CONCENTRATION MEASUREMENT

SONATEC

Concentration from Sound Velocity Using a Product-Specific Curve

SONATEC continuously measures sound velocity. A suitable product-specific polynomial is used to determine concentration from sound velocity. The media listed below are documented for the CONCENTRATION MONITOR product family; the appropriate sensor variant is selected to suit the medium and measuring range.



Physical Measured Variable
Sound velocity determined from the transit time of a sound pulse.

Derived Concentration
Evaluation using a suitable product-specific polynomial.

Documented Media
Specific concentration applications of the product family are listed directly.

Measuring Principle

An ultrasonic transmitter generates a sound pulse that is detected by an ultrasonic receiver. The sound velocity determined from the transit time is the physical measured variable; concentration is derived from it only using a suitable product-specific mathematical relationship.

Applications

- Extract / °Plato, Brix, Oechsle
- Ethanol and Methanol
- Sodium and Potassium Hydroxide
- Sulphuric Acid, Phosphoric Acid, Hydrochloric Acid
- Nitric and Boric Acid
- Sodium Chlorite, Formalin / Formaldehyde
- Hydrogen Peroxide, Glycerine and Glycol
- Acetone, Ammonia, Ammonium Nitrate, Urea

Temperature drift of the measurement signal is automatically compensated. European patent application: 1 439 438 B1.

Technical Data

Technical SONATEC data for selection and integration, together with specific media examples for concentration measurement.

PARAMETER	SONATEC
Measuring Principle	Sound Velocity Measurement
Measuring Range	400 - 3.000 m/s
Accuracy	± 0,05 m/s
Repeatability	± 0,01 m/s
Response Time	≤ 1 s
Operating Pressure	max. 16 bar
Operating Temperature / Temperature Sensor	-25 to +125 °C / Pt1000
Material	1.4404 / 1.4435 / AISI 316L; Hastelloy; tantalum; others on request
Input	1 x analog (4 - 20 mA) & 6 x digital (24 VDC)
Output / Fieldbus	2 x analog (4 - 20 mA) & 3 x digital (24 VDC) optional: PROFIBUS DP & PROFINET
Enclosure Rating	IP65; optional: ATEX (II 3G Ex ic IIC T6 Gc)
Power Supply	24 VDC

Specific Media and Ranges

Ethanol and Methanol	**0 - 100 %**
Sodium and Potassium Hydroxide	**0 - 100 %**
Sulphuric Acid	**0 - 98 %**
Phosphoric Acid	**0 - 75 %**
Hydrochloric Acid	**0 - 42 %**
Nitric and Boric Acid	**0 - 63 %**
Sodium Chlorite	**0 - 30 %**
Formalin / Formaldehyde	**0 - 40 %**
Hydrogen Peroxide	**0 - 90 %**
Glycerine and Glycol	**0 - 100 %**
Acetone	**0 - 100 %**
Ammonia / Ammonium Nitrate	**0 - 100 %**
Urea	**0 - 32 %**

Sound Velocity and Concentration

Highly accurate determination of both variables.

Display at the Measuring Point

Depending on the version, the measured value can be read directly at the sensor.

Hygienic Design

Various materials and flange connections.

Design & Integration

We support you with the project-specific selection and integration of the **SONATEC** - from measuring range and installation position to process connection and interfaces.

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