

Operator's Manual



U4467-2428

English

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Madison Company
27 Business Park Drive Branford, CT 06405
(203) 488-4477 • Fax (203) 481-5036
E-mail: info@madisonco.com
www.madisonco.com

Madison Europe
Ninaberlaan 83
NL-7447 AC Hellendoorn • The Netherlands
+ 31 (0) 548 659 034 • Fax: + 31 (0) 548 659 010
E-mail: Madison@eurodev.com

U4467-2428

Loop Powered Ultrasonic Level Sensor



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• Warranty and Warranty Restrictions

Madison warrants its products to be free from defects of material and workmanship and will, without charge, replace or repair any equipment found defective upon inspection at its factory, provided the equipment has been returned, transportation prepaid, within 18 months from date of shipment from factory.

THE FOREGOING WARRANTY IS IN LIEU OF AND EXCLUDES ALL OTHER WARRANTIES NOT EXPRESSLY SET FORTH HEREIN, WHETHER EXPRESSED OR IMPLIED BY OPERATION OF LAW OR OTHERWISE INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

No representation or warranty, express or implied, made by any sales representative, distributor, or other agent or representative of Madison which is not specifically set forth herein shall be binding upon Madison. Madison shall not be liable for any incidental or consequential damages, losses or expenses directly or indirectly arising from the sale, handling, improper application or use of the goods or from any other cause relating thereto and Madison's liability hereunder, in any case, is expressly limited to the repair or replacement (at Madison's option) of goods.

Warranty is specifically at the factory. Any on site service will be provided at the sole expense of the Purchaser at standard field service rates.

All associated equipment must be protected by properly rated electronic/ electrical protection devices. Madison shall not be liable for any damage due to improper engineering or installation by the purchaser or third parties. Proper installation, operation and maintenance of the product becomes the responsibility of the user upon receipt of the product.

Returns and allowances must be authorized by Madison in advance. Madison will assign a Return Material Authorization (RMA) number which must appear on all related papers and the outside of the shipping carton. All returns are subject to the final review by Madison. Returns are subject to restocking charges as determined by Madison's "Credit Return Policy".

Introducing

The U4467-2428 is a loop-powered ultrasonic sensor. The U4467 provides a low-power, non-contact level measurement solution. These units are completely sealed and are programmed via a U4467-99 programming module. The module has 5-tactile switches and a 2 line by 8 character LCD display to provide the user feedback in programming and sensor performance data.

Sensor features include:

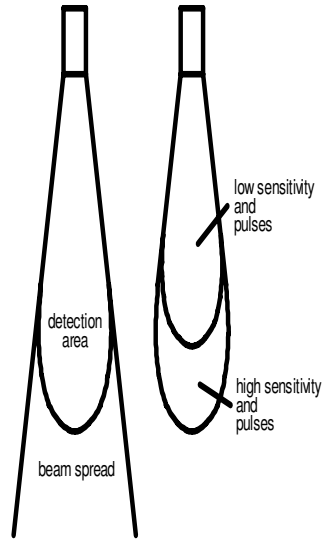
- Loop powered for low power consumption.
- Remote programming.
- Rugged Kynar transducer housing for harsh environments and high degree of chemical compatibility.
- Microprocessor-controlled.
- Listed by CSA for operation in Class 1 Division 1 Groups C & D and Class 1 Zone 0 A Ex ia IIB hazardous areas.
- IP65 rating for outdoor applications.



Understanding Ultrasonics

Ultrasonic sensors measure distance using a transducer to send out ultrasonic bursts. Each burst contains a series of 1-20 pulsed sound waves that emit in the shape of a cone, reflect off the target, and are received by the sensor. The time required for the sound burst to travel to and from the target is converted into a distance measurement by the sensor.

Ultrasonic sensing is affected by several factors including the target surface, distance, size, angle, and the environment. The following considerations will help ensure the best possible target conditions.



Surface

The ideal target surface is hard and smooth and perpendicular to the sensor. This surface will reflect a greater amount of signal than a soft, sound wave absorbent surface. A target with poor sound wave reflection characteristics will reduce the operating distance of the sensor and decrease its accuracy.

<p>GOOD</p> <p>surface</p> <p>BETTER</p>	<p>GOOD</p> <p>distance</p> <p>BETTER</p>	<p>GOOD</p> <p>size</p> <p>BETTER</p>	<p>INCORRECT</p> <p>angle</p> <p>CORRECT</p>
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Distance

The shorter the distance from the sensor to an object, the stronger the returning echo will be. Therefore, as the distance increases, the object requires better reflective characteristics to return a sufficient echo.

Size

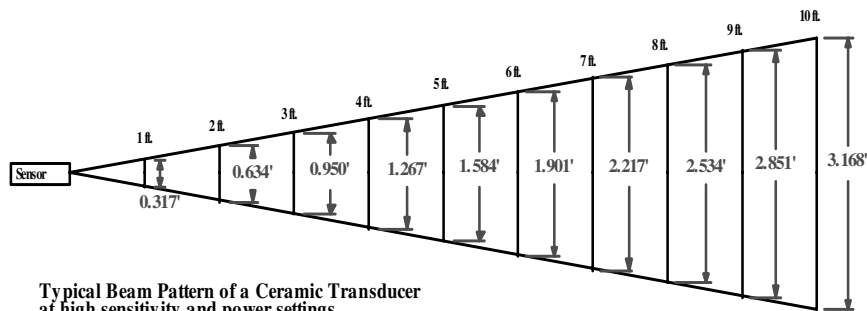
A large object will have a greater surface area to reflect the signal than a small one, therefore, a large target will be detected at a greater distance than a small target. The surface area recognized as the target is generally the portion closest to the sensor.

Angle

The inclination of the object's surface facing the ultrasonic sensor affects the reflectivity of the object. The portion perpendicular to the sensor returns the echo. If the entire surface is at a great enough angle, the signal will be reflected away from the sensor and no echo will be detected. Generally a target at an angle greater than 5° off perpendicular will not be detected.

