CLAMP-ON ULTRASONIC FLOW FOR LIQUIDS

OE OMEGA™

FDT-40 Series

1 YEAR WARRANTY CE

- ✔ **Bi-Directional Flow Measurement**
- ✔ **Rugged, Aluminum Enclosure**
- ✔ **Rate and Total Backlit Display**
- ✔ **4 to 20 mA and Dual Alarm Outputs**
- ✔ **USB Programming Port**
- ✔ **RS485 MODBUS® Network Connection**

FDT-40 and FDT-46-ANSI both shown smaller than actual size.

FDT-40 Series ultrasonic flow and energy meters clamp on to the outside of pipes and do not come in contact with the internal liquid. The technology has inherent advantages over alternate devices including: low-cost installation, no pressure head loss, no moving parts to maintain or replace, no fluid compatibility issue, and a large, bi-directional measuring range that ensures reliable readings even at very low and high flow rates. FDT-40 Series is available in a variety of configurations that permit the user to select a meter with features suitable to meet particular application requirements.

SPECIFICATIONS
System
Liquid Types: Most clean liquids or liquids containing small amounts of suspended solids or gas bubbles
Velocity Range: Bi-directional to greater than 40 FPS (12 MPS)
Flow Accuracy:
   Larger Than 50 mm (2"): ±1% of reading or ±0.01 FPS (0.003 MPS), whichever is greater
   25 to 50 mm (1 to 2"): ±1% of reading or ±0.04 FPS (0.012 MPS), whichever is greater
¾" (19 mm) and Smaller: ±1% of full scale

Sensitivity Flow: 0.001 FPS (0.0003 MPS)
Repeatability: 0.5% of reading
Transmitter
Power Requirements (AC): 95 to 264 Vac 47 to 63 Hz @ 17 VA maximum standard, 20 to 28 Vac 47 to 63 Hz @ 0.35 A maximum (**"-24VAC"** models), 10 to 28 Vdc @ 5 W maximum (**"-VDC"** models)
Protection: Auto resettable fuse, reverse polarity and transient suppression
Display: Two line LCD, LED backlit; top row 18 mm (0.7") height, 7-segment; bottom row 9 mm (0.35") height, 14-segment
Icons: RUN, PROGRAM, RELAY1, RELAY2
Flow Rate Indication: 8-digit positive, 7-digit negative maximum; auto decimal, lead zero blanking
Flow Totalizer: 8-digit positive, 7-digit negative maximum (re-set via keypad press, software, network command or momentary contact closure
Enclosure NEMA 4 (IP65) Construction: Powder-coated aluminum, polycarbonate, stainless steel, polyurethane, nickel-plated steel mounting brackets

