CONCENTRATION MEASUREMENT

RHOTEC

Concentration from Density Using a Product-Specific Curve

RHOTEC continuously measures density using the oscillating U-tube principle. A suitable product-specific polynomial is used to determine concentration from density. 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
Density determined using the oscillating U-tube principle.

Derived Concentration
Evaluation using a suitable product-specific polynomial.

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

Measuring Principle

The liquid flows through a thin U-shaped tube in the sensor. Electromagnets excite the tube to oscillate at its resonant frequency. The density measured in this way 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 RHOTEC data for selection and integration, together with specific media examples for concentration measurement.

PARAMETER	RHOTEC
Measuring Principle	Density Measurement / Oscillating U-Tube
Measuring Range	0 - 3 g/cm³
Accuracy	± 0,0001 g/cm³
Repeatability	± 0,00001 g/cm³
Response Time	≤ 1 s
Operating Pressure	max. 50 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 %**

Density 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 **RHOTEC** - from measuring range and installation position to process connection and interfaces.

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