Environmental Conditions

Temperature, humidity, gases, dust, and pressure may also affect the sensor's performance. Madison ultrasonic sensors automatically compensate for many of these conditions. However, these conditions can degrade the sensor's performance enough it may be necessary to use a longer-range sensor than normal conditions would require.

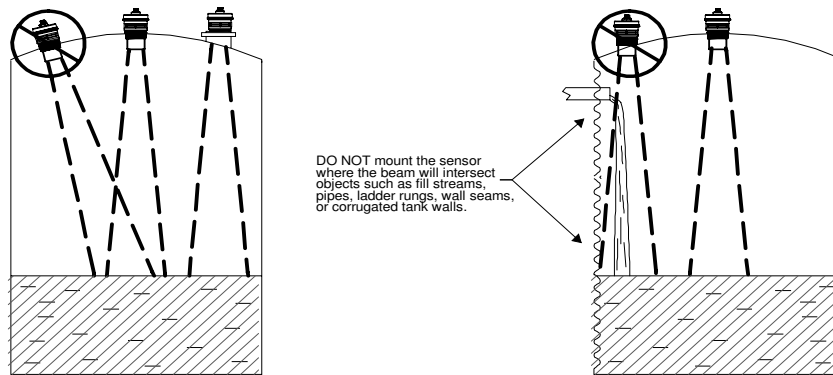


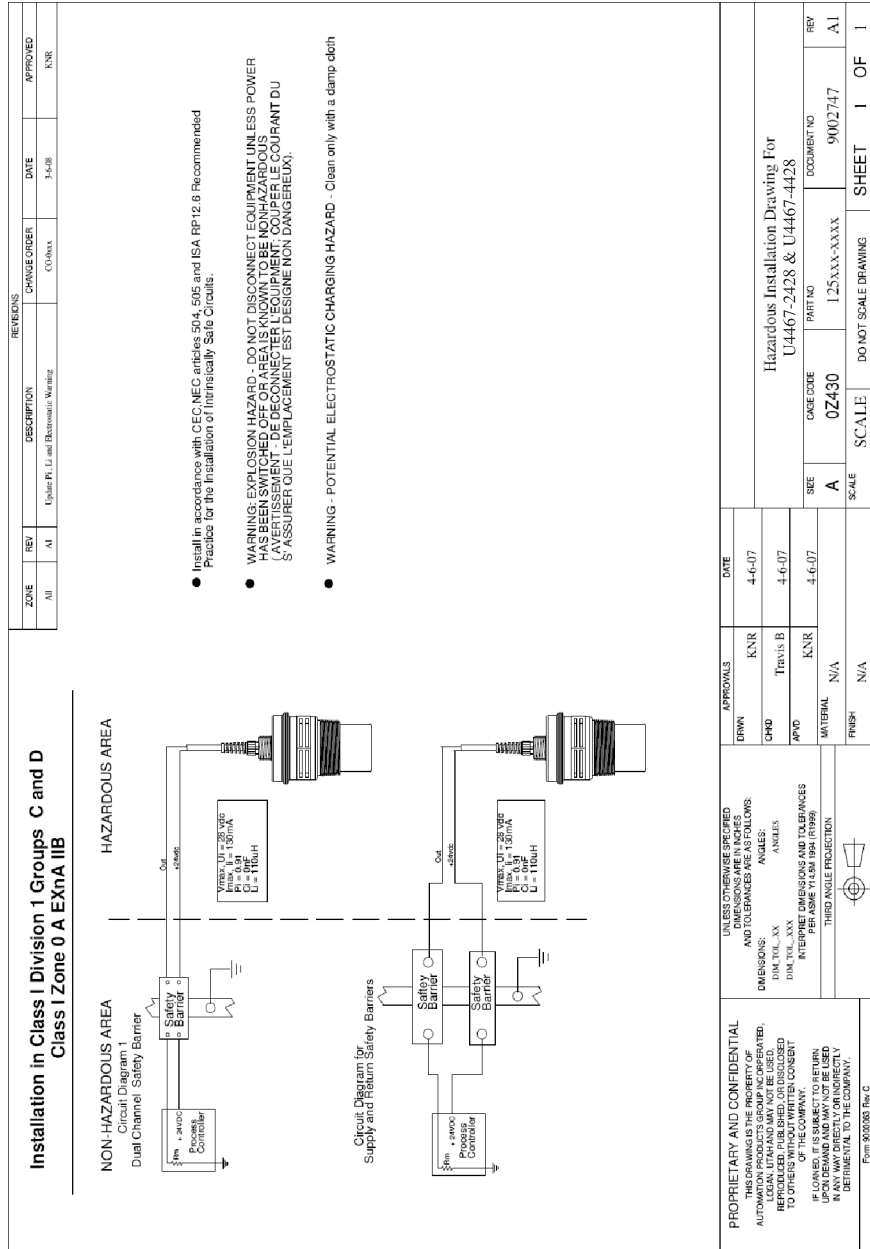
Installation

The U4467 sensor should be mounted so that it has a clear sound path to the level monitored. Mount the sensor away from tank walls and inlets. The path should be free from obstructions and as open as possible for the 9° off axis beam pattern. Follow the guidelines mentioned in "Understanding Ultrasonics". When using a stand pipe to mount the sensor above the tank, the stand pipe should be seamless and no longer than 4 inches to provide a smooth path for the sound waves to propagate into the tank. Seams from couplers, nipples or gaskets can cause erroneous echoes and degrade the sensors performance. The U4467 can be mounted in a coupler, or flange using the 2" NPT threaded case.