Size (Electronic Enclosure Only): 152 W x 112 H x 56 mm D (6.0 x 4.4 x 2.2")
Conduit Holes: (2) ½ NPT female (1) ¾ NPT female
Temperature: -40 to 85ºC (-40 to 185ºF)
Configuration: Via optional keypad or PC running software (Note: not all configuration parameters are available from the keypad – i.e. flow and temperature calibration and advanced filter settings)
Engineering Units Flow Meter: Feet, gallons, cubic feet, million gallons, barrels (liquid and oil), acre-feet, lbs, meters, cubic meters, liters, million liters, kg
**Inputs/Outputs USB 2.0:** For connection of a PC running configuration utility
   RS485: MODBUS RTU command set
   4 to 20 mA: 12-bit, internal power, can span negative to positive flow/ energy rates
   0 to 1000 Hz: Open-collector, 12-bit, can span negative to positive rates; square-wave or turbine meter simulation outputs
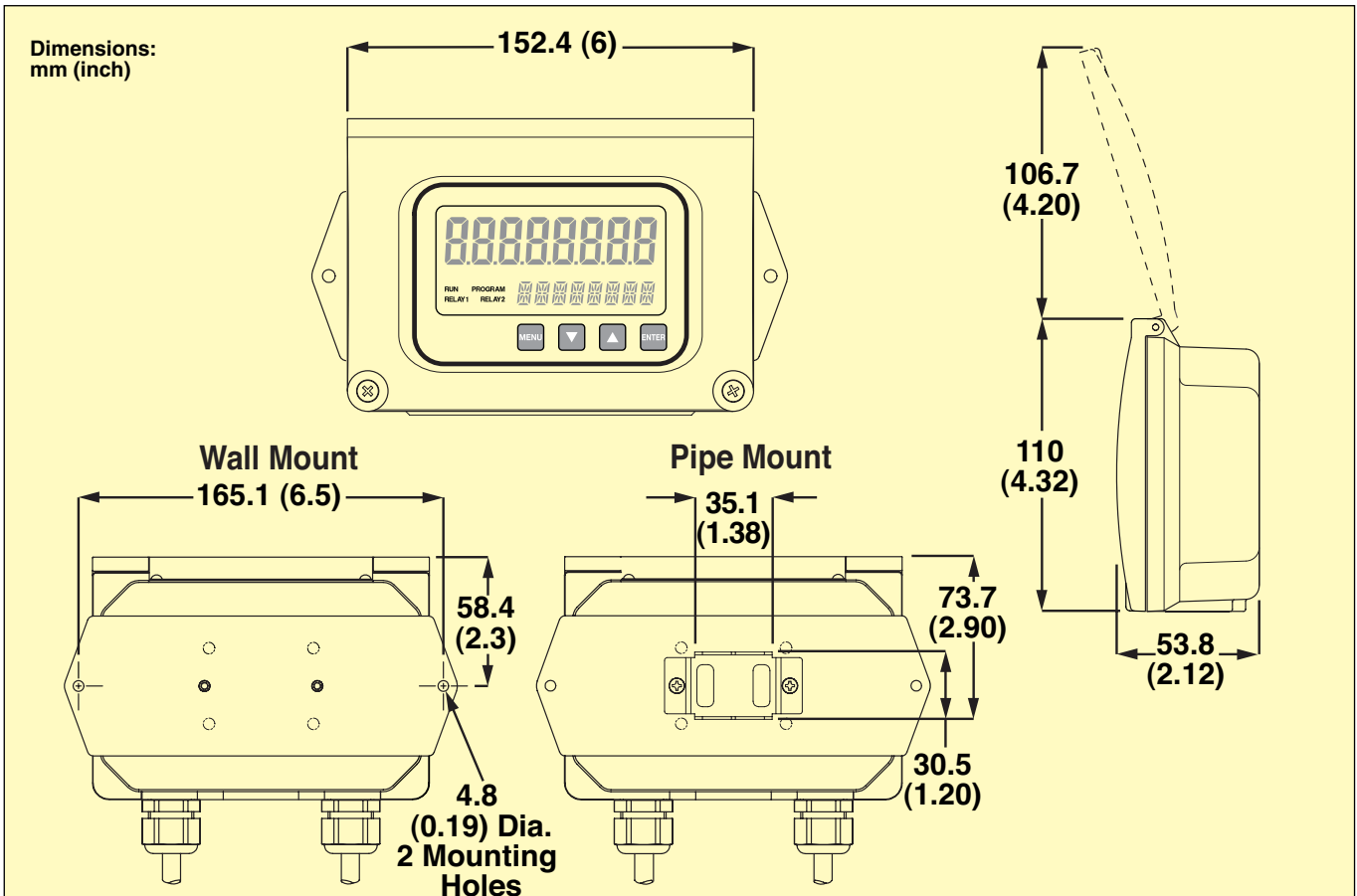
C (Min Clearance)

FDT-47, 48
Pipes larger than 50 (2)

TOP VIEW OF PIPE
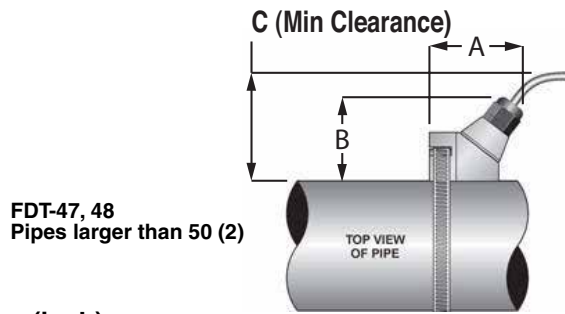
Dimensions: mm (inches)

Model No.	A	B	C
FDT-47 FDT-47-HT	74.9 (2.95)	69.8 (2.75)	76.2 (3)
FDT-48	86.4 (3.40)	74.7 (2.94)	81.3 (3.20)

Tranducer Dimensions: mm (inch)

