



Sensing Solutions since 1959

U5098 Series Technical Data Sheet

Ultrasonic Level Sensor, Polypropylene, G 2" (NPT), 4-20mA Output, Dual SPST Relay, Push Button Programmable

Accurate measurement of liquid volumes at any point in a container is critical for many commercial and industrial processes. Reducing process variability results in less waste, higher quality and reduced cost, and can make a big difference in profitability for OEMs.

Ultrasonic technology for liquid level measurement should be considered:

- For non-contact continuous level measurement
- When moving parts could stick
- When the liquid being measured is heavily agitated
- When the liquid being measured is thick, sticky, film-causing, or semi-solid
- When solids are to be measured
- When tanks are in remote areas

Madison Company offers the NEW U5098 ultrasonic sensor to address a wide range of applications. The U5098 can be used to continuously measure semi-solid, corrosive, and viscous medias, slurries and even some solids. It can be used indoor or outdoors, is low maintenance and can be cost-effective in difficult applications.

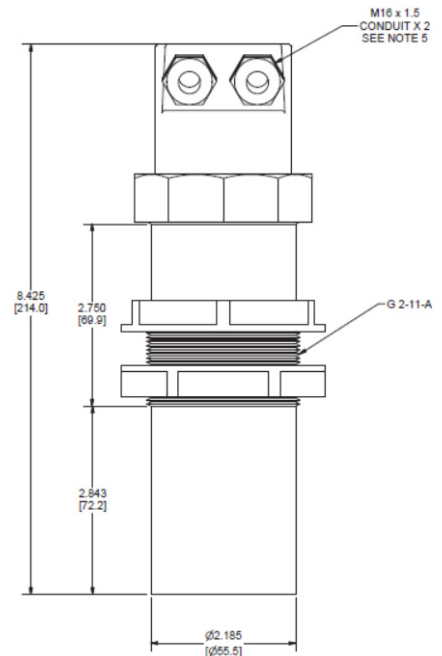


U5098 Ultrasonic Level Measurement Sensor Features:

- Non-contact measurement of difficult liquids
- Sensing ranges from 0.8 to 32 feet
- Can be combined with Madison panel meters for a readily available way to read the 4-20mA output
- 2 programmable relays capable of 3 amps each for switching controllers, valves, small pumps, etc.
- Beam Angle: 10 degree (3.2' dia. @ 19', 5.25' dia. @ 32')
- 2" fittings for commercial and industrial applications
- Bench or field-calibrated through a push button on the sensor or communications with a PC
- Temperature-compensated signal for improved accuracy
- Unaffected by the target material's color, shape or physical composition

Applications:

- Food and beverage
- Water and wastewater
- Fuel, chemicals and oils measurement
- Slurries and solids
- Open channel flow measurement



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Specifications

Sensing Range	0.8 to 19 ft (0.25 to 6 m) or 1.3 to 32 ft (0.4 to 10 m)
Mounting	G 2" Polypropylene threads (Fits 2" NPT)
Input Voltage	20-30 VDC , 22-27 VAC, 120 VAC, 240 VAC
Power Draw	2 Watts
Output	4-20 mA
Accuracy	±0.2% max of full range
Resolution	0.04" (1.02 mm)
Beam Angle	10 degree
Calibration	Push Button or via Software
Communication	RS-485 w/ MODBUS
Temperature range	-22 to 158°F (-30 to 70°C)
Max Pressure	7.25 PSI (0.5 bar)
Ingress Protection	IP66
Programmable Relays, (2)	3A@240VAC SPST NO
Approvals	CE

How They Work

Ultrasonic sensors work on the basic principle of sound waves (mechanical energy) to determine material level.

The sensor emits a high frequency pulse above human hearing (20-20 KHz). The ultrasonic transducer, in transmit mode, generates a high-pressure sound wave (similar to a loud-speaker) that propagates to a target and then reflects back from the products surface (echo). The transducer then switches to receiver mode (similar to a microphone) to listen for the reflected wave (echo). The reflected wave is then converted to an electrical signal that is converted to give the distance to a specific target.

The changing distance to a target is converted to a linear 4mA to 20mA current output to provide continuous level measurement. Ultrasonic sensors can be easily programed, on site via push button programming, or by PC, for different application heights within their range.