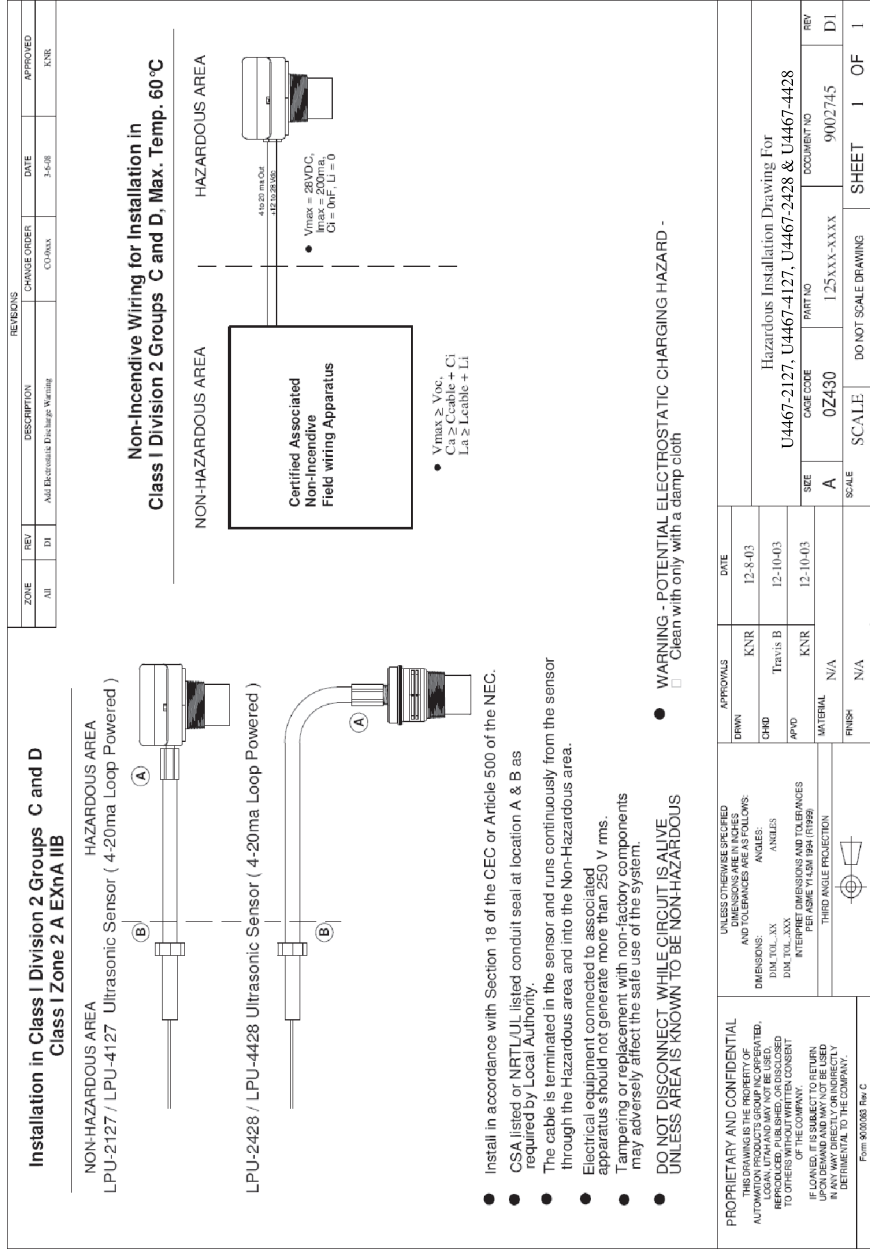
Caution: Do not over tighten! The sensor should be threaded in only hand tight.

The minimum detection range of the U4467 is approximately 1 ft. **The sensor should be mounted to ensure the target does not come closer than the minimum range or erroneous readings may result.**





Pending CSA approval

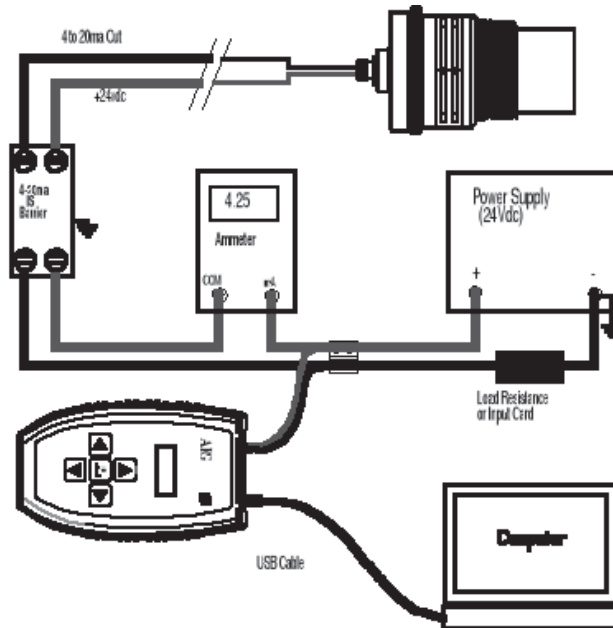


Pending CSA approval

Wiring

1. Sensor has two wires:
Red - +24V DC
Black - 4-20ma output
2. Connect Red wire to +24V DC supply.
3. Connect Black wire to "Load" (input of PLC or other type of load that is greater than 150 ohms)
4. To program sensor connect positive terminal of RST to the sensor red wire and connect the negative terminal to the sensor black wire.
5. To program using the computer software connect USB cable between the U4467 and the computer.

Note: Use the following wiring diagram when connecting to an intrinsically safe barrier (only required for operation in hazardous locations).
Recommended barrier is the Stahl 9001/51-280-110-141, or equivalent.



Programming

The U4467 is programmed using the U4467 programmer via the keypad & display or the USB interface & computer software.

RST Programming:

The LCD display shows the distance measurement. The display is also used to view the individual modes and their values when programming.

The U4467 has five programming or navigation buttons, LEFT Arrow, RIGHT Arrow, UP Arrow, DOWN Arrow, and ENTER (I/O). The arrow buttons allow the user to move through the pages in order to access and change parameters. Once a parameter has been changed press the I/O to save.

