

Concentration Meter B31 for the Optoelectronics and Chemical industries



CONCENTRATION METER B31 PRODUCT INFORMATION

B31– Concentration meter for ternary liquids

INTRODUCTION

Rhosonics introduces the Concentration Meter B31. This concentration meter is a compact measurement system which continuously measures two chemical components in a ternary liquid solution. The instrument can be used in the optoelectronics industry to measure concentrations in processes such as cleaning, developing and etching. The B31 shows two concentrations in wt% and can be set to show an alarm on its display if the concentration values are not as desired.

The B31 is equipped with RS232/Modbus RTU communication protocol which makes it possible to control the instrument and read the measured values on a distance.

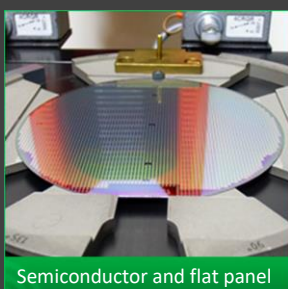
FEATURES AND BENEFITS

- Extremely high accuracy up to $\pm 0.0001\text{wt}\%$
- High stability due to reliable electronics
- Particularly high chemical resistance of the wetted materials
- Wide range of possible applications
- Easy installation (installed in four steps)
- Easy operations with new interface
- Touch-sensitive buttons for lab gloves
- Alarm settings and multiple functions
- RS232/ Modbus RTU protocol
- USB connection for data and system log
- Compact modular design with electronics and liquid parts separated
- Higher temperature response speed than conventional systems
- No moving parts

INDUSTRIES

The B31 can be used in the following industries:

- Semiconductor
- Production of TFT and LCD flat screens
- Chemical industries
- Metals & Mineral processing
- Any other industry or application where concentration measurement of ternary liquids is required.



Semiconductor and flat panel



Chemicals



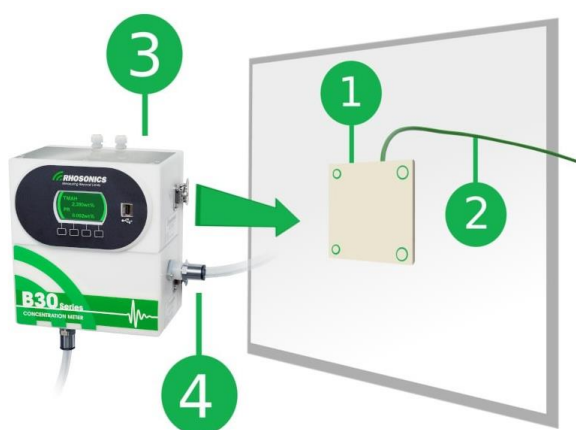
Features of the Concentration Meter B31

INSTALLATION

The Concentration Meter B31 has a renewed modular design, consisting of: a wall panel, an electrical box and a sensor box. The instrument is maintenance friendly and very easy to install.

The installation is done in four steps:

1. Mount wall panel onto a flat vertical surface.
2. Make electrical connection with the wall panel.
3. Click both analyser boxes onto the wall panel.
4. Connect the process tube to the analyser.



Installation and replacement has never been so easy

HOW DOES IT WORK?

The B31 measures three different physical variables in one combined measurement cell.

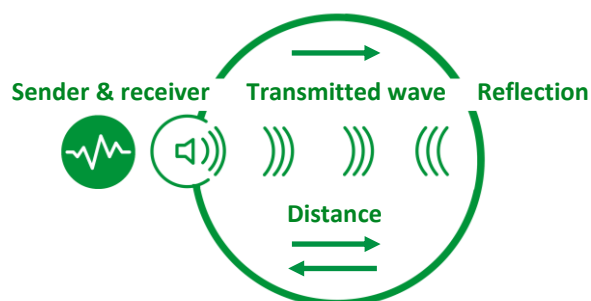
The instrument employs measurement of:

- Sound velocity
- Electrical conductivity
- Temperature

These variables are used to calculate and define the two concentrations of a ternary liquid solution. The calculations are based on special algorithms.

ULTRASONIC MEASUREMENT

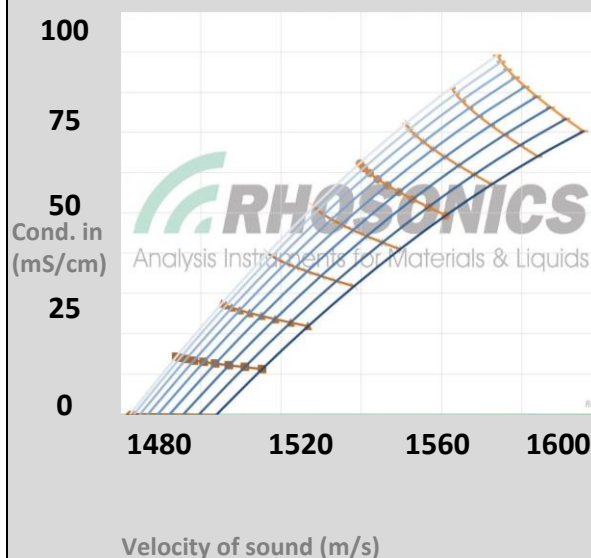
An ultrasonic transmitter generates a sound wave in the tubular measurement cell which is filled with the liquid. The sound wave propagates itself over a fixed length of the tube and is reflected on the other side of the tube. The speed of sound is calculated from the total length and time of flight through the liquid.



