

# ULTRASONIC FLOWMETER TRANSMITTER

## With Mating Flow Transducers

FD-301A

**\$1760**

Basic System with Sensor  
Specify pipe size and pipe  
schedule when ordering.



- ✓ 100 ppm of 100 Microns in Size Particulates or Bubbles Required (Not for Clean Liquids)
- ✓ 4 to 20 mA Output Standard on All Units
- ✓ NEMA-4X Waterproof Enclosure for Wall Mounting
- ✓ Easy to Install, No System Downtime for Maintenance
- ✓ Non-Invasive, Non-Fouling, No Head Loss
- ✓ NIST Certificate Standard

The FD-301A ultrasonic flow transmitter, indicator, totalizer systems are designed for use where a sensor cannot be installed in the process. They are well suited for full pipes of liquid that contain at least 100 ppm of 100 micron or larger suspended particles or gas bubbles which act as sound "reflectors" and are necessary for operation. Ideal uses for this technology include: measuring the flow of wastewater sewage, reactivated sludge, waste activated sludge, primary sludge, slurries, crude oils, lime slurries, phosphates and pulp stock. A strength light indicates when sufficient levels of suspended "reflectors" are present to provide a flow reading.

The encapsulated, submersible, design of the transducer sensor head can be easily mounted to the pipe surface with the coupling compound and clamp supplied with the unit. A 6 m (20') cable for connection to the transmitter/indicator unit is supplied as an



FD-301A, \$1100, shown smaller than actual size.

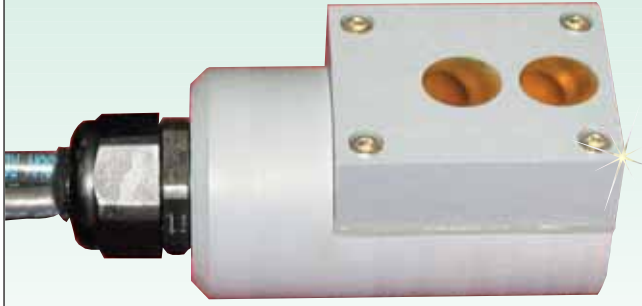


DPF66, \$420, shown smaller than actual size. See page M-19 for details.

integral part of the sensor. The FD-5000 sensor is utilized on pipes that range in internal diameter from 25.4 to 508 mm (1 to 20").

Flowrates can be measured in small line sizes from 1/4 to 1" with use of the small pipe sensor, Model FD-5.

**Clamp-on Sensor**  
**Max. Temp. = 121°C (250°F)**  
**Min. Temp. = -40°C (-40°F)**



FD-5000 sensor—now with armor cable—  
 \$660, shown smaller than actual size.  
 See Page E-10 for additional details.



DPF66, \$420, shown  
 smaller than actual size.  
 See page M-19 for details.

## SPECIFICATIONS

**System Accuracy:** ±2% of F.S.

**Velocity Range:** 0.1 to 20 feet/second  
 (0.03<sup>†</sup> to 6.1 meters/second)

Up to 30 fps optional.

**“-LF” Option:** 0.1 to 2.5 feet/second

**Measuring Units:** FPS (standard),  
 GPM, MPS, LPM

**Linearity:** ±0.2% of F.S.

**Repeatability:** ±0.2% of F.S.

**Outputs:** 4 to 20 mA into 600 ohms  
 max., isolated; 12 V pulse output for  
 external totalizer; flowrate relay, SPDT,  
 5 A @ 120 Vac, resistive

### Power Requirements:

120 Vac ±10%, 50/60 Hz, 6 VA max.  
 (standard); 12/24 Vdc, 3 VA max. or  
 220 Vac 50/60 Hz (optional)

**Liquid Requirements:** full-pipe; liquid  
 must contain a minimum of 100 ppm of  
 suspended solids or bubbles that are at  
 least 100 microns in size.

### Dimensions:

215 H x 165 W x 114 mm D  
 (8.5 x 6.5 x 4.5")

### Transmitter Operating Temperature:

-30 to 70°C (-22 to 158°F)

### Sensor Operating Temperature:

-40 to 121°C (-40 to 250°F)

## How to Order

- 1) Select Sensor for pipe size
- 2) Select Electronics, with any  
 desired options

### Ordering Example:

- 1) FD-5000: \$660
- 2) FD-301A (2" sch 40): \$1100
- 3) DPF66: \$420

## Transmitter/Sensors

**MOST POPULAR MODEL HIGHLIGHTED!**

Model No.	Price	Description
FD-301A-(*)	\$1100	Transmitter with flow switch
FD-5	900	Sensor for ¼ to 1" pipes
FD-5000	660	Clamp-on sensor for 1 to 20" pipes up to 121°C (250°F)
FD-5000-HTA	925	Clamp-on sensor for 1 to 20" pipes up to 148°C (300°F)

