

OPTISOUND™ -VU31 Ultrasonic Measurement System



2-Channel Optisound-VU31 can be used in a variety of Level and Open Channel Flow applications.

- Level
- Distance
- Open Channel Flow rate
- Totalization
- Pump Alternation - up to 6 pumps
- Differential Level (Bar Screen)
- Submerged Flow
- 4-20mA Signal Outputs w/ Modbus RTU
- 6 SPDT relays for control or alarm
- Programmable Batch Sampler Activation
- Data Logger - 1 to 24 Month

Easy Set-Up

Via Menu driven configuration via local display with environmentally sealed keypad

User Friendly

Set the measurement range directly in inches, feet, millimeters, centimeters, or meters via the display with environmentally sealed keypad. The display is menu driven and can easily be configured without detailed procedures: no cryptic codes, no problems.

The Optisound-VU31 Continuous Ultrasonic Level Series is a versatile package available with analog outputs, and 6 SPDT relays.

This multifunctional system can be used in a wide variety of applications ranging from simple indication of level as well as open channel flow rate and totalization to more demanding two channel inputs such as differential level and submerged flow.

When relay outputs are required, (6) SPDT relays rated at 5A @ 250VAC allows additional features such as alarm or control functions plus Batch Sample Activation and Pump Alternation of up to 6 pumps.

The OPTISOUND-VU31 continuous ultrasonic level system features a full, 7-digit, Back-Lit, LCD, display. The large display can be viewed easily from a distance or when process lighting conditions are dim.

The OPTISOUND-VU31 is preprogrammed with common tank shapes and Open Channel Flume and Weir characterizations. The menu driven software additionally offers a 21-point strapping table for non-linear inputs in level, volume or open channel flumes and weirs.

OPTISOUND-VU31 Level Measurement System

SmartGain™

Eliminates interfering signal reflections from agitators and other internal vessel obstructions without the need to empty the vessel and without operator intervention. Easily ignores pipes and similar obstructions that may be within the sonic beam path.

- Automatically ignores difficult internal obstructions
- No user adjustments required

Full Tank Measurement

- Transducer can be recessed in a 2-inch or larger ID nozzle to allow level measurements to the very top of the vessel.

Bench Configuration

- Eliminates the need to move process material levels for configuration

2-Inch Nozzle Mounting

Compact transducer design allows mounting in any 2-inch nozzle. It also allows for a recessed nozzle mounting enabling level to be read to the very top of the vessel.

Ideal for Hazardous Area Installations

Units designed for installations in Class 1 Div. 2, Zone 2 environments with sensors designed for Class I Div. 1, Zone 0, Zone 1.

Easy View Display

- 1"x4" Back-lit LCD display, wall mount.
- 2-line display, top line - 10 characters 9.8 mm tall, second line - 7 characters 15.5 mm tall

Supported Flume & Weir Characterizations:

- Parshall
- Rectangular (With & Without end contractions),
- Trapezoidal (Cippoletti) Weir
- Trapezoidal Flume
- V-Notch Weir
- Leopold-Lagco
- Palmer-Bowlus
- Compound Weir
- "H" Flume.

Software Options

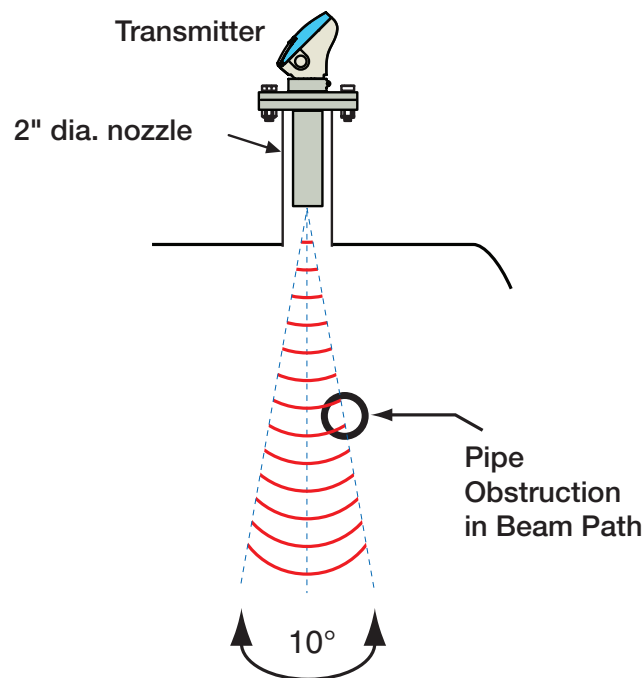
- Level, distance in: %, inches, feet, mm, cm, m
- Flow rate in: GPM, M3/Hr. – (2) Totalizers, (1) resettable, and (1) non-resettable.
- Differential level – Traveling Bar Screen, Submerged flow.
- Pump Alternation up to 6 pumps.
- Batch Sample Activation – based on totalized flow with dry relay contact closure with adjustable pulse durations.
- Characterizations of common flumes and weirs plus customer configuration of nonstandard flumes and weirs via a 21-point strapping table.



