

# MonoScan®

## Ultrasonic Continuous Level Measurement of Liquids and Solids



**Flexible and Cost-Effective Solution**

**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 problematic 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 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 problematic conditions. This is radar-like performance at ultrasonic prices.

### **No Calibration 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.

## **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 an 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 (49ft), with a 0.25% accuracy of the measuring range.

Moreover, the MonoScan is the smallest ultrasonic gauging device for measuring open channel flow incorporating 9 predefined types of weirs and flumes in its memory that assures fast and easy set-up.

**MonoScan485®** includes all of MonoScan's features plus AC power supply and 3 SPDT relays that provide a complete solution for process tanks in stand-alone applications and a Fast Dynamic Response (FDR) algorithm that ensures excellent performance.

### **Advantages**

- Direct installation on tanks, vessels and reactors
- Self-calibration to virtually all types of conditions
- Full compensation in virtually all environments
- Delivers highest accuracy even under problematic conditions
- Maintenance-free



**Extremely high levels of accuracy and reliability**

**Automatic adaptation to problematic conditions**

**Worldwide distributor network**

**Hot line for service and application assistance**

	MonoScan®	MonoScan485®
<b>Applications</b>	Liquid, Solid, Open Channel Flow	Liquid, Solid, Open Channel Flow
<b>Measuring range</b>	<b>L, O :</b> Short-Range: 0.25-5m (0.8-16.5ft) Standard-Range: 0.6-15m (2-49ft)* <b>S:</b> Short-Range: 0.25-5m (0.8-16.5ft) Standard-Range: 0.6-8.5m (2-28ft)	<b>L, O :</b> Short-Range: 0.25-5m (0.8-16.5ft) Standard-Range: 0.6-15m (2-49ft)* <b>S:</b> Short-Range: 0.25-5m (0.8-16.5ft) Standard-Range: 0.6-8.5m (2-28ft)
<b>Accuracy</b>	0.25%	0.25%
<b>Resolution</b>	1mm (0.04in)	1mm (0.04in)
<b>Display</b>	LCD Included	LCD Included
<b>Enclosure</b>	Mono-Block, IP 65	Mono-Block, IP 65
<b>Interface</b>	Included	Included
<b>Ambient Temperature</b>	Automatic	Automatic
<b>Relays</b>	NA	3 SPDT
<b>Power Supply</b>	12-28VDC (0.1A surge)	12-28VDC (0.1A surge): 100-240VAC 50/60Hz, 30mA
<b>Operating Temperature</b>	-40C to +70C (-40F to 158F)	-40C to +70C (-40F to 158F)
<b>Sensor Material</b>	Stainless Steel 316L or Coated Aluminum	Stainless Steel 316L or Coated Aluminum
<b>Certificates</b>	CE ATEX: EEx ia IIC T4 FM: Class I, Division 1 Group A T4	CE ATEX: EEx ia IIC T4 FM: Class I, Division 1 Group A T4

## Applications

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

**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.

**Food & Beverage:** Beer, juice, slurries in blending and mixing tanks. Grains, powders, flour in silos and more.

Benefit from improved accuracy and new implementations.

**Water & Wastewater:** Water storage towers, accurate open channel flow measurement, sludge and slurries in wastewater plants and in pump stations. Benefit from low cost and high performance.

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

**Paper & 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.

\* Depending on sensor type

All specifications are subject to change without notice

MonoScan® is a registered trademark of Solid Applied Technologies Ltd.

**Coulton Instrumentation Ltd**  
17 Somerford Business Park  
Christchurch, Dorset  
BH23 3RU  
Tel: +44 (0) 1202 480303  
Fax: +44 (0) 1202 480808  
Email [Sales@coulton.com](mailto:Sales@coulton.com)

