

Density meter for challenging slurry applications



SDM - SLURRY DENSITY METER **PRODUCT INFORMATION**

SDM – Non-nuclear Slurry Density Meter

INTRODUCTION

Rhosonics introduces the Slurry Density Meter (SDM), a robust measuring device that can provide the readings of slurries in density (SG) or % solids (WT).

More than ten years of experience with harsh applications have been used to develop this high-end device. All of our R&D effort allowed the creation of the SDM, an eco-friendly density meter capable of measuring the density of challenging water-based slurries.

For many years, nuclear devices were the only option. Nowadays the non-nuclear SDM is used to replace radiation-based devices. Rhosonics employs field-proven ultrasonic technology for density measurement. The transition to the non-nuclear SDM significantly reduces operational costs and eliminates all health and safety risks related to the radioactive source.

INDUSTRIES

SDM is used in the following industries:

- Mining and Minerals processing
- Dredging
- Construction
- Energy and power supply
- Any other where density measurement in water-based slurries is required



Mineral slurry



Dredging slurry

SDM – DESCRIPTION

The Rhosonics Slurry Density Meter has its sensor, analyzer, cable and software integrated in just one system. The density meter is compact and lightweight.



SDM density meter with wafer installation

A single probe is used for accurate density measurements in light to very dense slurries. The density is measured by ultrasonic technology which is completely environmental friendly.

The sensor is easily mounted to the process and it is not intruding the slurry. Furthermore, the sensor is made of durable and abrasion-resistant materials for long service life.

FEATURES AND BENEFITS

- Non-nuclear technology
- Robust, compact and lightweight
- Easy installation and calibration
- Durable probe system
- High availability
- High accuracy and reproducibility
- Suitable for various types of slurries
- Standard communication via 4 ... 20 mA / HART
- Continuous data logging
- Benefits compared to the nuclear devices:

- health and safety risks can be eliminated
- radiation safety officer (RSO) or certified personnel are not needed to operate the SDM
- there's no need for licenses or obligatory training
- it does not generate any extra costs with disposal and transport

RCU – REMOTE CONTROL UNIT

A Remote Control Unit (RCU) is available to read values, convert signals and change settings of the SDM from a convenient location of choice. Please contact Rhosonics for more information.

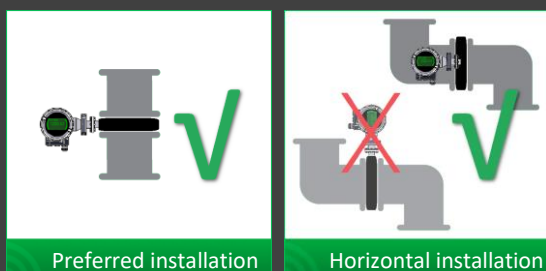


RCU unit – optional control unit for the SDM

HOW TO INSTALL

The following guidelines apply for installation:

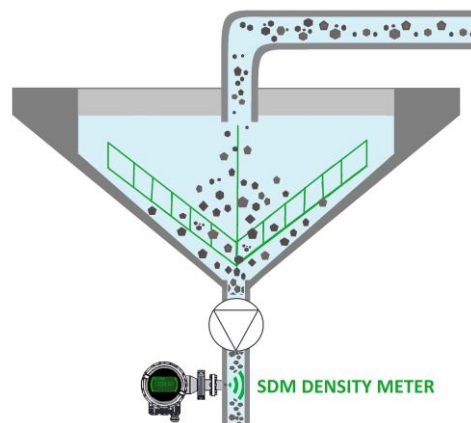
- In horizontal pipes the sensors must be installed at a 7-9 o'clock position from in the pipe.



A TYPICAL APPLICATION

The SDM density meter can be used in many applications to measure the density of a slurry. In the mining industry, typical applications can be thickeners underflow, and cyclone feedline. applications like dredging, power plant ash, limestone milk and many others are also possible. The measured density value can be used for process control, but also for production yield and mass calculation when combined with a flow meter.

The Rhosonics SDM ultrasonic density meter is in general THE sustainable alternative to radiation-based density technology for slurry applications.



Density measurement in the slurry of a thickener underflow

AWARD

Rhosonics has won the 'Environmental Impact' category in the Mining Technology Excellence Awards 2020 from GlobalData, as one of the greatest innovations in the mining industry. The award celebrates Rhosonics' SDM as a sustainable density meter for slurries (nuclear-free), which is helping hundreds of processing plants around the globe to achieve a greener and smarter operation.