To select a page, press the UP Arrow or DOWN Arrow button until the desired page is displayed. Press the Right arrow to move into that page. Then press the UP or DOWN Arrow button to move to the desired parameter. When the parameter is shown press the RIGHT Arrow button. The display will show the name of this parameter on the lower line and the current value on the upper line of the display. To change the parameter's value, press the UP Arrow or DOWN Arrow button until the desired value is displayed.

To store or save the changed value, press the I/O button once. At this point, the parameter value has been saved. The values are stored in nonvolatile memory, and will not be lost when power is turned off.

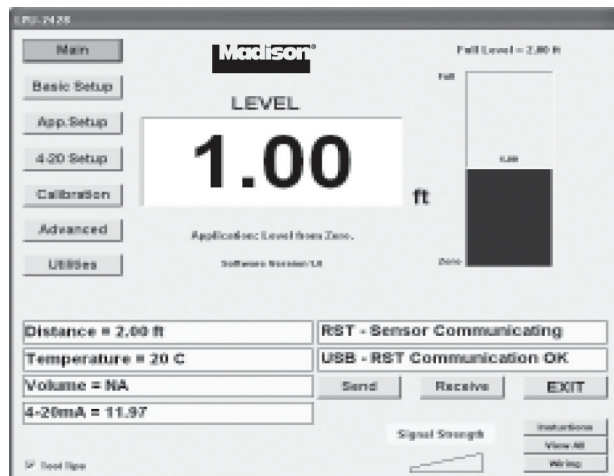


Use the provided terminal strip and resistor to establish communication with the U4467. Follow the wiring diagram shown on the previous page.

- Computer Programming

The utility program used for setting up the sensor is supplied on a 3.5 inch CD. Install the software by running the Windows Installer Package titled, "Setup". The installation process will prompt you as needed to complete the installation. This will load the operating program to your hard drive. The setup program can be run from the Windows "START" menu "RUN" option by entering the file location and name, or by going to Windows Explorer, locating the file and double clicking on "MAD-2428.EXE". The setup program will create a "Madison" folder under the Windows program menu.

When the program screen comes up, there are several buttons and windows to view information. The lower right side of the screen contains two windows indicating the communication status of the sensor and computer. It will indicate "Sensor NO Communication", or "Sensor Communicating". If an error is indicated, then check for proper connections. Allow a moment for the communication to be established while watching the status window to indicate "Sensor Communicating". If this fails to establish communication, plug the USB cable into the second port on the back of the computer. After communication is established, click on the "Receive" button to load the sensor settings into the programming windows. Changes to the parameters are accomplished by clicking in the appropriate text box window, entering the desired value, then clicking the "Send" button. The "Reset" button will load the factory settings into the sensor. The program is closed by clicking on the "Exit" button.





For software users the U4467 can be set up using the following seven pages.

Note: When entering parameter changes in the software, be sure to SEND these changes to the sensor before exiting the software. Failure to do so will result in unchanged parameter values.

Main:

Displays distance or level. A graphical representation is displayed if measuring level, volume, or flow.

Basic Setup:

Submenu contains Units, Application, Flow/Volume Units, Flow Rate, and Response Time.

Note: Changing unit and rate values in Basic Setup will NOT update values found in the App. Setup and 4-20 Setup pages.

App. Setup:

Submenu contains Volume Tank Type, Flow Type, Max/Full Distance, Zero/Empty Distance, and values for flow or volume.

4-20 Setup:

Submenu contains Min & Max mA Setpoints, Fail Safe, and Fail Safe Delay.

Calibration (not required on most applications):

Submenu contains Min & Max mA Value, Min & Max mA Trim, Multiplier, and Offset.

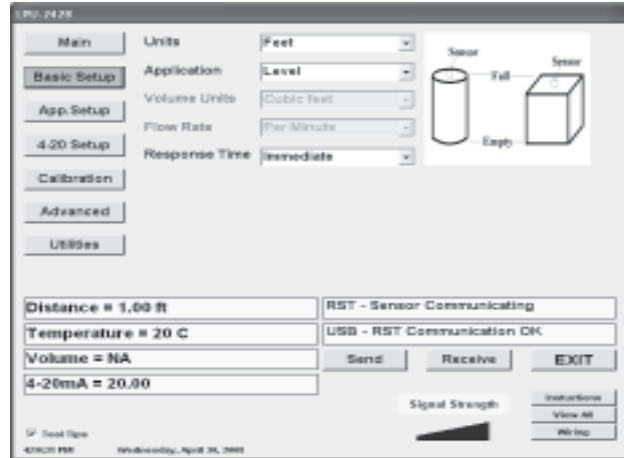
Advanced:

Submenu contains Temperature Compensation, Gain Control, Sensitivity, Pulses, and Blanking.

Utilities:

Submenu contains Low & High Distance Simulation, Simulation Cycle Time, Reset, File System, and Software Version.

Basic Setup (*BasicSet*)



Units (*Units*)

Selects the unit of measure that will be used throughout the setup process.

Feet, Inches, Meters, Millimeters
Default: Feet

Application (*Out Func*)

Selects function of measurement.

Distance, Level, Volume, Flow,
Linearization Table, Submersible
Default: Distance

Volume Units (*Vol Unit*)

Selects the units of volumetric measurements.

Cubic Feet, Million Cubic Feet,
Gallons, Cubic Meters, Liters
Default: Cubic Feet

Flow Rate (TimeUnit)

Selects the time unit to be used in the flow rate calculation.

