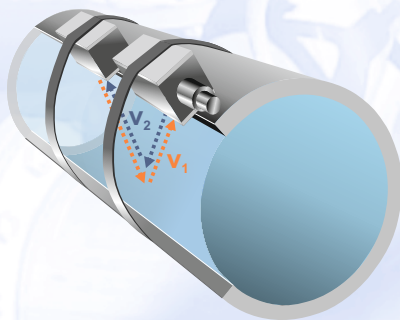




# The perfect flow measurement in full pipelines – contactless!



Reliable flow measurements using the transit time method for clean to slightly polluted water

- Contactless and pressure independent
- High measurement stability and accuracy due to signal correlation
- Ideal for retrofitting and temporary measurements
- Easy startup and installation procedure thanks to software-based sensor alignment and clamp-on system
- Uncomplicated integration into existing control systems through universal interfaces
- Suitable even for aggressive media

## Transmitter

Power Supply	100 to 240 V AC, +10 % / -15 %, 47 to 63 Hz or 9 - 36 V DC ±15 %, 5 % residual ripple
Power consumption	max. 48 VA
Wall mount enclosure	<ul style="list-style-type: none"> <li>• material: Polycarbonate</li> <li>• protection: IP65</li> <li>• weight: approx. 3700 g</li> </ul>
Operating temperature	-20 °C to +50 °C
Max. humidity	80 %, non-condensing
Display	back-lit graphic display, 128 x 128 pixel
Operation	18 keys, multilingual dialog mode (German, English, French, ...)
Inputs	2 sensor pairs directly connectable
Outputs	4 x 0/4 - 20 mA, 5 relays (SPDT)
Data memory	compact flash card up to 128 MB
Data transmission	via compact flash card, Modbus TCP, integrated web server; Ethernet, Internet via Ethernet or optional via internal ISDN or GPRS modem

## Sensors

Measurement principle	Ultrasonic transit time
<b>Flow velocity measurement</b>	
Measurement range	±20 m/s
Inner pipe diameter	0.08 m to 6.0 m (DN80 to DN6000)
Measurement uncertainty	<ul style="list-style-type: none"> <li>• flow velocity (<math>v_{\text{average}}</math>) ± 0.1 % of measurement value within the path depending on hydraulic ambient conditions</li> <li>• flow (Q): ±1-5 % of measurement value</li> <li>• offset velocity &lt; ±5 mm/s</li> </ul>
Number of paths	1 or 2 measurement paths
Measurement frequency	1 MHz
Protection	IP68
Operating temperature	-30 °C to +80 °C
Cable length	10 m, other cable lengths on request
<b>Temperature measurement via sound velocity</b>	
Measurement range	0 °C to +80 °C
Measurement uncertainty	±1 K