Madison's industry expertise is not only in the manufacture of high-quality ultrasonic level sensors, but also in the recommendation of the proper ultrasonic level sensor type. Madison's trained experts will consider fluid composition, chemical compatibility, container size and shape, agitation and by-products (foam or vapor), and level range to provide the correct solution. If a standard ultrasonic sensor will not work for the application, Madison can custom engineer a solution in as little as 4 days, once the requirements are established.

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19' Models and Specifications				
Model	U5098-D024-019	U5098-A024-019	U5098-A120-019	U5098-A240-019
Beam Angle	10°	10°	10°	10°
Range	0.8 - 19.7 ft. (0.25 to 6 m)	0.8 - 19.7 ft. (0.25 to 6 m)	0.8 - 19.7 ft. (0.25 to 6 m)	0.8 - 19.7 ft. (0.25 to 6 m)
Resolution	0.04" (1mm)	0.04" (1mm)	0.04" (1mm)	0.04" (1mm)
Temperature	-22 to 158°F (-30 to 70°C)	-22 to 158°F (-30 to 70°C)	-22 to 158°F (-30 to 70°C)	-22 to 158°F (-30 to 70°C)
Pressure, Max.	7.25 PSI (0.5 bar)	7.25 PSI (0.5 bar)	7.25 PSI (0.5 bar)	7.25 PSI (0.5 bar)
Ingress Protection	IP66	IP66	IP66	IP66
Input Power	20 - 30 VDC	22 - 27 VAC	120 VAC	240 VAC
Output	4 - 20 mA	4 - 20 mA	4 - 20 mA	4 - 20 mA
Relay (Form A)	3A@240VAC SPST NO	3A@240VAC SPST NO	3A@240VAC SPST NO	3A@240VAC SPST NO
Comm.	RS-485 w/ Modbus	RS-485 w/ Modbus	RS-485 w/ Modbus	RS-485 w/ Modbus
Mounting	G 2" (NPT)	G 2" (NPT)	G 2" (NPT)	G 2" (NPT)