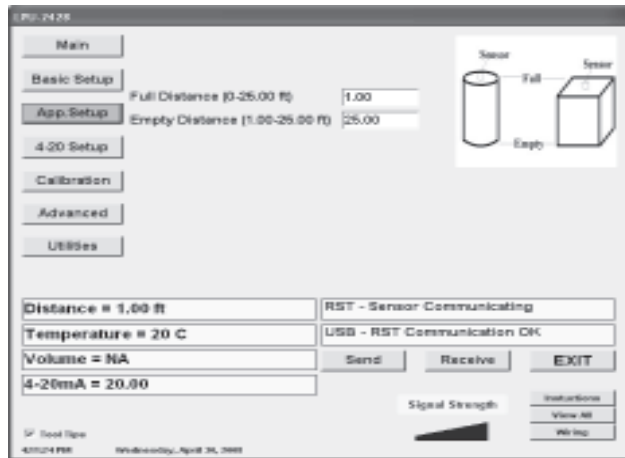
- Per Second, Per Minute,
- Per Hour, Per Day
- Default: Per Minute

Response Time (Response)

Selects the desired response time. Faster response times equate to a less stable output.

- Standard (most filtering)
- Fast
- Immediate (least filtering)
- Default: Standard

Application (App.) Setup (Applicat)



Max Distance - Distance Mode (Max Dist)

Selects the maximum operating range of the sensor.

- 1.00 – 25.00 ft
- Default: 25.00 ft

Full Distance - Level & Volume Mode (*Ful Dist*)

The distance from the sensor face to the top of the tank. This parameter is usually set to zero if the sensor is mounted at the top of the tank.

0.00 – 25.00 ft
 Default: 1.00 ft

Empty Distance - Level & Volume Mode (*Emp Dist*)

The distance from the sensor face to the bottom of the tank.

1.00 – 25.00 ft
 Default: 25.00 ft

Volume Tank Type - Volume Mode (*TankType*)

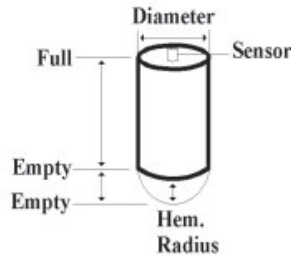
Standing Cylindrical Tank with Hemispherical Bottom (*SCTWHB*)

Full Distance
 0.00 – 25.00 ft
 Default: 1.00 ft

Empty distance
 1.00 – 25.00 ft
 Default: 25.00 ft

Tank Diameter
 0.00 – 100.00 ft

Radius of Hemisphere
 0.00 – 100.00 ft

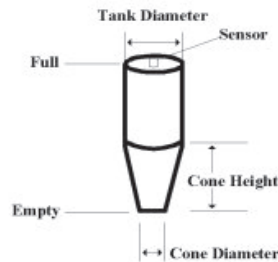


Standing Cylindrical Tank with Conical Bottom (*SCTWCB*)

Full Distance
 0.00 – 25.00 ft
 Default: 1.00 ft

Empty distance
 1.00 – 25.00 ft
 Default: 25.00 ft

Tank Diameter
 0.00 – 100.00 ft



Cone Diameter
0.00 – 100.00 ft

Cone Height
0.00 – 25.00 ft

Standing Rectangular Tank with or without Chute (*SRT*)

Full Distance
0.00 – 25.00 ft
Default: 1.00 ft

Empty distance
1.00 – 25.00 ft
Default: 25.00 ft

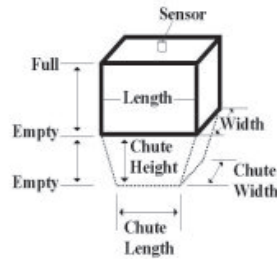
Tank Length
0.00 – 100.00 ft

Tank Width
0.00 – 100.00 ft

Chute Length
0.00 – 25.00 ft

Chute Width
0.00 – 25.00 ft

Chute Height
0.00 – 25.00 ft

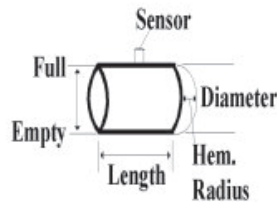


Horizontal Cylindrical Tank (*HCT*)

Full Distance
0.00 – 25.00 ft
Default: 1.00 ft

Empty distance
1.00 – 25.00 ft
Default: 25.00 ft

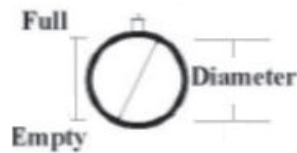
Tank Length
0.00 – 100.00 ft



Tank Diameter
 0.00 – 100.00 ft
 Radius of Hemisphere
 0.00 – 25.00 ft

Spherical Tank (*ST*)

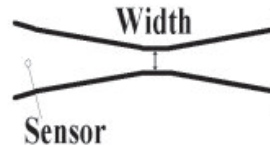
Full Distance
 0.00 – 25.00 ft
 Default: 1.00 ft
 Empty Distance
 1.00 – 25.00 ft
 Default: 25.00 ft
 Tank Diameter
 0.00 – 100.00 ft



Flow Type - Flume (*FlowType*)

Parshall (*Parshall*)

Max Flow
 0.00 – 25.00 ft
 Default: 1.00 ft
 Zero Flow
 1.00 – 25.00 ft
 Default: 25.00 ft
 Constant K
 0.00 – 12000.00
 Exponent n
 0.00 – 2.00



Cutthroat (*CutThroa*)

Max Flow
 0.00 – 25.00 ft
 Default: 1.00 ft
 Zero Flow

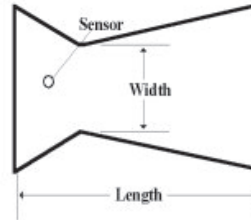
1.00 – 25.00 ft
 Default: 25.00 ft

Constant K
 0.00 – 480.00

Exponent n1
 0.00 – 2.00

Throat Width
 0.00 – 25.00 ft

Exponent n2
 0.00 – 2.00



Flow Type - Weir (Weir)

California Pipe (Californ)

Max Flow
 1.00 – 25.00 ft
 Default: 1.00 ft

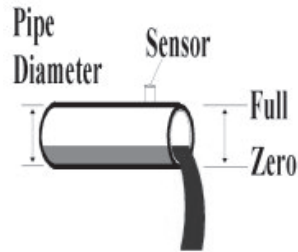
Zero Flow
 1.00 – 25.00 ft
 Default: 25.00 ft