INSTALLATION METHODS

Spool *(with or without liner)*

A spool is a pipe piece which can be mounted between two flanges. The spool piece can be made of HDPE, steel A106/A105 or other steel grades. this installation method is optionally available with a PU liner, and other liners on request. The choice of materials can be different for each application.

Weldolet

The Weldolet is a weld-on metal adapter which can be used for the installation in new or existing steel pipes. The Weldolet piece can be welded on the pipe at the installation point of choice. This installation method is mostly used in applications with new metal pipes.

UWC Wafer *(Ultrasonic Wafer Cell)*

The UWC is a synthetic 60 mm thick flange-like ring made of UHPE (Ultra High Density Poly Ethylene). It can be clamped between two flanges in almost every piping system.

HOW DOES IT WORK?

The ultrasonic density measurement is based on the measurement of the acoustic impedance using the Physical law established by Sir Rayleigh.

$$Z = C \times \rho$$

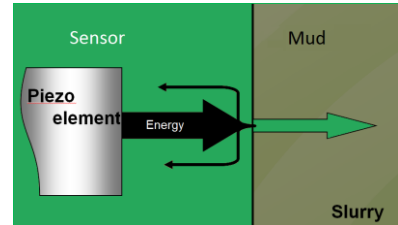
Z = acoustic impedance

C = speed of sound

ρ = density

The acoustic impedance is the reflection of the ultrasonic wave on the interface between the sensor and the slurry. The speed of sound is based is known and programmed into the analyzer.

Ultrasonic measurement principle



INSTALLATION TOOLS

			
	Example: UFTP A106 steel with PU liner		
Installation method	FDSC or UFTP Spool	Weldolet	UWC Wafer
Suitable for nominal pipe OD	1" ... 16"	>3" wall thickness 5 ... 22 mm	4" ... 60" *

* Depending on the standard, determined by Rhosonics

SENSOR SPECIFICATIONS

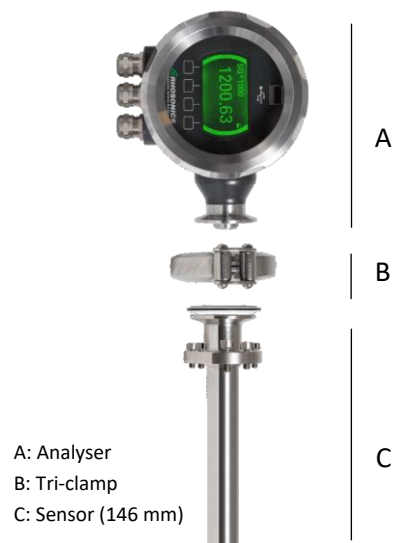
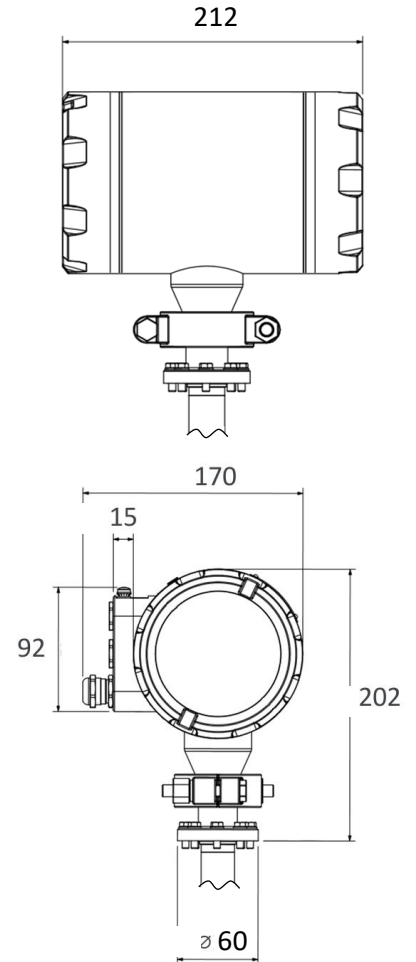
Method:	Acoustic impedance (Power Interface Echo)
Max pressure:	16 bar
Min. temperature range:	0 °C (32 °F)
Max. temperature:	110 °C (230 °F)
Body materials:	Ceramics, Duplex 1.4462, 316L
Wetted materials:	Ceramics, Duplex 1.4462
Sensor surface radius:	0 mm (flat)
Sensor length:	146 mm
Weight:	± 1 kg
Process connection:	According to page 4

