

# In-Line Transit-Time Ultrasonic Flow Meter

## Features

- Accuracy +/- 0.5% of reading
- Repeatability +/- 0.5% of reading
- Ultrasonic Flow meter for the detection of the flow rate of most liquids
- Ultra-precise patented time measurement technology measures the transit-time accurately between the upstream and downstream transducers
- Excellent zero tracking with no damping. Will measure down to zero flow
- Powder Coated Carbon Steel (150# ANSI or DN PN 10)
- NEMA 4X (IP66) die cast PC/ABS enclosure
- Power: 90 to 250 VAC, 48 to 63 Hz and 10 to 36 VDC
- Outputs: OCT pulse (1 Hz to 1 KHz); 0/4 to 20mA DC (500 Ohm max); Relay (on/off time <2 m sec, max current load 1.2 amps); RS 232
- Wide operating temperature range for measured fluid -40F to 176F (-40C to 80C)
- Wide bi-directional flow range of 0 to 23 ft/s liquids (0 to 7 m/s)
- In-line body sizes from 1.0" to 10" (65mm-250mm)

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# Innova-Sonic<sup>®</sup> Model 206 In-Line



## Description

**O**ur Innova-Sonic<sup>®</sup> Model 206 In-Line is a state-of-the-art digital correlation transit-time ultrasonic flow meter designed to give the end-user high performance at an affordable price. The instrument is designed specifically as an alternative choice or replacement for magnetic flow meter applications. The instrument is also an ideal choice for any liquid flow application found in general industry, and has been assessed by the American Bureau of Shipping (ABS) for shipboard use.

While principally designed for clean liquid applications, our Innova-Sonic In-Line is tolerant of liquids with small amounts of air bubbles or suspended solids common in most industrial environments. All flow meters in Sierra's Innova-Sonic family offer low power consumption, high reliability and outstanding applicability at an affordable price.

Our Innova-Sonic In-line is an order-of-magnitude improvement in transit-time ultrasonic flow meters and features our patented ultra-precise PicoFly™ measurement technology. An industry first, this advanced technology allows ultrasonic transit time-of-flight samples to be measured in picoseconds  $10^{-12}$  (one trillionth of a second) for superb resolution and tremendous low flow detection rather than the typical nanoseconds  $10^{-9}$  (one billionth of a second). In fact, the Innova-Sonic In-Line can read zero and track zero flow with no damping.

The Model 206 is designed specifically to offer as an alternative choice or replacement for magnetic flow meter applications. The instrument is also an ideal choice for any liquid flow application found in general industry.

The chart below shows how our Innova-Sonic® compare to a typical industrial Magnetic Flow Meter.

	Magnetic Flow Meters	Innova-Sonic® Model 206 In-Line Flow Meter
<b>Accuracy</b>	+/- 0.5% to +/- 1.0% of reading	+/-0.5% of reading
<b>Turndown</b>	Down to approx. 0.1 fps	Measure down to ZERO flow due to patented PicoFly™ technology
<b>Applicability</b>	Conductive Liquids Only. Cannot measure hydrocarbons, distilled water or many non-aqueous solutions	Any clean liquid. Can tolerate small amounts of suspended solids and air bubbles
<b>Economy</b>	Medium cost. Coriolis much higher cost, Turbine meters lower cost	Somewhat lower cost... Price comparable to high-end turbine meters, yet with higher accuracy and less maintenance (no moving parts)

Our Innova-Sonic® Model 206 In-line features accuracy of +/-0.5% of reading, repeatability of +/-0.5% of reading, a wide operating temperature range of -40F to +176F (-40C to 80C), and a bi-directional flow range of 0 to 23 ft/s liquids (0 to 7 m/s). The instrument is ideal for clean liquid applications and is tolerant of liquids with the small amount of air bubbles or suspended solids commonly found in most industrial flow applications.

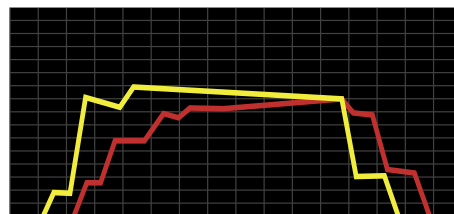


Figure above shows the much quicker response of the Innova-Sonic® (yellow line) as compared to a mag meter (red line) during a step change in flow.

### Performance Specifications

#### Flow range

0 to +/- 23 ft/s (0 to +/- 7 m/s)

#### Accuracy

+/- 0.5% of reading

#### Repeatability

+/- 0.5% of reading

#### In Line flow body size

1.0 in to 10 in (65mm to 250mm), 150# ANSI or DN PN 10 Flanges

### Operating Specifications

#### Outputs

Analog: 0/4 to 20mA, DC. Max load 500 ohms

OCT Pulse Output: 1 to 1000 Hz

Relay: On-off time <2 milliseconds, max current load 1.2A

#### Power supply

90 to 250 VAC, 48 to 63 Hz and 12 to 36 VDC

#### Keypad Programming

16 key 4 x 4 touch keypad on front of enclosure

#### Display

20 character, 2 line (20x2) alphanumeric, backlit LCD

#### Temperature

Fluid: -40C to 80C (-40F to 176F)

### Physical Specifications

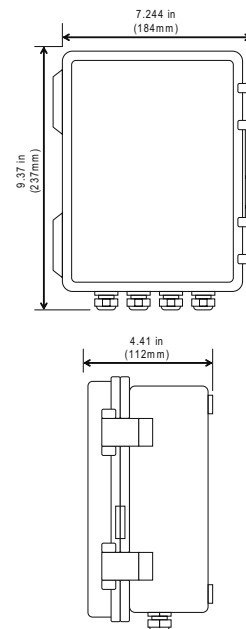
#### Transmitter

NEMA 4x (IP65), Die cast PC/ABS Enclosure

#### Transducer

Spool piece with wetted transducers NEMA6P (IP68), pressure rating 150 psig (10 barg).

