



Made in  
the USA

## • F-4200 SERIES • CLAMP-ON ULTRASONIC FLOW METER



*ONICON F-4000 Series Ultrasonic Flow Meters utilize the differential transit time method to measure the velocity of relatively clean liquids in full pipes. By measuring the difference between transit times of ultrasonic sound waves travelling between two transducers, the flow velocity and direction are accurately determined.*

### DESCRIPTION

ONICON F-4200 Clamp-on Ultrasonic Flow Meters offer an ideal solution for liquid measurement in existing systems when it is impractical to install traditional inline or insertion style flow meters. The innovative design incorporates matched precision clamp-on transducers and signal processing circuitry to accurately measure the flow of most liquids over a wide velocity range. Each F-4200 is provided with transducers and easy-to-use mounting hardware, factory supplied transducer cabling and a wall mount enclosure with an LCD and user interface keypad.

Output signals include a 4-20 mA analog signal, a scaled pulse for totalization, and a relay output for indication of flow direction or alarm status. The F-4200 is also provided with an isolated RS485 output capable of communicating over BACnet MS/TP or Modbus RTU networks. Optional BTU measurement systems are also available.

### GENERAL SPECIFICATIONS

#### **ACCURACY**

- ± 1.0% of reading from 1 to 40 ft/sec
- ± 0.01 ft/s for velocities below 1 ft/sec

#### **OVERALL FLOW RANGE**

0.1 to 40 ft/sec

#### **SENSING METHOD**

Clamp-on ultrasonic, differential transit time method in direct or reflect mode

#### **PIPE SIZE RANGE**

½" through 48" nominal diameter

#### **POWER SUPPLY OPTIONS**

Standard: 11.5 to 28.5 VDC, 10 Watts maximum  
Optional: 90-240 VAC 50/60 Hz, 15 VA maximum

#### **FLUID TEMPERATURE RANGE**

Standard: -40° F to 250° F  
Optional: High Temperature -40° F to 446° F

### APPLICATIONS

- Chilled water, hot water, condenser water & water/glycol solutions for HVAC
- Steam condensate
- Domestic/municipal water
- Process water & other clean liquids

### FEATURES

**Ideal Solution for Retrofits & Baseline Monitoring -** Clamp-on transducers allow for quick installation with no shutdown, no drilling and no pressure drop. Each meter is provided with a built-in one megabyte data logger making it an ideal solution for baseline monitoring.

**Simple to Install and Commission -** Every ONICON F-4200 is individually configured and programmed using customer specific application data. Complex field programming is not required.

**Proprietary Sensing Design Provides High Confidence and Reliability -** ONICON provides transducers that are optimized for specific pipe & process conditions. The transducer frequency is automatically matched to the resonant frequency of the pipe at start-up, providing a strong, stable signal with an outstanding signal-to-noise ratio.

**Highly Accurate Over a Wide Flow Range -** High precision matched transducers combined with our proprietary resonant frequency tuning process provides a strong, stable signal for optimal performance. The integral auto-zero function provides the basis for zero precision and high accuracy, even at very low flow velocities.

**Built-in BACnet MS/TP or Modbus Communications -** The F-4200 is provided with a single RS485 output that can be configured to operate on BACnet MS/TP or Modbus RTU networks.



Typical Installation  
on Steel Pipe

**GENERAL SPECIFICATIONS (cont.)**



**AMBIENT TEMPERATURE RANGE**

14° F to 122° F

**STORAGE TEMPERATURE RANGE**

-4° F to 140° F

**OUTPUT SIGNALS PROVIDED**

Analog output: Isolated 4-20 mA  
(Externally powered 10 – 30 VDC)

Scalable pulse output:

Optically isolated open collector  
Contact rating: 30 VDC, 10 mA maximum,  
Pulse duration: 50 ms

Relay output for flow direction or alarm:

Programmable form C relay  
Contact rating: 30 VDC, 250 mA maximum

RS485: BACnet MS/TP or Modbus RTU

**ELECTRONICS ENCLOSURE**

Wall mount, NEMA 4 steel enclosure

**DISPLAY**

Alphanumeric 2-line, 16 character per line  
multifunction LCD display (Character height, 0.2")

**ELECTRICAL CONNECTIONS**

Enclosed terminal blocks, cable access through  
four standard 3/4" conduit openings

OPERATING RANGE	
Pipe Size (Inches)	Flow Rate (GPM) (0.1 ft/sec - 40 ft/sec)
1	0.3 - 108
1½	0.6 - 255
2	1.0 - 420
2½	1.5 - 600
3	2.3 - 920
4	4.0 - 1,560
5	6.2 - 2,500
6	9.0 - 3,600
8	16 - 6,240
10	25 - 9,840
12	35 - 14,100
14	43 - 17,200
16	57 - 22,800
18	73 - 29,200
20	91 - 36,300
24	132 - 53,000
30	210 - 83,900
36	304 - 122,000
40	378 - 151,000
42	417 - 167,000
48	547 - 218,800

NOTE: Specifications are subject to change without notice.

**TYPICAL INSTALLATION**