Constant K
 0.00 – 1200.00

Exponent n1
 0.00 – 2.00

Diameter of Pipe
 0.00 – 25.00 ft

Exponent n2
 0.00 – 3.00



Rectangular w/ constrictions (Rect w/c)

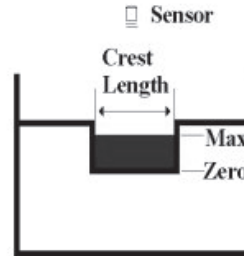
Max Flow
 0.00 – 25.00 ft
 Default: 1.00 ft

Zero Flow
 1.00 – 25.00 ft
 Default: 25.00 ft

Constant K
 0.00 – 420.00

Exponent n
 0.00 – 2.00

Crest Length
 0.00 – 25.00 ft



Rectangular w/o constrictions (*Rect w/o*)

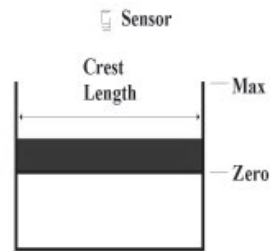
Max Flow
 0.00 – 25.00 ft
 Default: 1.00 ft

Zero Flow
 1.00 – 25.00 ft
 Default: 25.00 ft

Constant K
 0.00 – 420.00

Exponent n
 0.00 – 2.00

Crest Length
 0.00 – 25.00 ft

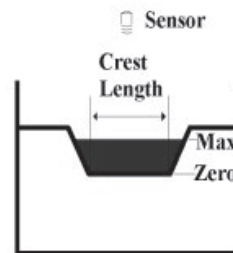


Trapezoidal (*Trapazod*)

Max Flow
 0.00 – 25.00 ft
 Default: 1.00 ft

Zero Flow
 1.00 – 25.00 ft
 Default: 25.00 ft

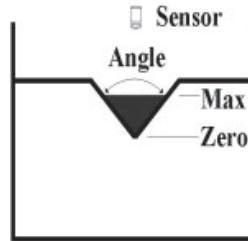
Constant K



0.00 – 420.00
 Exponent n
 0.00 – 2.00
 Crest Length
 0.00 – 25.00 ft

Triangular or V-Notch (*Triangul*)

Max Flow
 0.00 – 25.00 ft
 Default: 1.00 ft
 Zero Flow
 1.00 – 25.00 ft
 Default: 25.00 ft
 Constant K
 0.00 – 270.00
 Exponent n
 0.00 – 3.00



Equation (*Equation*)

$Q = KH^n (I)$

Max Flow
 0.00 – 25.00 ft
 Default: 1.00 ft
 Zero Flow
 1.00 – 25.00 ft
 Default: 25.00 ft
 Constant K
 0.00 – 10e308
 Exponent n
 0.00 – 10e308



$$Q=KLH^n (2)$$

Max Flow

0.00 – 25.00 ft

Default: 1.00 ft

Zero Flow

1.00 – 25.00 ft

Default: 25.00 ft

Constant K

0.00 – 10e308

Exponent n

0.00 – 10e308

Length

0.00 – 10e308

$$Q=K[L-XH]H^n (3)$$

Max Flow

0.00 – 25.00 ft

Default: 1.00 ft

Zero Flow

1.00 – 25.00 ft

Default: 25.00 ft

Constant K

0.00 – 10e308

Exponent n

0.00 – 10e308

Length

0.00 – 10e308

Constant X

0.00 – 10e308

$$Q=K[B-A/D]^{n1}P^{n2} (4)$$

Max Flow

0.00 – 25.00 ft

Default: 1.00 ft

Zero Flow

1.00 – 25.00 ft
 Default: 25.00 ft

Constant K

0.00 – 10e308

Exponent n1

0.00 – 10e308

Constant D

0.00 – 10e308

Exponent n2

0.00 – 10e308

Linearization Table (Only available through computer software)

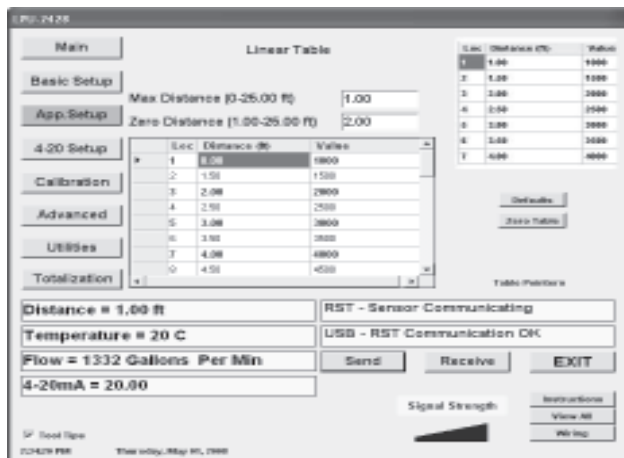
Used for non-linear open channels and tanks. Linearization table holds up to 32 entries.

Max Distance

0.00 – 25.00 ft
 Default: 1.00 ft

Zero Distance

1.00 – 25.00 ft
 Default: 25.00 ft





Submersible (Submersi)

Used to directly replace a pressure transducer.

Submersible Range

0.00 – 25.00 ft

Default: 1.00 ft

Depth Distance: this parameter is used to limit the high end of the analog output so that it will not go above a programmed value. This setting becomes the output that is selected at the 20 mA distance. It can be used if it is desired for the sensor to directly replace a pressure transducer.