Ultrasonic sound velocity measurement

GRAPH OF SOLUTION TMAH+PR

(TMAH 0-6% + PR 0-2% at 20°C)

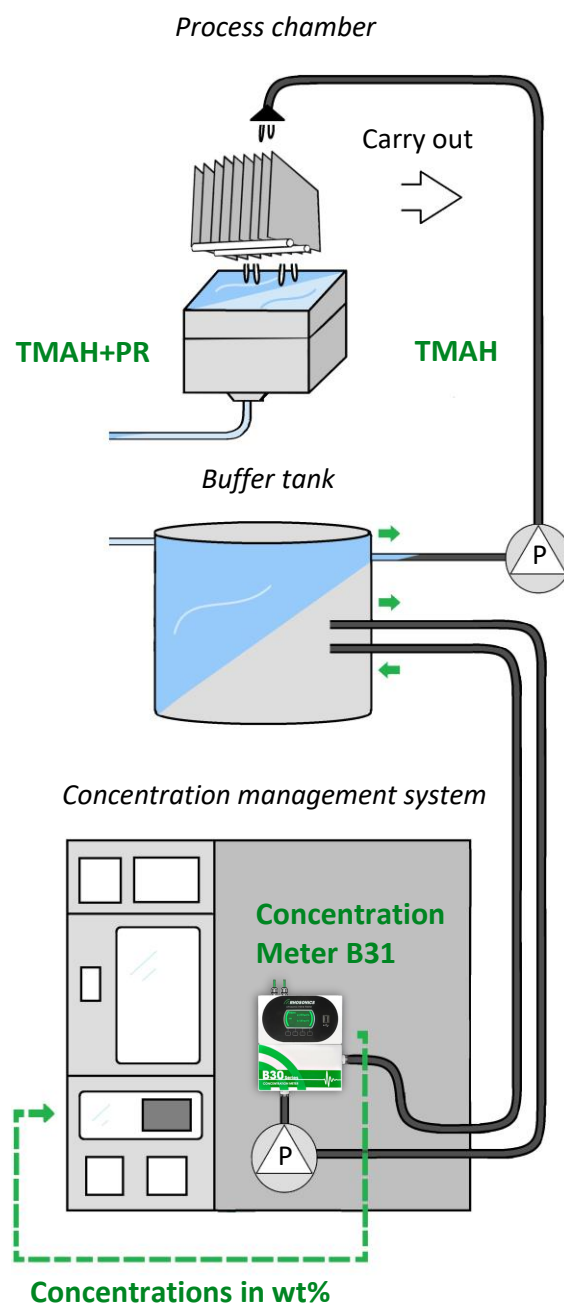


TYPICAL APPLICATION

The Concentration Meter B31 can be installed in systems that are used for chemical supply in the production process of LCD displays, semiconductors, solar panels or in the chemical industry.

In the developing process, a substrate can be wet-chemical treated by TMAH. When the substrate is treated, the solution of TMAH will be polluted by dissolved photoresist. The solution of TMAH+PR will be collected and recycled for reuse. The B31 can be integrated in a concentration management system to measure the concentration of TMAH and the impurity of the dissolved product.

During the process, the instrument is used to show the real-time concentrations in wt%. The controlled process ensures a chemical with the right concentrations.



Measurement of the concentrations TMAH and PR in a concentration management system

APPLICATIONS

The Concentration Meter B31 can be used in the following applications:

- Etching solutions
- Alkaline cleaning solutions
- Surfactants
- RCA cleaning



Development and Etching



Cleaners and Etchants

TECHNICAL DATA

PERFORMANCE SPECIFICATIONS

Method:	Ultrasonic sound velocity Inductive electrical conductivity Temperature
Range process temperature:	5 ... 50 °C (41...122°F)
Readings:	Concentration (wt%), Sound velocity (m/s), Conductivity (mS/cm), Temperature (°C)
Accuracy:	Up to +/- 0.0001 wt% (= 1 ppm)
Decay time:	< 1 to 60 s (adjustable)
Display:	Monochrome display with RGB backlight
Operation:	Capacitive touch buttons, Modbus, Computer.

GENERAL SPECIFICATIONS

Process conditions	
Max. pressure:	4 bar
Max. temperature:	50°C (122°F)
Wetted materials:	Standard: Ceramics sensor and PVDF <i>Optional material: PFA, which is recommended when solutions of TMAH, Piranha and DMSO are used.</i>
Electrical specifications	
Power supply:	18 ... 32 VDC, 8 Watt <i>Optional: Power supply/converter for 90 ... 240 VAC</i>
Communication:	Modbus RTU via RS232 protocol
Data logging:	via USB memory stick
Cable entries:	2X M16 X 1,5
Ambient conditions	
Ambient	5 ... 60 °C (41...140°F)
Humidity:	< 95% at 40°C (noncondensing)
Protection:	IP65, NEMA 4
Dimensions and weights	
Weight:	Approx. 6 kg
Housing materials:	POM / Stainless steel
Housing dimensions:	225 (L) x 200 (W) x 142 mm (H)
Process connection:	PVDF Flexible Tube Connector Ø 12x10 mm. Other sizes on request.

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