

# Flexim PIOX<sup>®</sup> S

## Non-Intrusive Liquid Analyzer

Concentration • Density • Mass flow rate



**FLEXIM**<sup>™</sup>

  
**EMERSON**<sup>™</sup>

# Flexim PIOX<sup>®</sup> S

## Measurement from the safe side



Flexim PIOX<sup>®</sup> S determines density, concentration, mass flow rate and other parameters by means of clamp-on ultrasonic transducers mounted on the outside of the pipe. The non-intrusive acoustic technology is the system of choice when substances and processes place highest demands on safety and reliability.

### Precise and reliable

- Permanently stable measurement without any drift
- Accurate measurements at the lowest and highest flow velocities
- Continuous monitoring of measurement quality

### Cost-effective and economical

- No plant shutdown for commissioning
- No special materials or bypass solutions required
- No early failure of measuring system
- Simultaneous determination of mass flow rate as well as concentration and density

### Safe and available

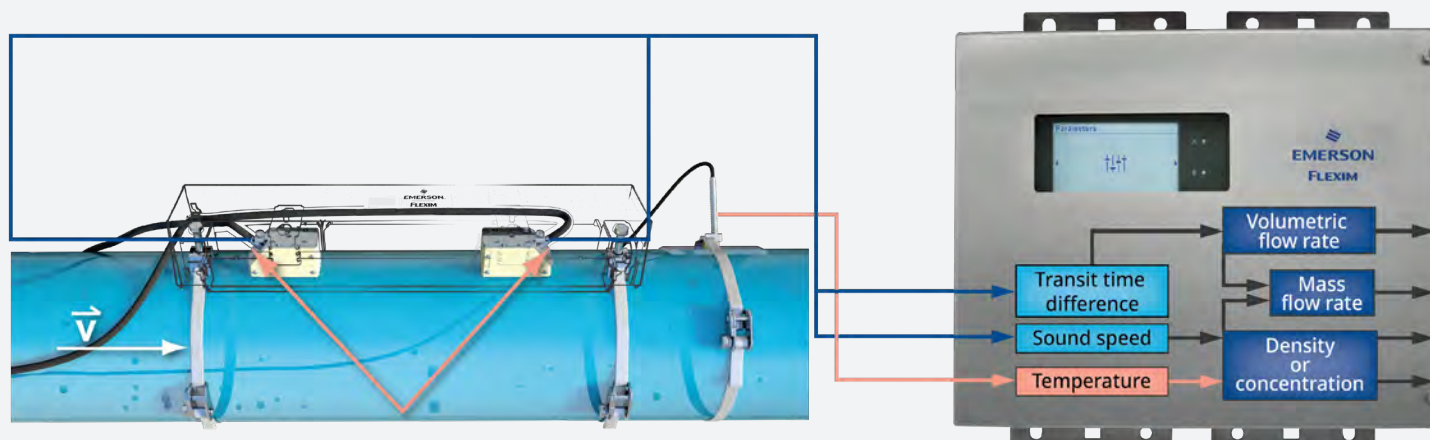
- Mounting of the measurement system outside of the pipe, no need for pipe modifications
- Maintenance-free measurement system
- No leakage risk

### Durable and long-term stable

- No fluid contact, therefore no risk of corrosion
- No moving parts, no vibrations, no material fatigue
- No pressure limitations
- For harsh industrial environments

### Flexibility as a matter of principle

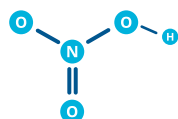
Flexim PIOX<sup>®</sup> S measures the sound speed, thereby determining the density and concentration of the fluid inside the pipe. By simultaneously recording the volumetric flow rate, PIOX<sup>®</sup> S automatically calculates the mass flow rate.





In a large number of binary fluid systems, the acoustic velocity is in a fixed proportion to concentration and density. PIOX® S includes an extensive database of substances, thereby allowing for accurate and reliable density, concentration and mass flow determination in real time for a variety of acids, caustics and other chemical fluids.