Pipe Size (inches)	Min. Flow Rate (GPM) <sup>†</sup>	Scale (ft/s) Std. Units	Scale (GPM) <sup>*</sup> Std. Units	Scale (ft/s) Option “-LF”	Scale (GPM) Option “-LF”
¾	0.83	0 to 10	0 to 15	0 to 2.5	0 to 4
1	1	0 to 10	0 to 25	0 to 2.5	0 to 6
1½	3	0 to 10	0 to 75	0 to 2.5	0 to 15
2	5	0 to 10	0 to 100	0 to 2.5	0 to 25
4	20	0 to 10	0 to 400	0 to 2.5	0 to 100
6	30	0 to 10	0 to 1000	0 to 2.5	0 to 225
8	75	0 to 10	0 to 1500	0 to 2.5	0 to 400
10	100	0 to 10	0 to 2500	0 to 2.5	0 to 625
12	150	0 to 10	0 to 3500	0 to 2.5	0 to 875

Comes with complete operators manual and NIST certificate. Sensors come with cable clamp and sealant.

\* Specify pipe size and pipe schedule when ordering.

Add suffix “-12VDC” or “-220VAC” for 12 Vdc or 220 Vac power input. No additional charge. Add suffix “-24VDC” for 24 Vdc power input. No additional charge.

† Minimum flow is 0.5 ft/sec. Down to 0.05 ft/sec available on special order. Consult OMEGA.

**Ordering Example:** FD-5000, clamp-on sensor, FD-301A-6", SCH40, 0 to 225 GPM, transmitter scaled in GPM for low flow range, 0 to 225 GPM, 6" pipe, \$660 + 1100 = \$1760.

## Accessories

Model No.	Price	Description
DPF66	\$420	Panel meter for flow rate and totalization
ES-2214	100	Reference Book: Industrial Waste Treatment Book



#### UNITED STATES

[www.omega.com](http://www.omega.com)  
1-800-TC-OMEGA  
Stamford, CT.

#### CANADA

[www.omega.ca](http://www.omega.ca)  
Laval(Quebec)  
1-800-TC-OMEGA

#### GERMANY

[www.omega.de](http://www.omega.de)  
Deckenpfronn, Germany  
0800-8266342

#### UNITED KINGDOM

[www.omega.co.uk](http://www.omega.co.uk)  
Manchester, England  
0800-488-488

#### FRANCE

[www.omega.fr](http://www.omega.fr)  
Guyancourt, France  
088-466-342

#### CZECH REPUBLIC

[www.omegaeng.cz](http://www.omegaeng.cz)  
Karviná, Czech Republic  
596-311-899

#### BENELUX

[www.omega.nl](http://www.omega.nl)  
Amstelveen, NL  
0800-099-33-44



## More than 100,000 Products Available!

### • Temperature

Calibrators, Connectors, General Test and Measurement Instruments, Glass Bulb Thermometers, Handheld Instruments for Temperature Measurement, Ice Point References, Indicating Labels, Crayons, Cements and Lacquers, Infrared Temperature Measurement Instruments, Recorders Relative Humidity Measurement Instruments, RTD Probes, Elements and Assemblies, Temperature & Process Meters, Timers and Counters, Temperature and Process Controllers and Power Switching Devices, Thermistor Elements, Probes and Assemblies, Thermocouples Thermowells and Head and Well Assemblies, Transmitters, Wire

### • Flow and Level

Air Velocity Indicators, Doppler Flowmeters, Level Measurement, Magnetic Flowmeters, Mass Flowmeters, Pitot Tubes, Pumps, Rotameters, Turbine and Paddle Wheel Flowmeters, Ultrasonic Flowmeters, Valves, Variable Area Flowmeters, Vortex Shedding Flowmeters

### • pH and Conductivity

Conductivity Instrumentation, Dissolved Oxygen Instrumentation, Environmental Instrumentation, pH Electrodes and Instruments, Water and Soil Analysis Instrumentation

### • Data Acquisition

Auto-Dialers and Alarm Monitoring Systems, Communication Products and Converters, Data Acquisition and Analysis Software, Data Loggers Plug-in Cards, Signal Conditioners, USB, RS232, RS485 and Parallel Port Data Acquisition Systems, Wireless Transmitters and Receivers

### • Pressure, Strain and Force

Displacement Transducers, Dynamic Measurement Force Sensors, Instrumentation for Pressure and Strain Measurements, Load Cells, Pressure Gauges, Pressure Reference Section, Pressure Switches, Pressure Transducers, Proximity Transducers, Regulators, Strain Gages, Torque Transducers, Valves

### • Heaters

Band Heaters, Cartridge Heaters, Circulation Heaters, Comfort Heaters, Controllers, Meters and Switching Devices, Flexible Heaters, General Test and Measurement Instruments, Heater Hook-up Wire, Heating Cable Systems, Immersion Heaters, Process Air and Duct, Heaters, Radiant Heaters, Strip Heaters, Tubular Heaters