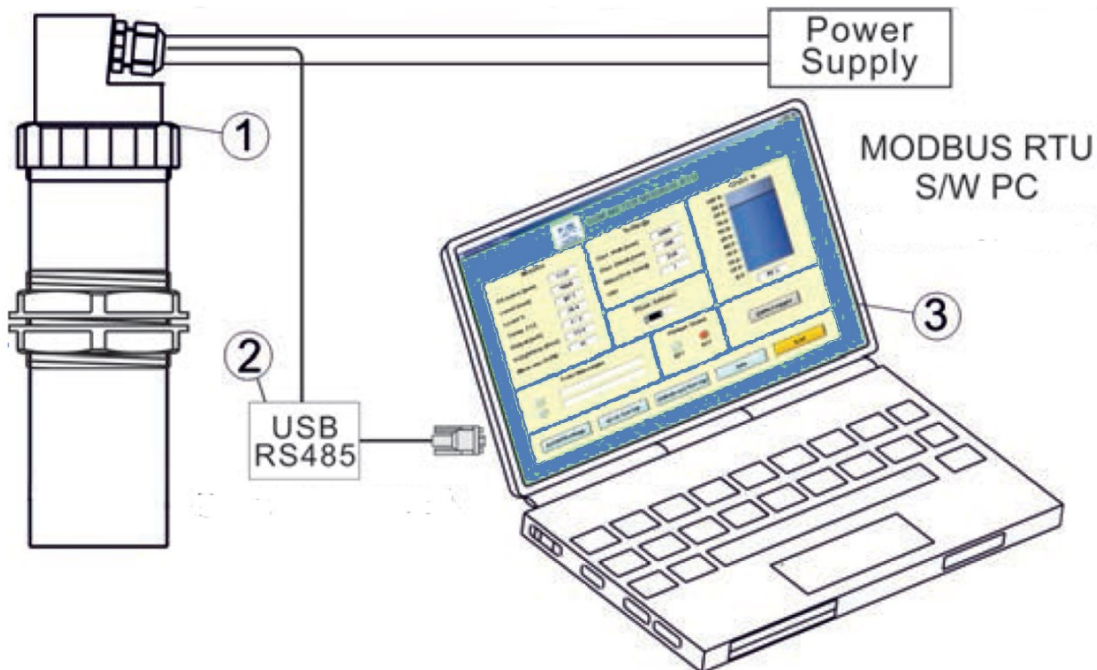
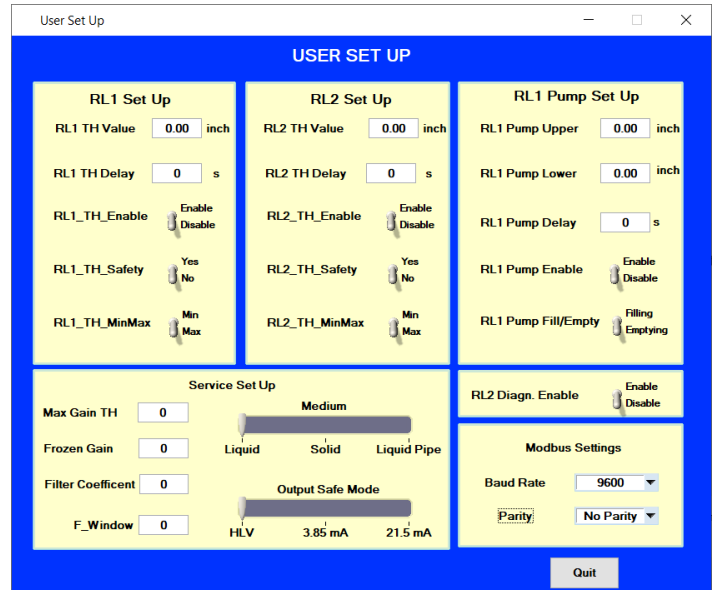
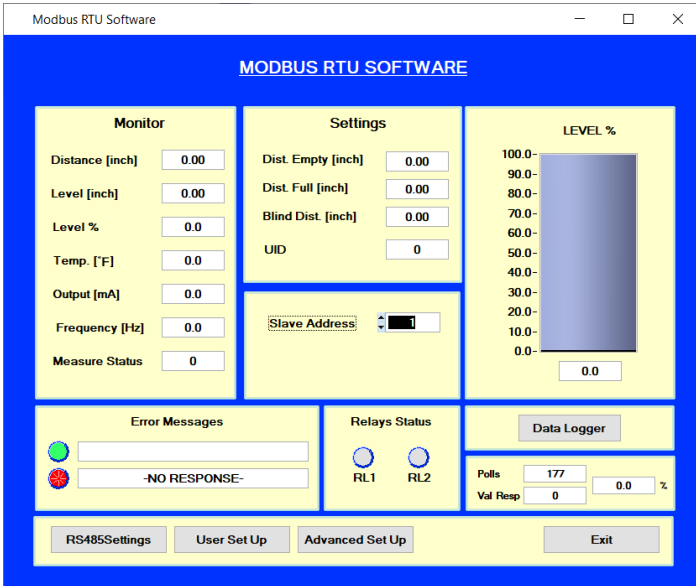
32' Models and Specifications				
Model	U5098-D024-032	U5098-A024-032	U5098-A120-032	U5098-A240-032
Beam Angle	10°	10°	10°	10°
Range	1.3 - 32.8 ft. (0.4 to 10m)	1.3 - 32.8 ft. (0.4 to 10m)	1.3 - 32.8 ft. (0.4 to 10m)	1.3 - 32.8 ft. (0.4 to 10m)
Resolution	0.04" (1mm)	0.04" (1mm)	0.04" (1mm)	0.04" (1mm)
Temperature	-22 to 158°F (-30 to 70°C)	-22 to 158°F (-30 to 70°C)	-22 to 158°F (-30 to 70°C)	-22 to 158°F (-30 to 70°C)
Pressure, Max.	7.25 PSI (0.5 bar)	7.25 PSI (0.5 bar)	7.25 PSI (0.5 bar)	7.25 PSI (0.5 bar)
Ingress Protection	IP66	IP66	IP66	IP66
Input Power	20 - 30 VDC	22 - 27 VAC	120 VAC	240 VAC
Output	4 - 20 mA	4 - 20 mA	4 - 20 mA	4 - 20 mA
Relay (Form A)	3A@240VAC SPST NO	3A@240VAC SPST NO	3A@240VAC SPST NO	3A@240VAC SPST NO
Comm.	RS-485 w/ Modbus	RS-485 w/ Modbus	RS-485 w/ Modbus	RS-485 w/ Modbus
Mounting	G 2" (NPT)	G 2" (NPT)	G 2" (NPT)	G 2" (NPT)



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The communications software allows viewing and setting the transducers operation parameters.