OPTISOUND-VU31 Level Measurement System

Ignore difficult internal obstructions with patented SmartGain™

SmartGain is a standard feature with every system and prevents unwanted reflections from internal obstructions and agitator blades. SmartGain automatically controls the transmitter gain (sensitivity to returned echoes). Without user intervention, the OPTISOUND-VU31 ignores obstructions that are mounted within the sonic beam path. SmartGain also provides measurement advantages in horizontal cylinders and spheres by reducing the effects of multiple reflection signal paths.



Ignore a 2-Inch (50 mm) Pipe

- The edge of a 2-inch (50 mm) pipe can be as close as ½ inch (12 mm) from the centerline of the transducer, and ignored.

Ignore a 1-Inch (25 mm) Pipe

- The edge of a 1-inch (25 mm) pipe can be 1-inch (25 mm) from the centerline of the transducer, and ignored.

Quick Start-Up:

1. Choose Level or Flow as an input type.
2. Choose Configuration Units (Feet, Inches, Meters, Centimeters, Millimeters).
3. Enter Tank Height.
4. Enter LRV (4 mA point) and URV (20 mA point).

That's all that is needed to start measuring Level!

Easy user-defined configuration as simple or complex as needed.

In addition to a quick and easy start-up, in-depth configuration allows the conversion of Level to Volume through internal strapping tables or open channel flow tables and totalizer settings. The OPTISOUND-VU31 has (2) 7-digit totalizers per channel for use in flow measurement inputs; one totalizer per channel is resettable. Systems settings allow user-defined system gain, repetition rates, time delay, error signals, display options, diagnostics and more.

OPTISOUND-VU31 Level Measurement System

Specifications

Input Power

120 VAC & 24 VDC
240 VAC & 24 VDC

Output signal options

(2) Active 4-20mA with Modbus RTU

Maximum Loop Resistance

1000 ohms

Output Mode

Level, Distance, Flow, Volume

Display Indications

Level, Distance, Flow Rate, Volume, Totalization, Temperature, Signal Strength, Milliamp. User selectable, multiple selections can be scrolled automatically.

Range

1 to 30 ft. (0.3 to 9.1m).

Near Zone

12 inches (305 mm).

Minimum span

3 inches (76 mm).

Maximum Span

30 ft. (9.1 m).

Display

2-line, back-lit LCD, UV protected. Top line, 10 characters 9.8 mm tall. Second line, 7 characters 15.5 mm tall.

Accuracy

+/- 0.15% or 0.2 inch (5 mm) of sensor range, which ever is greater.

Repeatability

< 0.12 inch (3 mm)

Resolution

< 0.12 inch (3 mm)

Response Time

Less than 1 second

Ambient Temperature Limits

-40°F to 158°
(-40°C to 70°C).

Data Logger - 1 to 24 Month

Maximum time period dependant on sample rate
Optional RS232 to DB9 cable (#380-5000-100) is required to download Datalogger to PC. 16 ft. (5 m)

Temperature Compensation

Built-in, Automatic and readable from display.

Fail-Safe

3.7 and 22 mA error signals – user selectable for Lost Echo and Near Zone violations.

Configuration

Local Display with Keypad, password protected

Signal Damping

User programmable from
0 – 99 seconds.

Relays:

(6) SPDT @ 5A 250VAC with 10 user defined trip points.

SmartGain™

Standard feature on every system

Sensor

6" CPVC, rated
-40°F to +158°F at 50 psig.
(-40°C to +70°C at 3.4 bar)

Remote Sensor Cable Length

Max. cable length to 1200 ft. (365 m)
Max. cable length factory supplied, 300 ft. (91 m)

Sensing element connection

2-inch & ¾" NPT/BSP fitting, CPVC
Flange mounting (via threaded flanges)

Frequency

50KHz

Beam Angle

Conical, 10° @ 3db down

Enclosures

Electronics:

Fiberglass reinforced Polyester (FRP) to NEMA 4X (IP-66)

Sensor:

CPVC rated NEMA 6 (IP-68)

Approvals

Electronics:

Class I, Div. 2, Zone 2 hazardous locations.

Sensors:

FM, CSA - Class I, Div. 1

ATEX / CE - Zone 0, Zone 1 (Pending)