

# SmartScan™

Ultrasonic Continuous Level Measurement  
of Liquids and Solids



Automatic adaptation to virtually all environments

Radar-like performance at an affordable price

Superior reliability and accuracy under extremely harsh conditions

**SolidScan** *You Can Measure the Solid Benefits*

# SmartScan™

# Patented technologies.

## No More Compromises.

## Now You Can Have it All!

[Self-adjustment to Virtually All Types of Conditions](#)

[Affordable Solutions for a Range of Process Control and Storage Applications](#)

[Radar-like Performance](#)

[Superior Accuracy and Reliability](#)

### 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 extremely harsh 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 all of the modules described below:

- **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**

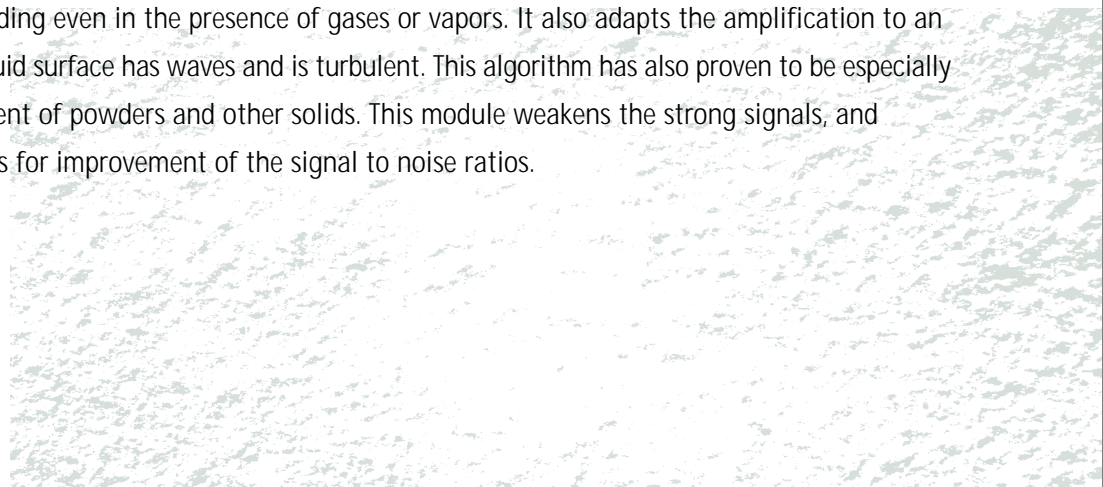
An innovative algorithm enables automatic (dynamic) identification, learning and storage in memory of disturbances and noises without human intervention. The "Scan distance function" locates disturbances and noises in the tank and provides appropriate compensation. Alternatively, it permits intervention and the manual input of echoes 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 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 CO<sub>2</sub>. Inventory tank gauging with accuracy down to 2mm.

**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:** high 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 and Paper:** liquors, bleaching agents, slurries, diameter measurement of paper rolls. Benefit from superior performance, accuracy and reliability at an affordable price.

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

## SmartScan™ 50

The SmartScan™ 50 is an ultrasonic level measuring instrument for installation into process tanks, storage vessels, open air piles, and more. It is a 4-wire low voltage device, with customized graphic LCD display. With a variety of softwares available for each application, it is an excellent choice for measuring the level of liquids and solids at ranges of up to 12 meters, with better than 0.25% accuracy of the measuring range.

SmartScan™ 50 delivers very fast response, while maintaining high reliability, in open air, tank conditions or dusty environments. Many choices are available: Q/h calculation in open channel, diameter measurement of a paper roll, volume of a tank, and more.



The Radar-like performance makes the SmartScan™ 50 a unique cost saving solution for accurate measurement.

# Specifications

## Measuring range:

SmartScan 50L for LIQUIDS: 0.4-12 Meters (1.3-39 ft.)

SmartScan 50S for SOLIDS: 0.4-8.5 Meters (1.3-27 ft.)

