2	25	0,4	8
25	5	130	1,0	20
40	10	330	2,5	50
50	15	560	4	80
80	40	1600	6	180
100	60	2300	10	300
150	130	5300	20	600
200	250	9400	40	1200
250	400	16000	80	1800
300	500	20000	120	2500



# Specifications

Measurement range	2 - 20000 m <sup>3</sup> /h for gas/ vapour 0,4 - 2500 m <sup>3</sup> /h for liquids	
Output	4-20 mA / HART or current pulses in addition scalable pulse output acc. to NAMUR	
Deviation of the measurements	± 0,9 % v. of meas. value for gas / vapour *) ± 0.6 % v. of meas. value for liquids *)	
Conditions of usage	as to the conditions of usage the guidelines of VDI/VDE must be taken in to account	
Fitting position	horizontal or vertical	
Ambient temperature limits	- 40 °C to + 70 °C	
Stocking temperature	- 40 °C to + 70 °C	
System of protection	IP 67	
Temperature limits for the material measured	- 40 °C to + 260 °C (- 200°C to + 350°C upon request)	
Material	Sensor unit:	sensor + bluff body: 1.4404, measurement ring: 1.4404
	Measurement transducer:	casing: cast aluminium
Process connection	DN 15 - 300 (larger connections upon request) PN 10 to 40	
Electrical connection	Power supply 24 VDC, two-wire system, optionally additional output acc. to NAMUR M20x1,5, NPT	
Display	eight digit LC display (optional)	
Certificates and approvals	CE conformity EMV-Guidelines 89/336/EWG, DIN EN 61000-6-2, DIN EN 61000-6-3 as well as NAMUR NE 21 Ex approvals: DMT 99 ATEX E 078 X II 1/2G EEx ia IIC T6	
Type/dimensions		



Flange version

DN	L	H
15	200	335
25	200	330
40	200	340
50	200	340
80	200	355
100	250	370
150	300	395
200	300	425
250	380	440
300	450	465

Dimensions in mm

Sandwich version

DN	L	H
15	65	335
25	65	330
40	65	340
50	65	340
80	65	355
100	65	370
150	90	395
200	120	425
250	140	440
300	160	465

Dimensions in mm

\*) at reference conditions





**Bopp & Reuther**

**Messtechnik GmbH**

Postfach 1709

67327 Speyer

Am Neuen Rheinhafen 4

67346 Speyer

Telefon +49 (6232) 657-0

Telefax +49 (6232) 657-505

**Internet: [www.burmt.de](http://www.burmt.de)**

**eMail: [info@burmt.de](mailto:info@burmt.de)**