1.00 – 25.00 ft

Default: 25.00 ft

Transducer PSI to Milliamp Chart											
0-5 PSI	milliamp	Feet	0-10 PSI	milliamp	Feet	0-15 PSI	milliamp	Feet	0-100 PSI	milliamp	Feet
0	4.0	0.0	0	4.0	0.0	0	4.0	0.0	0	4.0	0.0
1	7.2	2.3	1	5.6	2.3	1	5.1	2.3	5	4.8	11.6
2	10.4	4.6	2	7.2	4.6	2	6.1	4.6	10	5.6	23.1
3	13.6	6.9	3	8.8	6.9	3	7.2	6.9	15	6.4	34.7
4	16.8	9.2	4	10.4	9.2	4	8.3	9.2	20	7.2	46.2
5	20.0	11.6	5	12.0	11.6	5	9.3	11.6	25	8.0	57.8
			6	13.6	13.9	6	10.4	13.9	30	8.8	69.3
			7	15.2	16.2	7	11.5	16.2	35	9.6	80.9
			8	16.8	18.5	8	12.5	18.5	40	10.4	92.4
			9	18.4	20.8	9	13.6	20.8	45	11.2	104.0
			10	20.0	23.1	10	14.7	23.1	50	12.0	115.5
						11	15.7	25.4	55	12.8	127.1
						12	16.8	27.7	60	13.6	138.6
						13	17.9	30.0	65	14.4	150.2
						14	18.9	32.3	70	15.2	161.7
						15	20.0	34.7	75	16.0	173.3
									80	16.8	184.8
									85	17.6	196.4
									90	18.4	207.9
									95	19.2	219.5
									100	20.0	231.0

4-20 Setup (4-20 Set)

In Distance mode, the zero reference is from the face of the sensor. In Level, Volume, or Flow modes, zero is referenced from the Zero Distance, Empty Distance, or Zero Flow.

Minimum (Min) mA Setpoint (MinMaSet)

Sets the minimum mA distance, level, volume, or flow.

0.00 – 25.00 ft (Distance/Level)
 Default: 1.00 ft

Maximum (Max) mA Setpoint (MaxMaSet)

Sets the maximum mA distance, level, volume, or flow.
 0.00 – 25.00 ft (Distance/Level)
 Default: 25.00 ft

Fail Safe (FailSafe)

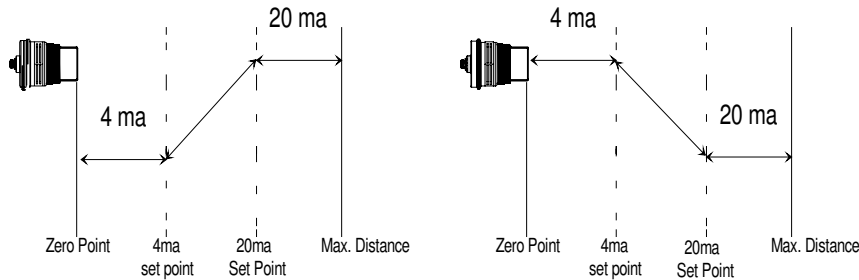
Determines the output condition of the sensor in the event of a Loss of Echo.

Hold, 3.8 mA, 22 mA
 Default: Hold

Fail Safe Delay (FS Delay)

Sets the delay in seconds before the sensor will output a Fail Safe condition.

15 – 9999 Seconds
 Default: 15 Seconds



Calibration (Calibrat)

Min mA Value (MinMaVal)

Limits the low end of the mA output.
 4.00 – Max mA Value
 Default: 4.00

Max mA Value (*MaxMaVal*)

Limits the high end of the mA output.

Min mA Value – 20.00

Default: 20.00

Min mA Trim (*Min Trim*)

Fine tunes the minimum mA current. For example, if the 4 mA on the input device is reading 3.95 mA, increasing this parameter will increase the minimum mA output.

0 – 999

Default: 500

Max mA Trim (*Max Trim*)

Fine tunes the maximum mA current. For example, if the 20 mA on the input device is reading 20.15, decreasing this parameter will decrease the maximum mA output.

0 – 999

Default: 500

Multiplier (*Multipli*)

Calibrates the sensor for variations in the speed of sound due to irregular atmospheric conditions.

0 – 1.999

Default: 1.000

Offset (*Offset*)

Adjusts the zero reference at the sensor face.

-3.00 ft to +3.00 ft

Default: 0.00

Advanced (*Advanced*)**Temperature Compensation** (*TempComp*)

Compensates for changes in the speed of sound due to temperature changes. Note: if the internal temperature compensation is used, care must be taken that the sensor is not exposed to direct sunlight. The

radiant heat of the sun can heat the sensor above the ambient temperature causing the sensor to over compensate for temperature changes.

ON/OFF
Default: ON

Gain Control (*GainCont*)

Selects the gain control functions in the sensor.

Manual = user controls the Sensitivity & Pulses
AutoSense = sensor controls Sensitivity & Pulses
Hard Target = user controls the Sensitivity & Pulses
but the gain comes up slower
Soft Target = user controls the Sensitivity & Pulses
but the gain comes up faster
Default: AutoSense

Sensitivity (*Sensitiv*)

Sets the maximum level of gain that is applied to the echo. If Gain Control is set to AutoSense, this parameter limits the maximum gain used by the AutoSense feature.

0 to 100 %
Default: 100%

Pulses (*Pulses*)

Sets the number of pulses per transmit burst. If Gain Control is set to AutoSense, this parameter limits the maximum pulses used by the AutoSense feature. In acoustically active applications or small enclosed areas, decreasing the number of pulses helps to reduce multiple echoes.

0 – 16 pulses
Default: 16

Blanking (*Blanking*)

Sets a dead band distance in front of the sensor. Because of the physical properties of an ultrasonic sensor, objects cannot be detected approximately one foot from the face of the transducer. The Blanking



can be extended and used to ignore unwanted targets close to the sensor such as welds, seams, pipe fittings, and gaskets.

1.00 – 25.00 ft
Default: 1.00 ft

Utilities (*Utilitie*)

Simulation allows the user to input a simulated low level, high level and the cycle time of the simulation. After these parameters are entered and the simulation is activated the level reading will move linearly between the programmed points at the specified interval.

