



CDM BROCHURE

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CHEMICAL DENSITY METER

Introduction

The Rhosonics CDM stands for Chemical-based-slurry Density Meter and that category of instruments allows measuring density in real-time. The CDMs have a robust design with sensors that are made of highly corrosion and abrasion-resistant materials to withstand rough process conditions.

Features and benefits

The major features and benefits of the CDMs are:

- Real-time density monitoring
- Safe technology (non-nuclear)
- Corrosion and abrasion-resistant sensors
- Easy operation and installation

Measuring methods

- Acoustic impedance

The acoustic impedance is the reflection of ultrasonic energy at the interface between the sensor and slurry or liquid.

- Attenuation

The attenuation is the loss of energy caused by solids in suspension in the liquid when the ultrasonic wave travels from the sender to the receiver.

- Speed of sound

The speed of sound is determined by measuring the time that the ultrasonic wave takes to travel over a known distance in the liquid, known as the time of flight.

- Temperature

The temperature is measured by a Pt100, used to obtain an accurate speed of sound.

How does it work?

The CDMs calculate density based on the physical law of acoustic impedance, which applies all the measuring methods.

$$Z = C \times \rho$$

Z = acoustic impedance

C = speed of sound

ρ = density

As the CDMs measure the acoustic impedance and the speed of sound in real-time, density can be accurately calculated in real-time. The complete formulas that allow an accurate density calculation are Rhosonics' intellectual property.

The CDMs can also report TSS (Total Suspended Solids) obtained via the attenuation method, and its speed of sound measurement allows it to report TDS (Total Dissolved Solids).

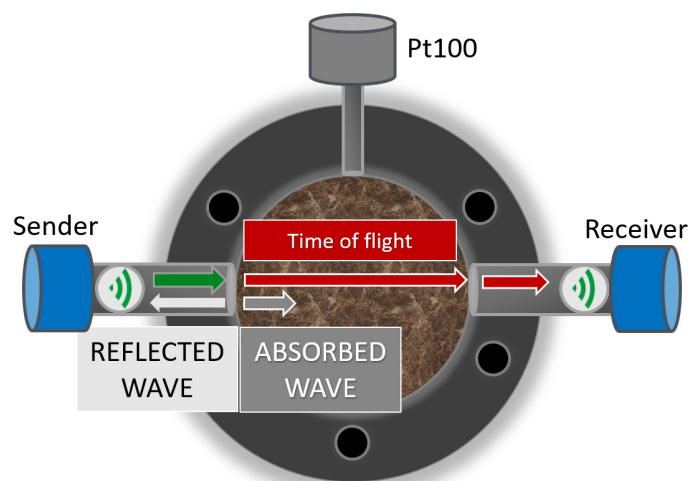
Installation

The CDMs can be installed inline with the use of a pipe integration system, which can be a Wafer or a Spool-piece. The best fit depends on the process data, and these systems are tailor-made to match the existing piping specifications (flange standard and pipe ID). The CDMs can also be mounted to tanks with the use of sensors designed for that purpose.

Applications

The CDMs can be used in a variety of applications whenever there is the need for measuring chemical-based slurries or liquors. Some of the industries where this technology is used are:

- Mining
- Ore refineries
- Pulp & Paper



CHEMICAL DENSITY METER

Datasheet

GENERAL	Part-number	9670 / 9671 / 9680
	Method	Speed of sound, attenuation, Acoustic impedance, temperature
	Readings	Density in g/l or in SG x1000, TSS in wt% or g/l, TDS in wt% or g/l, Temperature in °Celsius
	Accuracy	Up to +/- 0.5% of reading
TRANSMITTER	Power Supply	24 VDC (18...36V), 35 Watt
	Output	2x 4-20mA, 2x alarm output, 1x RS-485/422 via Modbus via USB stick (start-stop)
	Data logging	Note: max. 65535 entries of data can be stored
	Cable glands	5x M20X1.5 Note: Ø 4-9 mm cable
	Ambient temperature	-20 °C to +65 °C (-4 °F to 149 °F)
	Humidity	< 95% at 40 °C (noncondensing)
	Protection rating	IP65, NEMA 4X
	Display	5,7" Color Touch Screen
	Material	Epoxy coated steel (Optional: SS304 or SS316)
	Dimensions	300 x 120 x 300 (L x W x H in mm)
Weight	± 6 kg	

2022 RHOSONICS - specifications are subject to change without notice - 07/2022

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