SDM ELECTRONICS SPECIFICATIONS

Method:	Acoustic impedance (Power Interface Echo), set temperature or Pt100 temperature 4-20 mA input
Readings:	Density in SG x1000 or in WT% Temperature in °Celsius

SDM TRANSMITTER SPECIFICATIONS

Density Range:	700 ... 3000 g/l
Power supply:	18...32 VDC, 8 Watt
Communication & Output:	4-20mA by HART output (1x) <i>Optional: RCU unit as converter to Modbus</i>
Input:	Temperature (optional)
Data logging:	Continuously Retrieving by USB memory stick
Cable entries:	3 pieces of M16X1.5 cable glands for Ø 2-6 mm cable
Ambient temperature:	- 5 °C to +50 °C (23 °F to 122 °F)
Humidity:	< 95% at 40 °C (noncondensing)
Protection:	IP68, NEMA 6P
Vibration:	Resistant to moderate / high vibration of pumps
Weight:	Approx. 6 kg
Materials:	Coated stainless steel housing with glass window front cover
Dimensions:	212x170x202 (L x W x H in mm) 212x170x348 (including sensor)
Display:	240x128 dots (W x H), 5 colors RGB with backlight
Operation:	Push-buttons



About us



MEASURING BEYOND LIMITS

Rhosonics is based in the Netherlands in Putten. We design, produce and supply state-of-the-art measuring instruments for virtually any industry. The company cooperates with partners worldwide to offer the best technology solutions. We use craftsmanship, capability and creativity to create measurements beyond limits.



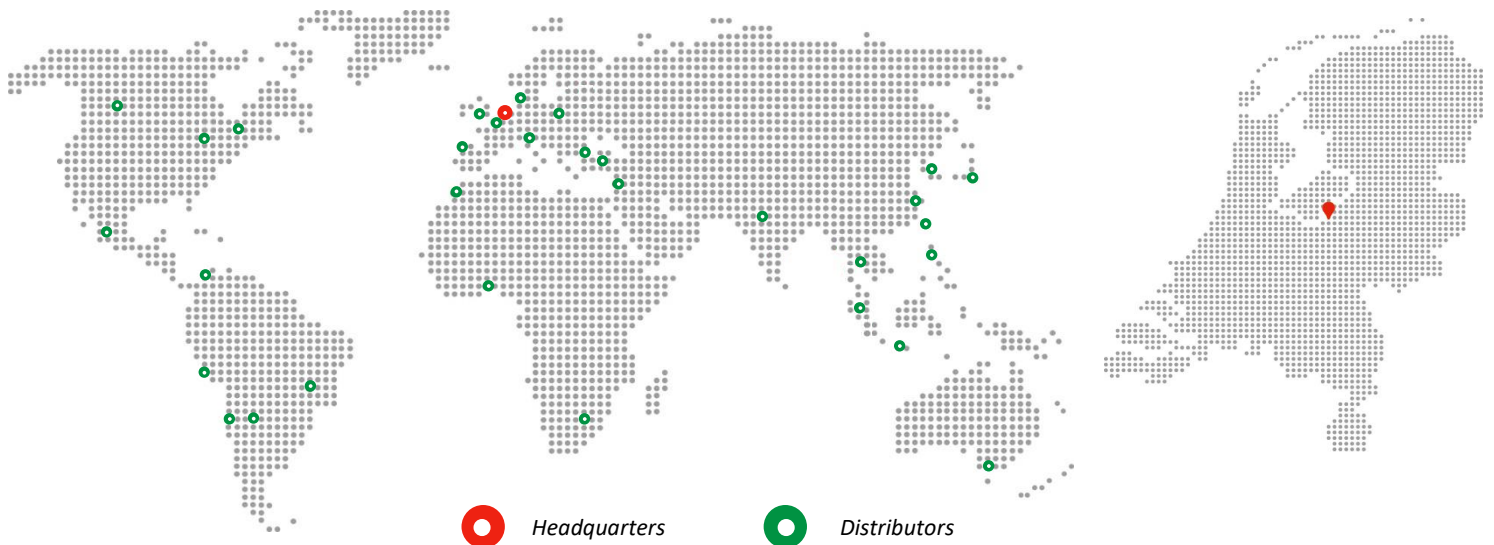
We proudly meet the requirements for the ISO9001 standard since 2010.

CONTACT US

Rhosonics

Hoge Eng West 30, 3882 TR Putten, NL
+31 341 – 37 00 73
info@rhosonics.com
www.rhosonics.com

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