



ultrasonic sensing



■ **Description**

The IRU-5000 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-5000 sensors use internal temperature compensation to offset the effects of these changes. The IRU-5000 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-5000

## Self-Contained Ultrasonic Sensor

- Range from 4 to 79 in. (102 to 2007 mm)
  - Self-contained sensor
  - Works on solids and liquids
  - Easy to install
  - APG's AutoSense Software for hassle-free setup
  - Internal temperature compensation
  - Virtually maintenance free
  - Programmed via computer interface using the RST-3001 (USB) or the RST-2001A (RS-232) module 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)



ultrasonic sensing

■ Specifications

<b>Operating Range:</b> 4 to 79 in. (102 to 2007 mm)
<b>Available Outputs:</b> 4-20 mA, 4-20 mA + (2) NPN, or 0-2.5 V/0-5 V (selectable via software)
<b>Operating Voltage:</b> 12-28 VDC
<b>Programming Voltage:</b> 15-28 VDC
<b>Total Current Draw:</b> 75 mA @ 24 VDC
<b>Maximum Power Rating:</b> 2.5 W
<b>Housing:</b> Poly carbonate/PET blend
<b>Mounting:</b> 1 in. NPT, 2 in. NPT, or 2 in. sanitary 3A flange
<b>Transducer Type:</b> PVDF-faced ceramic
<b>Ratings:</b> NEMA 4X
<b>Approvals:</b> Class 1 Div. 2 groups A, B, C, D (pending)
<b>Response Time:</b> Programmable (20 ms minimum)
<b>Sample Rate:</b> Programmable (1-22 Hz)
<b>Resolution:</b> 0.1 in. (2.5 mm)
<b>Accuracy:</b> ± 0.25% of detected range (with no temperature gradient)
<b>Adjustments:</b> USB interface using RST- 3001, or RS-232 interface using RST-2001A
<b>Operating Temperature:</b> -40 to +140°F (-40 to 60°C)
<b>Beam Pattern:</b> 9° off axis (at full signal strength and sensitivity settings)
<b>Electrical Connection:</b> Pigtail or micro connector
<b>Frequency:</b> 143 kHz

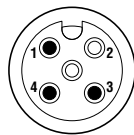
Specifications are subject to change without notice.

■ Wiring

**IRU-5xx3-C**

Red	+24 VDC
Black	Ground
White	mA+

**IRU-5xx3-M**

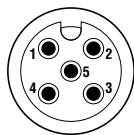


1	Brown	+24 VDC
2	White	Not used
3	Blue	Ground
4	Black	mA+
5	Grey	Not used

**IRU-5xx5-C**

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

**IRU-5xx5-M**

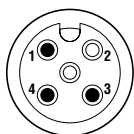


1	Brown	+24 VDC
2	White	NPN 1
3	Blue	Ground
4	Black	mA+
5	Grey	NPN 2

**IRU-5119-C**

Red	+24 VDC
Black	Ground
White	Voltage out

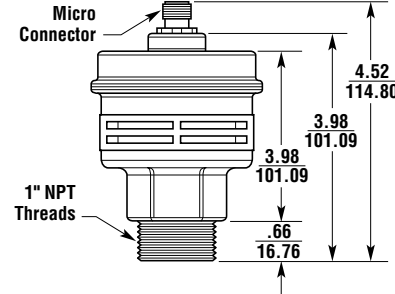
**IRU-5119-M**



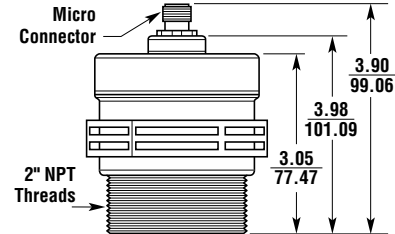
1	Brown	+24 VDC
2	White	Not used
3	Blue	Ground
4	Black	Voltage out
5	Grey	Not used

■ Dimensions — in./mm

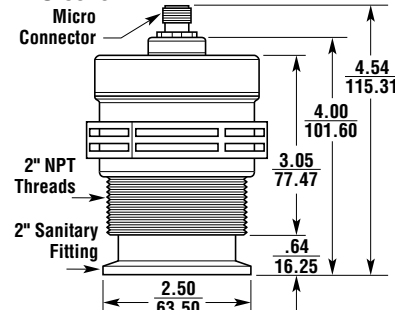
**IRU-5110**



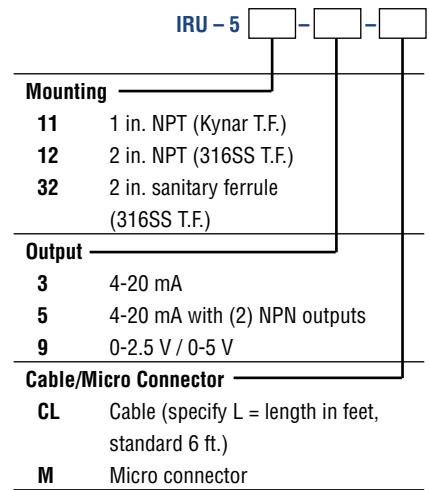
**IRU-5120**



**IRU-5320**



■ 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



For information on ultrasonic sensing accessories, see [www.apgsensors.com](http://www.apgsensors.com)