AMETEK®

DREXELBROOK®

DATA SHEET

USonic-R™ Series

Ultrasonic Level Measurement System

2-Channel USonic-R 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 USonic-R 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 USonic-R 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 USonic-R 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.

USonic-R™ Series
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” Backlit 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., L/S, L/M – (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.

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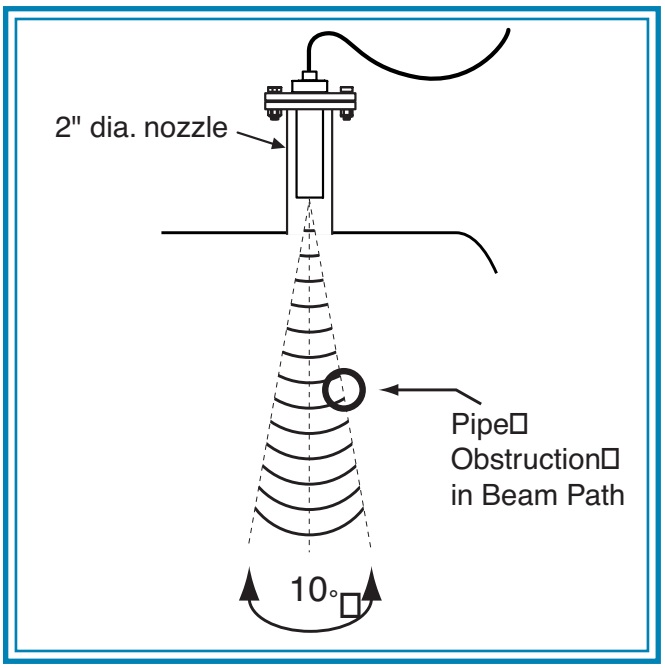
USonic-R™ Series
Level Measurement System

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 USonic-R 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 USonic-R 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.

USonic-R™ Series
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, backlit 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-65)
Sensor:
CPVC rated NEMA 6 (IP-68)

Approvals
Electronics:
Class I, Div. 2, Zone 2 hazardous locations.
Sensors:
FM / FMc - Class I, Div. 1

* Specifications subject to change without notice

USonic-R™ Series
Level Measurement System

Model Numbering

Technology

USonic-R Continuous Line-Powered Ultrasonic Level Measurement System

Power

1 120 VAC, 24 VDC
2 240 VAC, 24 VDC

Output

1 Analog 4-20 mA outputs with Modbus

Approvals

1 FM / FMc - Class 1, Div. 2

Sensors

0	Without	
1	One Sensor 3/4" / 2" NPT	(FM / FMc - Class I, Div. 1)
2	Two Sensors 3/4" / 2" NPT	(FM / FMc - Class I, Div. 1)
3	One Sensor 3/4" / 2" BSP (G)	(FM / FMc - Class I, Div. 1)
4	Two Sensors 3/4" / 2" BSP (G)	(FM / FMc - Class I, Div. 1)
5	One Sensor 3/4" / 2" NPT	
6	Two Sensors 3/4" / 2" NPT	
7	One Sensor 3/4" / 2" BSP	
8	Two Sensors 3/4" / 2" BSP	

Sensor #1 Cable length

0000	Without
0025	25 Ft. Continuous Run - Standard
0050	50 Ft. Continuous Run
0100	100 Ft. Continuous Run
0150	150 Ft. Continuous Run
0200	200 Ft. Continuous Run
0300	300 Ft. Continuous Run

Sensor #2 Cable length

0000	Without
0025	25 Ft. Continuous Run - Standard
0050	50 Ft. Continuous Run
0100	100 Ft. Continuous Run
0150	150 Ft. Continuous Run
0200	200 Ft. Continuous Run
0300	300 Ft. Continuous Run

USR – [ ][ ][ ][ ] – [ ] – [ ]

* Model Number subject to change without notice

Accessories: Optional RS232 to DB9 cable 16 ft. (5 m) and P.C. Software is required to download Datalogger to PC. (Part #401-0700-044)

USonic-R™ Series
Level Measurement System

Model Numbering

Additional or Replacement USonic-R Remote Sensor

Technology

USS Additional or Replacement USonic-R Remote Sensor

Enclosure

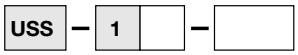
1 CPVC

Mounting

1 3/4" / 2" NPT - FM / FMc Approved Class I, Div 1
2 3/4" / 2" BSP (G) - FM / FMc Approved Class I, Div 1
3 2" NPT with 1/2" NPT Electrical Connections
4 2" BSP with M20 Electrical Connections

Interconnecting cable

0025 25 Ft. Continuous Run - Standard
xxxx Up to 300 ft. continuous run in 50 ft. increments



Other Great Solutions By: DREXELBROOK®

Total Tank Level System

Magnetostrictive
Level Measurement

Wireless Interface Solutions

Wireless Analog / Digital Link
Tube Mount NEMA 4x Transmitter DIN-Rail / Receiver Set

2867021-DRX
2867034-DRX

OMNEX Trusted Wireless

USonic™ Series

Ultrasonic Level Transmitter

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