

# VERSATILE MULTI-LIQUID ULTRASONIC FLOWMETERS

## Enhanced Doppler Design

FD-7000



Standard



FD-7000 shown smaller than actual size.

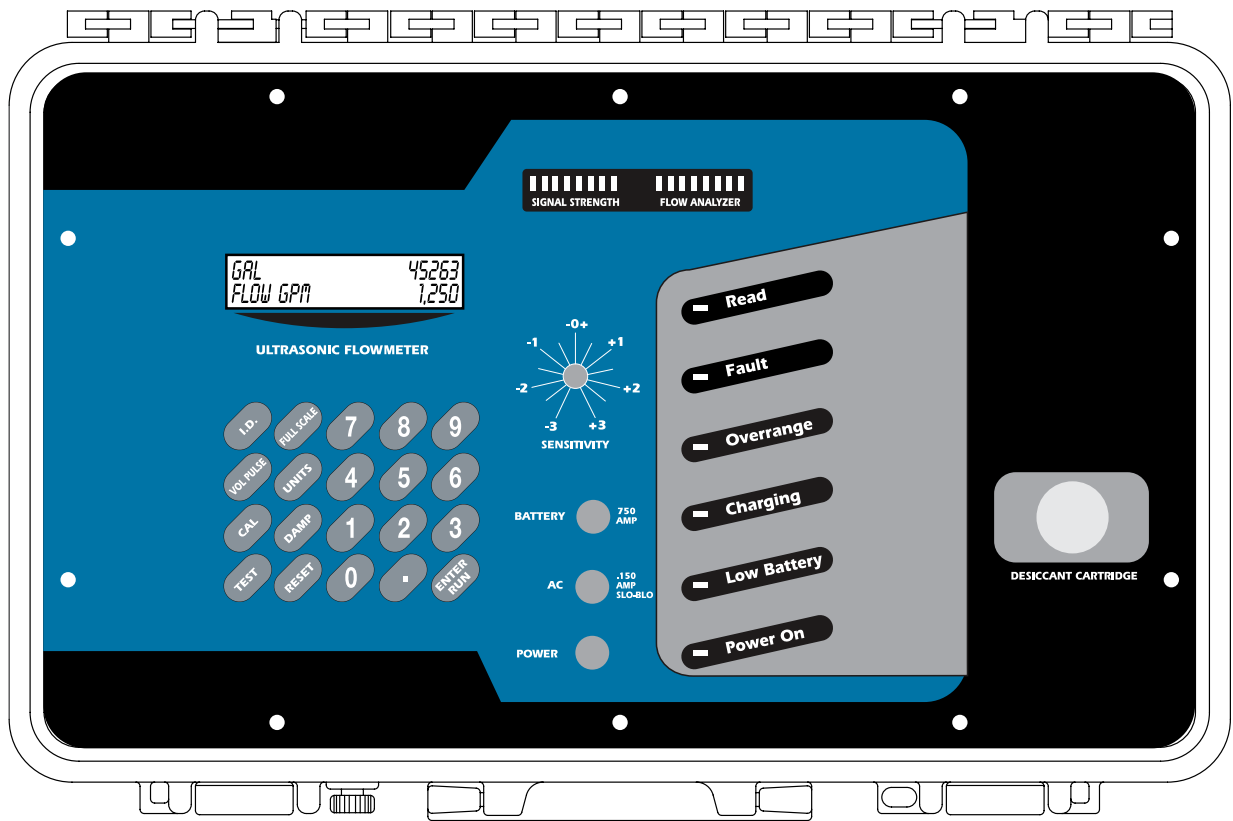
Complete with portable electronics, transducer set, acoustic couplant (not shown), mounting straps, power cord and battery (not shown)

- ✓ **Non-Invasive Design, Easy to Install, No System Downtime**
- ✓ **Powered by Rechargeable Internal Battery (Included) or AC Line Power**
- ✓ **Operates with Semi-Clean Liquids, Emulsions and Slurries**
- ✓ **Digital Flowrate Indicator Plus 8-Digit Totalizer**
- ✓ **4 to 20 mA Output Standard**
- ✓ **Easy-to-Use Data Entry Keypad**
- ✓ **NEMA-4X ABS Waterproof Enclosure**
- ✓ **NIST Certificate Standard**