Low Distance Simulation (*LoDisSim*)

1.00 – 25.00 ft
Default: 1.00

High Distance Simulation (*HiDisSim*)

1.00 – 25.00 ft
Default: 25.00

Simulation Cycle Time (*SimCycle*)

ON/OFF 0 – 9 seconds = OFF, 15 – 9999 = ON
Default = OFF

Reset (*Reset*)

Resets the sensor to factory defaults.

No Reset – Sensor Reset
Default: No Reset

File System (*Only available through computer software*)

Allows the user to save, load and edit text files that contain sensor parameters.

Sensor to File
File to Sensor
Compare Sensor to File
Default: none



Software Version (Version)

Displays the current software version running in the sensor.

Totalization (Totalize)

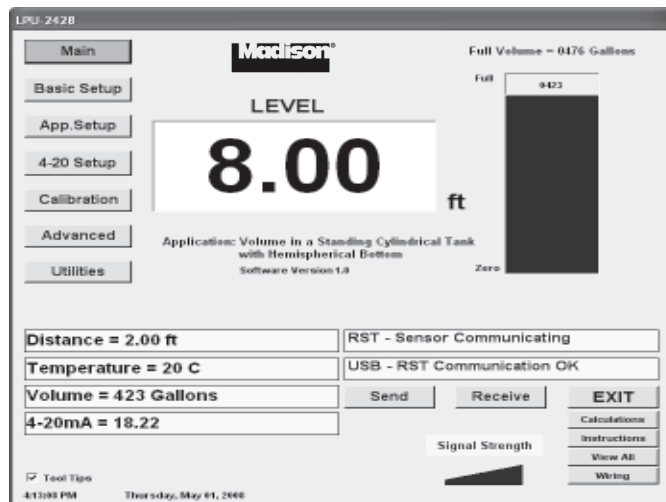
The sensor will have 2 flow totalizers. Totalization will update to software in increments of one minute.

- Non resettable totalizer
- Resettable totalizer
- Reset - Option to reset one totalizer

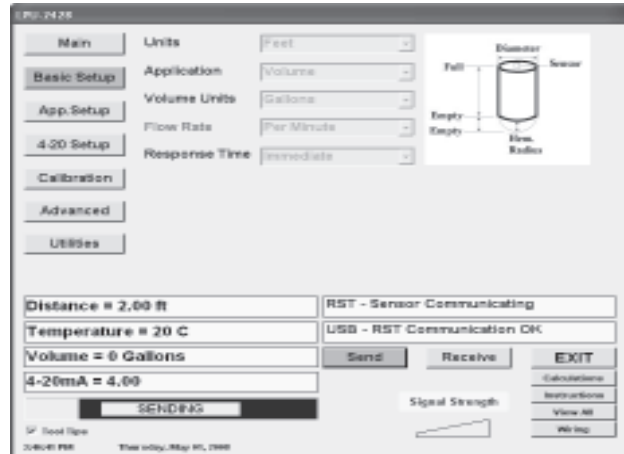
Programming Example:

Examples for each set of application (i.e., distance, level, volume, flow, linearization table, and submersible) can be found by clicking the Instructions button in the computer software. The following Volume application is taken from these examples.

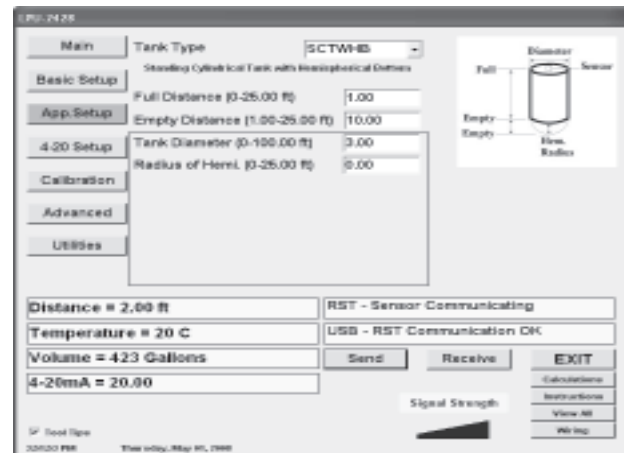
The U4467-2428 is mounted at the top of a 10 ft standing cylindrical tank with diameter of 3 ft. The sensor needs to be setup to monitor volume in gallons from 1 to 9 ft (remember sensor has a 1 foot blanking distance).



Click Basic Setup.
 Select Units to Feet.
 Set Application to Volume.
 Select Volume Units to Gallons.
 Press Send to save (Wait until progress bar completes).



Click App. setup.
 Set Tank Type to SCTWBH (Standing Cylindrical Tank with Hemispherical Bottom).
 Set Full Distance to 1 ft.
 Set Empty Distance to 10 ft.
 Set Tank Diameter to 3 ft. and set Radius of Hemi. to 0 ft.



Click 4-20 setup.
Set Min Ma Set point (4mA). This value is usually set to zero.
Set Max Ma set point (20mA).
Press Send to save (wait until progress bar completes).



Specifications - U4467-2428

Operating Range	1 ft. to 25 ft. (0.3 m - 7.62 m)
Supply Voltage	12 to 28 VDC
Output	4-20 mA (Max 600 ohms @ 24 VDC) 4-20 mA (Max 150 ohms @ 12 VDC) (Includes barrier resistance)
Resolution	0.1 in. (2.54 mm)
Accuracy	+/- 0.25% of range with no temp gradient
Sensor Adjustments	Interface through RST-4001
Maximum Current Draw	4-20 mA (22 mA max in Fail Safe)
Transducer Type	Flat ceramic sealed PVDF face
Operating Temperature	-40 to 60°C
Internal Temp. Compensation	Yes
Sample Rate	3 sec at 4 mA - 0.6 sec at 20 mA
Beam Pattern	9° off axis
Enclosure	NEMA 4X , IP65
Cable Connection	2 terminals
Approvals	Class I, Div. 1, Groups C & D Class I, Zone 0, AEx ia IIB, T3; IP65

Dimensions - in./mm