Specifications subject to change.  
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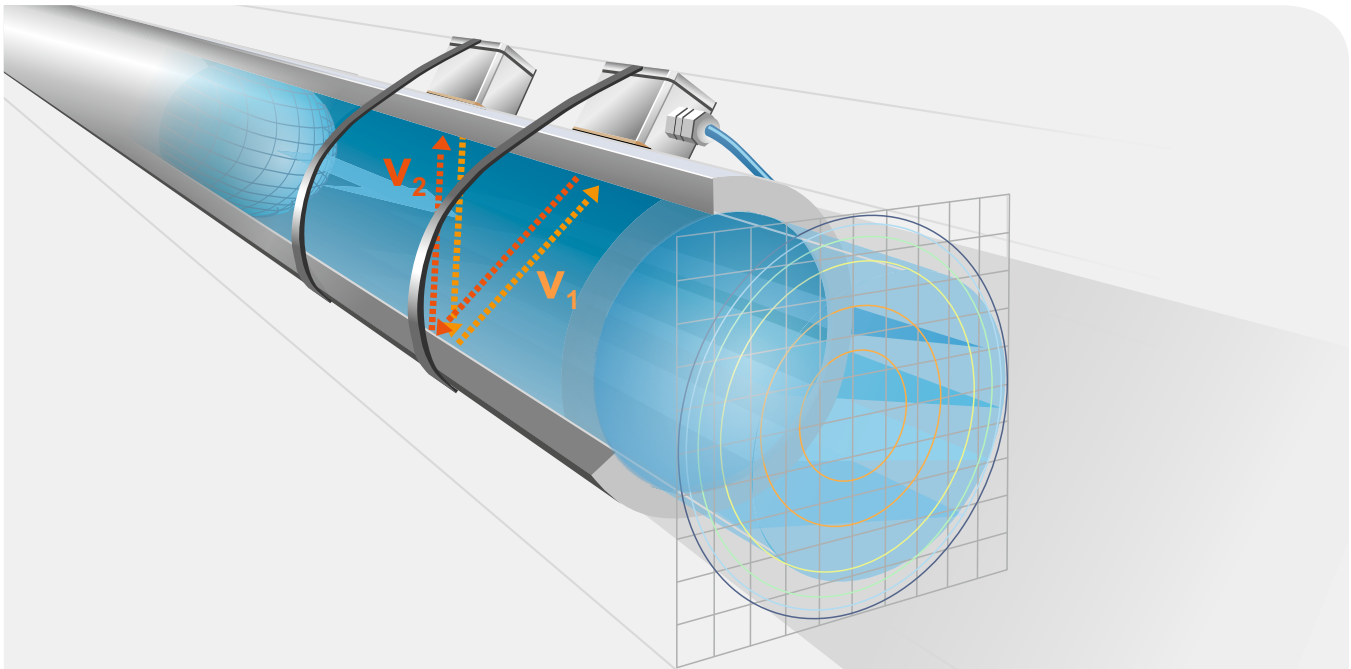
## Instrumentation For Water Industry

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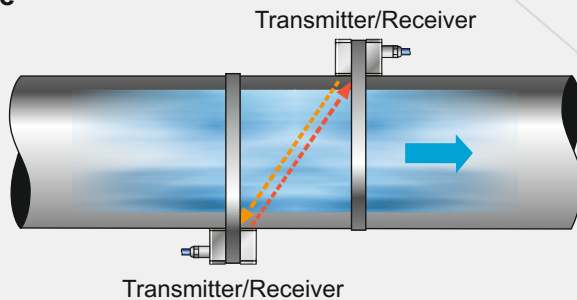




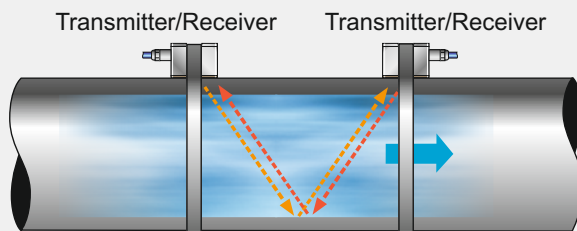
# The perfect flow measurement in full pipelines – contactless!



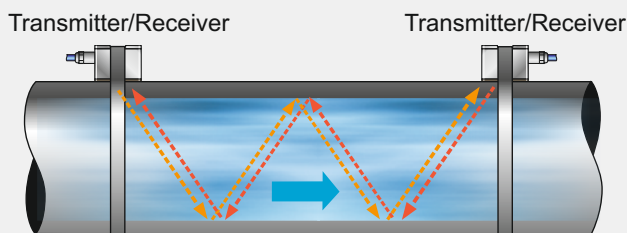
## Z-Mode



## V-Mode



## W-Mode



NivuSonic CO uses the advantages of the transit time method to provide the best possible measurement results. This method measures ultrasonic signals towards the flow direction as well as in the flow direction. Using the temporal difference due to the flow velocity it is possible to determine the average flow velocity very accurately. Measurement tasks can be carried out very easily within very short time without any greater effort. This applies for high pressures as well as for aggressive and abrasive media.

There is no easier solution when it comes to retrofitting or to temporarily measure in full pipe systems using one or two measurement paths.

Thanks to the signal correlation consistently high accuracies even under changing conditions are achieved. NivuSonic CO allows to install and to reliably operate the sensors in Z-, V- or W-mode.