### Proven measurement applications:



Nitric acid



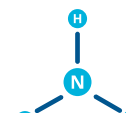
Hydrofluoric acid



Caustic soda / Sodium hydroxide



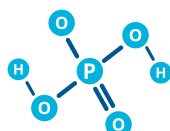
Potassium hydroxide



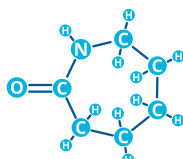
Ammonium hydroxide



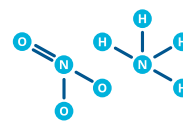
Sulphuric acid



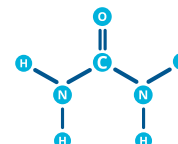
Phosphoric acid



Caprolactam



Ammonium nitrate



Urea

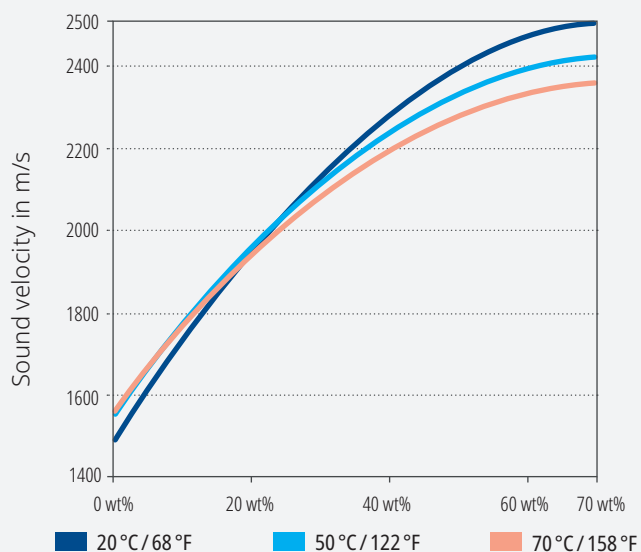
Salt solutions

Alcohols, glycols  
(MEG, PEG, TEG)

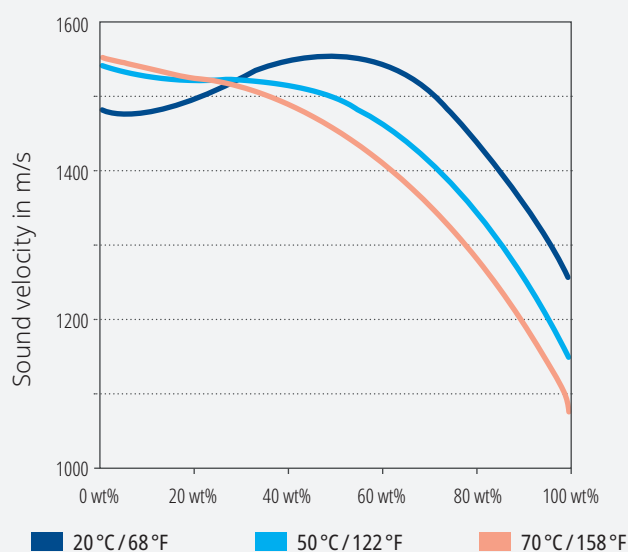
Organic solvents  
(DMA, NMP, DMF, ...)

*and many other fluids*

#### Caustic Soda (NaOH)



#### Nitric Acid (HNO<sub>3</sub>)



## TECHNICAL FACTS

### Flexim Piox® S731



### Flexim Piox® S831



#### Measurement functions

Physical quantities	Mass flow rate, mass fraction, flow velocity, sound speed, density
Totalizers	Volume, mass fraction

#### Measuring ranges

Flow velocity	0.03 ... 82 ft/s (0.01 ... 25 m/s)
Pipe diameter	0.4 ... 256 in (10 ... 6500 mm)
Pipe surface temperature	-40 ... +392 °F (-40 ... +240 °C) With WaveInjector®: -328 ... +1166 °F (-200 ... +630 °C)
Ambient temperature	-40 ... +140 °F (-40 ... +60 °C)

#### Uncertainty<sup>1</sup>

Mass flow rate	± 1.2 % of reading (as function of volumetric flow rate and density)
Sound speed / density / mass fraction	Defined by field calibration

#### Repeatability<sup>1</sup>

Mass fraction	± 0.1 wt%
Density	± 0.06 lb/ft <sup>3</sup> (± 1 kg/m <sup>3</sup> )
Mass flow rate	± 0.25 % of reading (as function of volumetric flow rate and density)

#### Transmitter

Explosion protection	ATEX/IECEX Zone 2, FM Class I Div. 2	ATEX/IECEX Zone 1, FM Class I Div. 1
Housing material	Aluminum or stainless steel 316L	
Number of measuring channels	1 or 2	
Process inputs	Current, temperature	
Outputs	Current, binary, pulse, frequency, HART, M-Bus, MSTP/IP, Modbus RTU/TCP, Profibus PA, Foundation Fieldbus	Current, binary, pulse, frequency, HART, Foundation Fieldbus, Profibus PA, Modbus RTU, BACnet MSTP

<sup>1</sup> Values are approximations for typical applications under reference conditions. Contact us for detailed values for your specific application.



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