



ultrasonic sensing



■ **Description**

The IRU-9400 series sensors use ultrasonic technology to provide a non-contact method of detecting level, presence/absence, volume, proximity and distance measurements. This versatility makes ultrasonics ideal for a variety of applications.

Ultrasonic sensors transmit pulsed waves of high frequency sound. If the sound wave meets a reflective object, such as liquid, it bounces back toward the sensor. The sensor records the time required for the sound wave to travel to the target and return. Using the speed of sound, which is a well-known variable, the sensor calculates the distance to the object.

Until recently, the many factors that influence the speed of sound created inaccurate readings. Now with low cost microprocessor technology, many of these variables can be factored into the equation and eliminated. Temperature change is one such variable. The IRU-9000 sensors use internal temperature compensation to offset the effects of these changes. The IRU-9000 can also compensate for other variables, such as wave action, agitators, and humidity. Sensor adjustments are made via a computer USB interface using an RST module* and Windows™ compatible software.

*The RST module is sold separately. The software is included with RST unit.

IRU-9400

Self-Contained Ultrasonic Sensor

- Range from 0.5 to 35 ft. (150 mm to 10.67 m)
 - Self-contained sensor
 - Works on solids and liquids
 - Easy to install
 - Easily configured for obstacle detection applications
 - Internal temperature compensation
 - Virtually maintenance free
 - Programmed via computer interface using the RST-3001 (USB) or the RST-2001A (RS-232) module or RS-232 and Windows™ compatible software
- Optional Outputs**
- 4-20 mA
 - 4-20 mA with (2) programmable NPN transistor outputs
 - 0-2.5 V/0-5 V (selectable via software)



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■ Specifications

Operating Range: 0.5 to 35 ft. (0.15 to 10.67 m)
Available Outputs: 4-20 mA, 4-20 mA + (2) NPN, 0-2.5 V/0-5 V (selectable via software)
Operating Voltage: 12-28 VDC
Programming Voltage: 15-28 VDC
Total Current Draw: 75 mA @ 24 VDC
Maximum Power Rating: 2.5 W
Housing: Poly carbonate/PET blend
Mounting: 2 in. NPT or 3/4 in. NPT
Transducer Type: Electrostatic
Ratings: NEMA 12
Approvals: CSA General Purpose (pending)
Response Time: Programmable (20 ms minimum)
Sample Rate: Programmable (1-22 Hz)
Resolution: 0.1 in. (2.5 mm)
Accuracy: ± 0.25% of detected range (with no temperature gradient)
Adjustments: USB interface using RST- 3001, or RS-232 interface using RST-2001A
Operating Temperature: -40 to +140°F (-40 to 60°C)
Beam Pattern: 9° off axis (at full signal strength and sensitivity settings)
Electrical Connection: Pigtail or micro connector
Frequency: 50 kHz

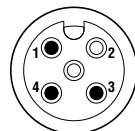
Specifications are subject to change without notice.

■ Wiring

IRU-9423-C

Red	+24 VDC
Black	Ground
White	mA+

IRU-9423-M

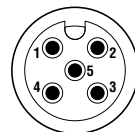


1	Brown	+24 VDC
2	White	Not used
3	Blue	Ground
4	Black	mA+

IRU-9425-C

Red	+24 VDC
Black	Ground
White	NPN 1
Green	NPN 2
Orange	mA+

IRU-9425-M

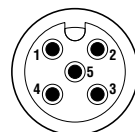


1	Brown	+24 VDC
2	White	NPN 1
3	Blue	Ground
4	Black	mA+
5	Grey	NPN 2

IRU-9429-C

Red	+24 VDC
Black	Ground
White	Voltage out
Green	Analog ground
Orange	Excitation

IRU-9429-M

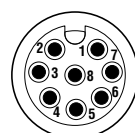


1	Brown	+24 VDC
2	White	Voltage out
3	Blue	Ground
4	Black	Analog ground
5	Grey	Excitation

IRU-9429S-C

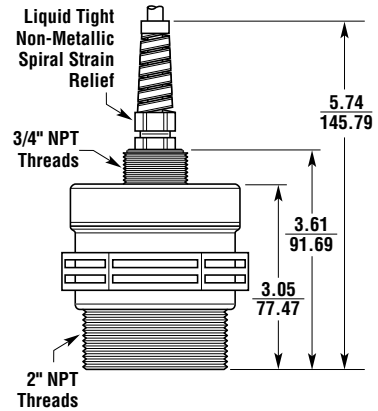
Red	+24 VDC
Black	Ground
Orange	Excitation
White	Voltage out
Green	Analog ground
Brown	RS-232 ground
Yellow	RS-232 TX
Blue	RS-232 RX

IRU-9429S-M

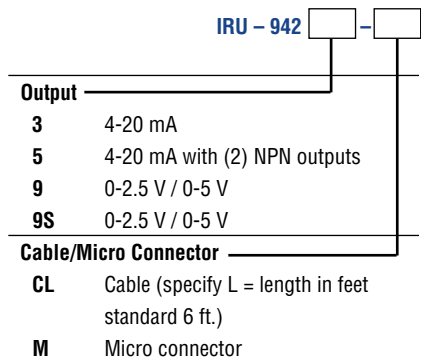


1	White	Voltage out
2	Brown	+24 VDC
3	Green	Analog ground
4	Yellow	RS-232 TX
5	Grey	RS-232 ground
6	Pink	RS-232 RX
7	Blue	Ground
8	Red	Excitation

■ Dimensions — in./mm



■ Ordering Information



Accessories

Over Molded Extension Cables with Foil Shield

4 Conductor	Part Number
Straight, 2 m	135407-0002
Right angle, 2 m	135407-1002
Straight, 5 m	135407-0005
Right angle, 5 m	135407-1005
5 Conductor	
Straight, 2 m	135415-0002
Right angle, 2 m	135415-1002
Straight, 5 m	135415-0005
Right angle, 5 m	135415-1005
8 Conductor	
Straight, 2 m	135423-0002
Right angle, 2 m	135423-1002
Straight, 5 m	135423-0005
Right angle, 5 m	135423-1005

For information on ultrasonic sensing accessories, see www.apgsensors.com