

# COMBITEC SD

## Combined Product Density and Ultrasonic Concentration Sensor/Transmitter



- Highly precise measurement of Density, Sound Velocity and Temperature
- Determination of concentration in w/w%, v/v%, etc.
- Available as Sensor and Transmitter with local MMI Interface
- Analog and digital In-/Outputs, optional Profibus
- Long run stable, low response time
- Maintenance free, long operation time

## Technical Data:

### Measuring Range

Density: 0 – 3 g/cm<sup>3</sup>  
 Sound Velocity: 400 – 3000 m/s

### Accuracy

Density: ± 0,0001 g/cm<sup>3</sup>  
 Sound Velocity: ± 0,05 m/s

### Reproducibility

Density: ± 0,00001 g/cm<sup>3</sup>  
 Sound Velocity: ± 0,01 m/s

Response time: ≤ 1 sec

Temperature comp.: PT1000

Temperature range, Medium: -25°C - +125 °C

Pressure range: Max. 16 bar

Material in contact with medium: Stainless Steel 1.4404 and Hastelloy C276

Process connection: Centec Online-Fitting (in the scope of supply) compatible to Varivent®-Inline housing DN40–150. Others on request

Communication, Sensor (without local display/keypad): Profibus DP

Inputs, Transmitter: - 10x digital (24 VDC)  
 - 2x analog (4-20 mA)

Outputs, Transmitter: - 5x digital (24 VDC)  
 - 4x analog (4-20 mA)

Optional, Transmitter: Profibus DP

Enclosure rating: IP 65

Power supply: 24 VDC

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The **Combitec SD** is a highly precise means of determining the density and Sound Velocity of liquids, even under extreme process conditions.

The **density** measurement is achieved through the use of an electromagnetic oscillating “U”-shaped tube. As the process medium flows through the “U”-shaped tube, the oscillation frequency is measured. The oscillation frequency is affected by any changes in density and measured accordingly.

Like density measurements, **sound velocity** is a material and concentration dependent quantity which can be used for determining the concentration of a liquid. The propagation time of a piezo-ceramic generated sound pulse is measured between the prongs of a fork-shaped measuring head installed directly in the process. As this propagation time changes, the sound velocity and resulting concentration changes are measured.

The temperature dependence of both, density and sound velocity measurement is compensated through the electronic measurement of parallel PT1000 temperature elements.

Monitoring of these product characteristics provides highly accurate monitoring and recording of process performance as well as product composition, essential for quality and cost control.

In breweries for example where process control is essential, Combitec SD is used to closely monitor the beer and the fermentation process. Data such as Original Gravity, Alcohol Content and Extract are obtained.