Up to now, doppler ultrasonic flowmeters have required significant quantities of suspended particles or gas bubbles to reflect sound signals. Now, with the model FD-7000 ultrasonic flowmeter, this is no longer required. When the FD-7000 is used to measure the flow of liquids containing suspended solids or bubbles, the transducers are mounted on a straight run of pipe in the same manner as other ultrasonic meters. In applications where insufficient "reflectors" exist (a condition indicated by a low reading on the FD-7000's flow analyzer bar graph), the transducers are relocated to a point in the piping where non-symmetrical hydraulic turbulence will be present—ideally just downstream of a 90° elbow. The FD-7000's unique digital filtering system and signal recognition circuitry transforms the reflections from this non-symmetrical, and not necessarily linear, turbulence into a useable and linear data format.

A backlit, 2 line by 20 character, alphanumeric LCD offers simultaneous flowrate and totalizer displays. The FD-7000 is designed for ease of use in the field. Only a few simple keypad entries are required to configure the flowmeter for any given pipe and flow conditions. The encapsulated, submersible design of the transducer sensor head allows it to be easily mounted to the pipe surface with the coupling compound and elastic bands that are supplied with the unit. A 6 m (20') retractable cable for connection to the transmitter/indicator unit is supplied as an integral part of the sensor. The FD-7000 sensor is utilized on pipes that range in internal diameter from 25 mm to 1.5 m (1 to 60").

Flowrates can be measured in smaller pipes from 6 to 25 mm (¼ to 1") in diameter with use of the small pipe sensor, model FD-7000-S1.



## SPECIFICATIONS

**System Accuracy:**  $\pm 2\%$  of FS  
**Velocity Range:** 0.15 to 6.2 MPS (0.5 to 20 FPS)  
**Measuring Units:** FPS, GPM, MGD  
**Linearity:**  $\pm 0.2\%$  FS  
**Repeatability:** 0.4% of FS  
**Flow Rate Display:** 6-digit LCD

**Totalizer Display:** 6-digit LCD (resettable)  
**Outputs:** 4 to 20 mA into 600  $\Omega$  max., isolated  
**Power Requirements:** 115 Vac  $\pm 10\%$ , 50/60 Hz, 20 VA max. (standard); 230 Vac 50/60 Hz (optional). Internal gel cell battery provides 8 hrs. of continuous operation  
**Liquid Requirements:** Full-pipe, low-viscosity (water-like) liquid

**Transmitter/Indicator Operating Temperature:**  $-30$  to  $70^{\circ}\text{C}$  ( $-22$  to  $158^{\circ}\text{F}$ )  
**Sensor Operating Temperature:**  $-40$  to  $121^{\circ}\text{C}$  ( $-40$  to  $250^{\circ}\text{F}$ )  
**Dimensions:** 432 L x 279 W x 203 mm H (17 x 11 x 8")  
**Weight:** 10 kg (22 lb)  
**Enclosure:** NEMA-4X (IP65)



FD-7000-STD, replacement sensor for line sizes 25 to 1524 mm (1 to 60") shown smaller than actual size.

Required pipe mounting configuration.

Non-penetrating—easy installation.

## To Order

Model No.	Description
FD-7000	Ultrasonic flowmeter, FPS, GPM, MGD (English) units
FD-7000-M	Ultrasonic flowmeter, MPS, LPM, m <sup>3</sup> /hr (metric) units

## Accessories

Model No.	Description
FD-7000-STD	Replacement sensor for 25 mm to 1.5 m (1 to 60") pipes
FD-7000-S1	Sensors for 6 to 25 mm (1/4 to 1") pipe
FD-7000-HT	High temperature sensor for 25 mm to 1.5 m (1 to 60") pipe, 204°C (400°F)
FD-7000-BATT	Replacement gel cell battery
FD-7000-Charger	Replacement charging cord (USA)
FD-7000-Charger-G	Replacement charging cord (Germany)
FD-7000-Charger-UK	Replacement charging cord (UK)
FD-7000-EXT	Extension cable, 2 conductors, 20 AWG, unshielded, 6 m (20')

For 230 Vac version add suffix "-230" to model number, no additional cost. Comes complete with operator's manual, 2 transducers, couplant, power cord, NIST certificate and gel cell battery.

**Ordering Example:** FD-7000, ultrasonic flowmeter.