Pipe size DN (inches)	Dimensions (inches)		
	L	H	W
<b>25 (1")</b>	400 (15")	120 (4.8")	180 (7.2")
<b>40 (1.5")</b>	450 (18")	135 (5.4")	200 (8")
<b>50 (2")</b>	500 (20")	150 (6")	210 (8.4")
<b>65 (2.5")</b>	400(16")	230 (9.2")	165 (6.6")
<b>80 (3.0")</b>	400 (16")	245 (9.8")	190 (7.6")
<b>100 (4")</b>	400 (16")	265 (10.6")	215 (8.6")
<b>150 (6")</b>	450 (18")	315 (12.6")	280 (11.2")
<b>200 (8")</b>	550 (22")	365 (14.6")	335 (13.4")
<b>250 (10")</b>	600 (24")	415 (16.6")	405 (16.2")



Transducer's Dimensions (DN65~DN250)		Transducer's Dimensions (DN25~DN50)	

## Ordering the Model 206

### Parent MODEL Number

**206** In line Ultrasonic Flowmeter. Velocity range:  $\pm 0$  to 22 ft/s (0-7m/s), Accuracy: 0.5% of reading. Repeatability: 0.07% of reading. Pipe size: 1.0" to 10" (25 to 250mm). Coated Carbon Steel Body with 150# ANSI or DN PN10 Flange. In-Line transducer -40F to 176F (-40C to 80C). 10 to 36V DC or 90 to 250 VAC, 48 to 63 Hz. OCT Pulse output, 0/4 to 20ma, Relay, RS 232. IP66, die-cast PC/ABS 16 (8 x 2) Keyboard. 20 x 2 alphanumeric backlit display.

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### FLOW BODY

**25** Carbon Steel Body with 150# ANSI Flanges  
In-Line transducer -40F to 176F (-40C to 80C). Pipe Size 1.0" (25)

**40** Carbon Steel Body with 150# ANSI Flanges  
In-Line transducer -40F to 176F (-40C to 80C). Pipe Size 1.5" (40)

**50** Carbon Steel Body with 150# ANSI Flanges  
In-Line transducer -40F to 176F (-40C to 80C). Pipe Size 2.0" (50)

**65** Carbon Steel Body with 150# ANSI Flanges  
In-Line transducer -40F to 176F (-40C to 80C). Pipe Size 2.5" (65)

**80** Carbon Steel Body with 150# ANSI Flanges  
In-Line transducer -40F to 176F (-40C to 80C). Pipe Size 3.0" (75)

**100** Carbon Steel Body with 150# ANSI Flanges  
In-Line transducer -40F to 176F (-40C to 80C). Pipe Size 4.0" (100)

**150** Carbon Steel Body with 150# ANSI Flanges  
In-Line transducer -40F to 176F (-40C to 80C). Pipe Size 6.0" (150)

**200** Carbon Steel Body with 150# ANSI Flanges  
In-Line transducer -40F to 176F (-40C to 80C). Pipe Size 8.0" (200)

**250** Carbon Steel Body with 150# ANSI Flanges  
In-Line transducer -40F to 176F (-40C to 80C). Pipe Size 10.0" (250)

**Note: To order DN PN 10 flange, add "D" to flow body code:  
ex: D25**

### CABLE LENGTH

**30** 30 ft (9m) standard cable length

**50** 50 ft (15m)

**100** 100 ft (30m)

**150** 150 ft (45m)

**200** 30 ft (60m)

**300** 300 ft (90m)

### NIST TRACEABLE CERT

**NIST** 5 Point Calibration Certification traceable to NIST

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### **Model 205 Innova-Sonic® Clamp-on Liquid Flow Meter**

Non-invasive transit-time ultrasonic digital flow meter for the detection of the flow rate of most liquids.



### **Model 205 Innova-Sonic® Insertion Liquid Flow Meter**

A transit-time ultrasonic digital flow meter featuring insertion transducers that can be used on pipe sizes ranging from 2" to 400" (50mm to 10000mm). The key benefit is the high signal strength achieved by using insertion transducers so that pipe wall, pipe liner, and pipe wall deposits do not affect instrument performance.



### **Model 206 Innova-Sonic® In-Line Liquid Flow Meter**

A state-of-the-art digital correlation transit-time ultrasonic flowmeter featuring PicoFly™ technology and designed to give customers an alternative choice for typical liquid Mag-Meter applications. Featuring +/- 0.5% of reading accuracy and the ability to measure down to zero flow in virtually any clean liquid regardless of conductivity.



### **Model 210 Innova-Sonic® Portable Liquid Flow Meter with Bluetooth® Wireless**

A non-invasive portable transit-time ultrasonic flowmeter for the detection of the volumetric flow rate of most liquids. A PDA is used to operate and read data using Bluetooth® wireless connectivity.



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