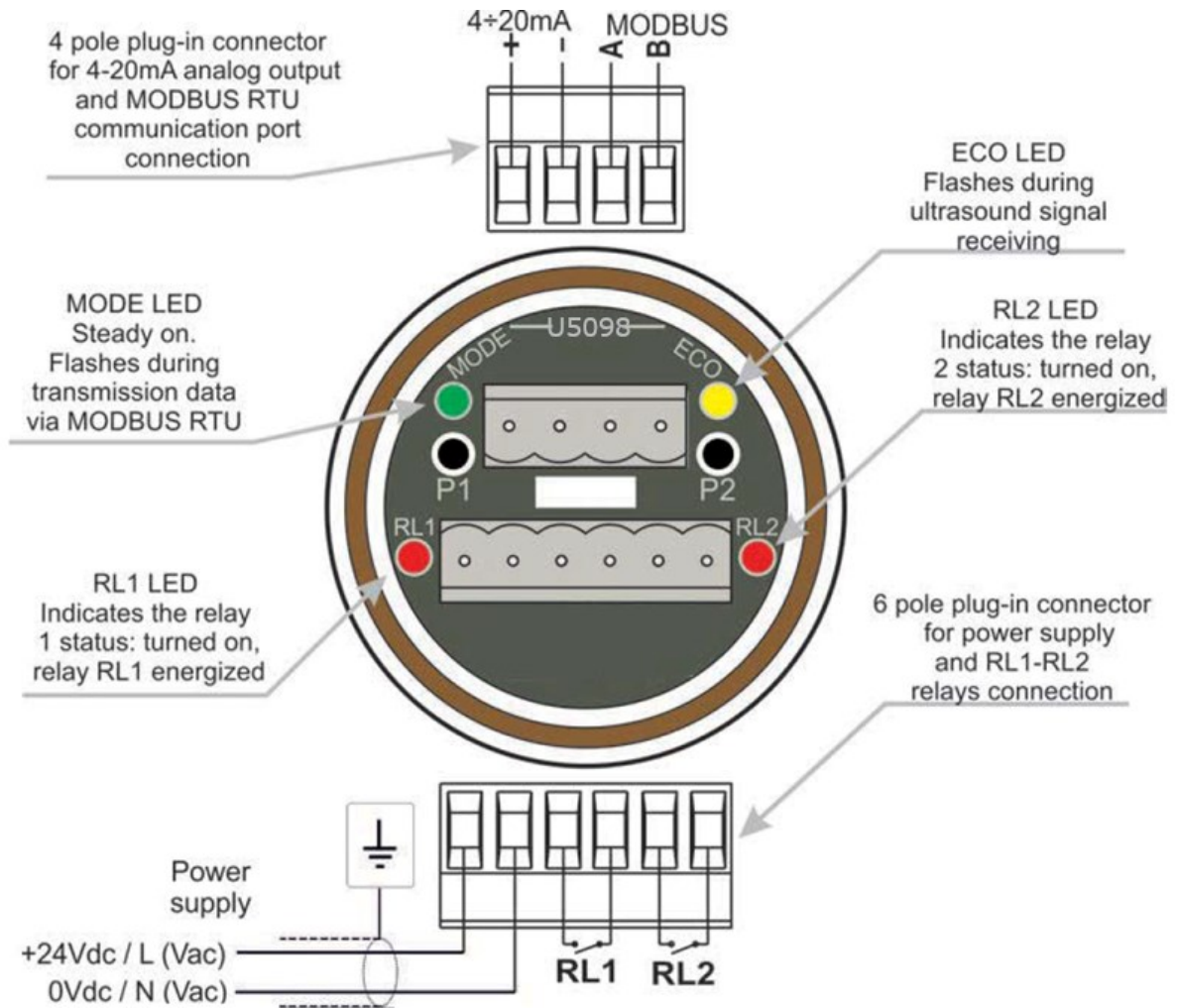


- 1) U5098 Ultrasonic Sensor
- 2) Optional RS-485 to USB converter module. Required if PC doesn't have RS-485 port. USB Converter module readily available online.
- 3) Included Modbus RTU Software (P/N 035-M00011).



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