

MonoScan™

Ultrasonic Continuous Level Measurement
of Liquids and Solids



Radar-like performance at an affordable price

Automatic adaptation to virtually all environments

World smallest ultrasonic Open Channel Flow gauge

Superior reliability and accuracy under extremely harsh conditions

SolidScan You Can Measure the Solid Benefits

MonoScan™

Patented

No More Compromises.

Now You Can

Self-adjustment to Virtually All Types of Conditions

Affordable Solutions for a Range of Process Control and Storage Applications

Radar-like Performance

Superior Reliability and Accuracy

You Know the Problem...

Current ultrasonic level measurement devices just aren't accurate enough. Attempts to compensate for changing atmospheric conditions and temperature variations within tanks have not been successful. Sound waves remain inconsistent and signal transmission and reception are unsynchronized. Even the most sophisticated—and more expensive devices, do not achieve the repeatability and linearity vital for accurate measurement. When translated into dollars and cents, the price of these uncertainties is too high.

The Solution: Full Compensation in Virtually All Environments

SolidScan™, a family of non-contact, ultrasonic instruments for continuous level measurement of liquids and solids, offers industry experts and engineers the accuracy and reliability they have been seeking at prices they can afford. Based on breakthrough, patented technology in ultrasonic level measurement, SolidScan™ achieves what other instruments just can't match. It delivers full compensation in virtually all environments: vapors, gases, temperature variations, wind, pressure, etc., to provide the highest accuracy especially under extremely harsh conditions. This is radar-like performance at ultrasonic prices.

No Calibration, No Maintenance Required

Requiring neither calibration nor maintenance, self-contained SolidScan™ instruments are easy to install and operate. SolidScan™ instruments are reasonably priced, and they deliver cost-effective ultrasonic level measurement for such "tough" industries as hydrocarbon processing.

Patented Technology Delivers Superior Resolution and Linearity

SolidScan™ technology employs unique modules integrating hardware and software. Each instrument incorporates several of the modules according to a specific application.

technologies.

Have it All!

- **Standing Wave Control Module**

The innovative technology incorporated into SolidScan™ transmits a fixed pulse and frequency at constant voltage, enabling SolidScan™ to receive a similarly controlled oscillation where each wave is identifiable. This provides a highly reliable signal at maximum amplitude for attaining an extremely high level of accuracy, resolution, repeatability and linearity. By measuring energy loss as a function of the speed of sound, SolidScan™ can cope with even the most difficult environments. This module, in effect, enables complete control over energy.

- **Dynamic and Static Echo Control**

An innovative algorithm enables automatic (dynamic) identification, learning and storage in memory of disturbances and noises without human intervention. The "Scan distance function" locates disturbances and noises in the tank and provides appropriate compensation. Alternatively, it permits intervention and the manual input of echo when necessary.

- **Temperature Control Module**

The module rapidly compensates for changes in temperature and corrects the reading accordingly. It is particularly suitable for process installations where there are extreme changes in environment's temperature, or in where there are rapid temperature fluctuations. The dynamic compensation ensures that the instrument maintains optimal accuracy at all times.

- **Gain Control Module**

This special module's algorithm enables full monitoring of signal amplification received from the sensor. It ensures an accurate and reliable reading even in the presence of gases or vapors. It also adapts the amplification to an optimized level when the liquid surface has waves and is turbulent. This algorithm has also proven to be especially effective for the measurement of powders and other solids. This module weakens the strong signals, and strengthens the weak signals for improvement of the signal to noise ratios.



Applications

Chemical Processes: acids, bases, different chemicals and reagents in buffer tanks; inventory storage tanks. Benefit from improved performance in the presence of foam, gases, water vapor.

Silos: bulky powders, fertilizers, ores, solids, stones. Benefit from improved long-range and reliable signals.

Petrochemicals: most hydrocarbons. Benefit from improved performance in environments of volatile gases and CO₂. Inventory tank gauging with accuracy down to 3mm.

Food and Beverage: beer, juice, slurries in blending and mixing tanks. Grains, powders, flour in silos, and more. Benefit from improved accuracy and new implementations.

Water and Waste Water: water storage towers. Accurate open channel flow measurement. Sludge and slurries in waste water plants. Pump stations. Benefit from low cost and high performance.

Pharmaceuticals: fine powders, aseptic liquids, pastes. Benefit from a wide range of new applications.

Pulp: liquors, bleaching agents. Benefit from superior performance, accuracy and reliability at an affordable price.

Plastics: granules, powders, solvents. Benefit from new solutions for the plastics industry.

MonoScan™, MonoScan485™

MonoScan™ is an ultrasonic level measuring instrument for direct installation on tanks, vessels and reactors. It is a loop-powered 4-20mA device, with integral LCD display. Constructed of a ABS body, it features a sensor with a diameter of just 2" thread. MonoScan™ is an excellent choice for measuring the level of liquids and solids at ranges of up to 15 meters, with a 0.25% accuracy of measured range.

The MonoScan485™ includes all of MonoScan's features plus communication on an RS-485 bus with the Modbus protocol, remote monitoring via PC and compatibility to HART protocol. Additionally the MonoScan485 offers 3 SPDT relays control that provides a complete solution for process tanks in stand-alone applications and a Fast Dynamic Response (FDR) algorithm that ensures excellent performance.

Extremely high levels of accuracy and reliability

Automatic adaptation to extreme conditions

Worldwide distributor network

Hot line for service and application assistance



Specifications

Measuring ranges

MonoScan™ L for LIQUIDS: Short-Range: 0.2-5 m (0.6-16 ft)
Standard-Range: 0.6-15 m (1.9-49 ft)

MonoScan™ S for SOLIDS: Short-Range: 0.2-5 m (0.6-16 ft)
Standard-Range: 0.6-8.5 m (1.9-28 ft)

MonoScan™ O for FLOW: Short-Range: 0.2-5 m (0.6-16 ft)
Standard-Range: 0.6-15 m (1.9-49 ft)

Accuracy

0.25% of measuring range

Resolution: 3 mm (0.12 inch)

Ambient Temperature compensation: Automatic

Mechanical

Enclosure: IP 65, Monoblock construction, plastic.

Wetted parts: Sensor body: PP, Stainless Steel 316 or Aluminum

* Optional PVDF

Operating Temperature: -40°C to +70°C (-40°F to +158°F)

Mounting: 2" NPT Or 2" BSP

Operating pressure: Atmospheric.

Dimensions: 289 x 107 x 85 mm (11.4 x 4.2 x 3.35 inch)

Weight: Approx. 1.5 Kg (3.3 lb.)

Electrical

Display: Integral LCD, 4 digits, 7 segments

Loop current: 4-20mA, 750 Ohm@28VDC

Supply: 12-28 VDC (0.1 A Surge)

Transducer: 25 KHz.

Certificates: CE - EMC

ATEX: EX ia IIC T4

FM: Class I Division 1 Group A T4

CSA: Class I, II, III, Group A,B,C,D,E,F and G.



MonoScan485™ Additional Features

Interface

Bi-directional RS-485 output supported by Modbus RTU

External Adapter

3 Independent SPDT Relays

6 Trigger points

Compatibility with HART Protocol*

* Consult Factory

Design ■ Boutakha Rausnitz Suday/Kineret Ruseak