SmartScan 50D for DIAMETER: 0.5-2.5 Meter (1.64-8.2 ft.)

SmartScan 500 for FLOW of LIQUIDS: 0.4-12 Meters (1.3-39 ft.)

## Accuracy:

50L: 0.2% of the measuring range

50S: 0.25% of the measuring range

50D: 0.1% of the measuring range

500: 0.2% of the measuring range

Resolution: 1 mm (0.04 inch)

Ambient Temperature compensation: Automatic

## Mechanical:

Enclosure: IP 67, wall /panel mounted, plastic

Temperature range: -40 to 60 °C (-40 to 140 °F)

Dimensions: 272 x 200 x 85 mm

(10.7 x 7.9 x 3.35 inch)

Weight: 2.5 Kg (5.5 lb)

## Sensors:

Wetted parts: Glass reinforced epoxy, PP/PVDF

Operating pressure: Up to 5 bars (75 PSI)

Operating temperature: -40 to 100 °C (-40 to 212 °F)

Mounting: 1" NPT or 1" BSP

Transducer: 50 KHz.

Max Sensor to instrument Distance: 200 meters (656 ft).

5 meter cable (16.4 ft) included with sensor.

## Electrical:

Display: Graphic custom LCD

Supply: 18-30 VDC (0.25A max)

Outputs: 4-20 mA, 750ohm load@24 VDC

Interface: RS 232 or RS 485

Relays: 5 independent SPDT

Certificates: CE, CSA\*, FM\*, FCC , I.S.\*, 3A\*

\*Consult Factory



## SmartScan™ 25

The SmartScan™ 25 is an ultrasonic level measuring instrument for installation in high process tanks, large storage vessels, and extended range applications. It is a 4-wire low voltage device, with customized graphic LCD display. With a variety of sensors available for each application, it is an excellent choice for measuring the level of liquids and solids in ranges up to 40 meters, with better than 0.25% accuracy of the measuring range.

SmartScan™ 25 delivers very fast response, while maintaining high reliability, in open air, tank conditions or dusty environments.

The radar-like performance makes the SmartScan™ 25 a unique cost saving solution for accurate measurement extended range applications.



## Specifications

### Measuring range:

SmartScan 25L for LIQUIDS: 0.6-40 Meters (1.96-131 ft.) (Depends on the model)

SmartScan 25S for SOLIDS: 0.6-40 Meters (1.96-131 ft.) (Depends on the model)

SmartScan 250 for FLOW of LIQUIDS:

0.6-40 Meters (1.96-131 ft.) (Depends on the model)

### Accuracy:

25L: 0.25% of the measuring range


25S: 0.25% of the measuring range

250: 0.25% of the measuring range

Resolution: 1 mm (0.04 inch)

Ambient Temperature compensation: Automatic





## Mechanical:

Enclosure: IP 67, wall/panel mounted. Plastic

Temperature range: -40 to 60 °C (-40 to 140 °F)

Dimensions: 272 x 200 x 85 mm (10.7 x 7.9 x 3.35 inch)

Weight: 2.5 Kg (5.5 LB)

## Sensors:

Wetted parts: Stainless Steel 316 or Aluminum, PP/PVDF

Operating pressure: Atmospheric.

Operating temperature: -40 to 80 °C (-40 to 176 °F)

Mounting: 1 " BSP or 1 " NPT or 2 " BSP or 2 " NPT

Transducer: 25 KHz.

Max Sensor to instrument Distance: 200 meters (656 ft).

5 meter cable (16.4 ft) included with sensor

## Electrical:

Display: Graphic custom LCD

Supply: 18-30 VDC (0.25A max)

Outputs: 4-20 mA, 750 ohm load@24 VDC

Interface: RS232 or RS 485

Relays: 5 independent SPDT

Certificates: CE, CSA\*, FM\*, FCC, I.S.\*

\*Consult Factory