| Pipe Size	Pipe Material	A	B	C	D	Measuring Range
½"	ANSI/DN	62.5 (2.46)	59.9 (2.36)	67.6 (2.66)	21.3 (0.84)	2 to 38 GPM/8 to 144 LPM
	Copper	62.5 (2.46)	59.9 (2.36)	84.6 (3.33)	15.9 (0.63)	1.8 to 27 GPM/7 to 102 LPM
	Tubing	62.5 (2.46)	57.9 (2.28)	94.5 (3.72)	12.7 (0.50)	1.5 18 GPM/6 to 68 LPM
¾"	ANSI/DN	62.5 (2.46)	65.3 (2.57)	67.6 (2.66)	26.7 (1.05)	2.75 to 66 GPM/10 to 250 LPM
	Copper	62.5 (2.46)	63.5 (2.50)	90.4 (3.56)	22.2 (0.88)	2.5 to 54 GPM/10 to 204 LPM
	Tubing	62.5 (2.46)	63.5 (2.50)	90.4 (3.56)	19 (0.75)	2.5 to 45 GPM/10 to 170 LPM
1"	ANSI/DN	62.5 (2.46)	74.2 (2.92)	72.6 (2.86)	33.4 (1.32)	3.5 to 108 GPM/13 to 409 LPM
	Copper	62.5 (2.46)	72.9 (2.87)	96.5 (3.80)	28.6 (1.13)	3.5 to 95 GPM/13 to 320 LPM
	Tubing	62.5 (2.46)	69.9 (2.75)	96.5 (3.80)	25.4 (1)	3.5 to 85 GPM/13 to 320 LPM
1¼"	ANSI/DN	71 (2.80)	80.8 (3.18)	79.8 (3.14)	42.2 (1.66)	5 to 186 GPM/19 to 704 LPM
	Copper	62.5 (2.46)	76.2 (3)	102.6 (4.04)	43.9 (1.38)	4.5 to 152 GPM/17 to 575 LPM
	Tubing	62.5 (2.46)	76.2 (3)	102.6 (4.04)	31.8 (1.25)	4 to 136 GPM/15 to 514 LPM
1½"	ANSI/DN	76.7 (3.02)	86.9 (3.42)	84.6 (3.33)	48.3 (1.90)	6 to 250 GPM/23 to 946 LPM
	Copper	68.8 (2.71)	72.6 (2.86)	108.7 (4.28)	41.3 (1.63)	5 to 215 GPM/19 to 814 LPM
	Tubing	68.8 (2.71)	84.1 (3.31)	108.7 (4.28)	38.1 (1.5)	5 to 200 GPM/19 to 757 LPM
2"	ANSI/DN	94 (3.70)	86.9 (3.42)*	139.7 (5.50)	60.3 (2.375)*	8 to 420 GPM/30 to 1590 LPM
	Copper	94 (3.70)	85.9 (3.38)*	139.7 (5.50)	54 (2.125)*	8 to 375 GPM/30 to 1419 LPM
	Tubing	81.5 (3.21)	98 (3.85)	120.7 (4.75)	50.8 (2)	8 to 365 GPM/30 to 1381 LPM

* Varies due to u-bolt configuration.

Dimensions: mm (inch)

152.4 (6)

RUN PROGRAM
RELAY1 RELAY2

MENU ▼ ▲ ENTER

106.7 (4.20)

110 (4.32)

53.8 (2.12)

Wall Mount
165.1 (6.5)
58.4 (2.3)
4.8 (0.19) Dia. 2 Mounting Holes

Pipe Mount
35.1 (1.38)
73.7 (2.90)
30.5 (1.20)

**FDT-41 thru FDT-46 (except U-bolt)
Pipes/Tubing 12 to 50 mm (1/2 to 2")**
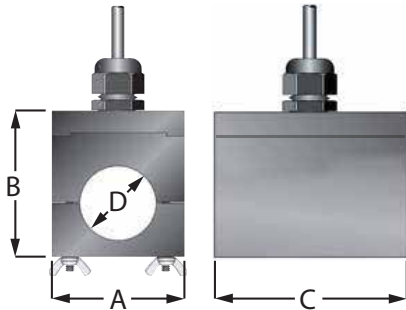
**FDT-46-ANSI, -CP U-bolt Connections
ANSI/DN and Copper 50 mm (2") Models**
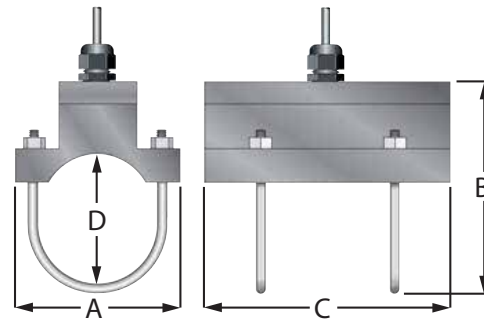
Two Alarm Outputs: Open-collector, configure as rate alarm, signal strength alarm or totalizer pulse

Transducers

Construction

Standard (FDT-41 thru 46): NEMA 6 (IP67), PVC, PEI, Nylon cord grip, PVC cable jacket
Temperature: -40 to 60°C (-40 to 140°F)
FDT-41 thru 46 with "-HT" option, FDT-47 and FDT-48: NEMA 6 (IP67), CPVC, PEI, Nylon cord grip, PVC cable jacket
Temperature: -40 to 90°C (-40 to 194°F)
FDT-47 "-HT": NEMA 6 (IP67), PTFE, polyimide, Nickel-plated brass cord grip, PFA cable jacket
Temperature: -40 to 176°C (-40 to 350°F)

Frequency:
FDT41 thru 46: 2 MHz
FDT-47: 1 MHz
FDT-48: 500 KHz

Cables: RG59 coaxial, 75 Ω or twin axial, 78 Ω (optional armored conduit)
Cable Length: Standard 6 m (20')
300 m (990') maximum in 3 m (10') increments

Software Utilities

Utilized to configure, calibrate and troubleshoot flowmeters. Connection via USB A/B cable; software is compatible with Windows 2000, Windows XP, Windows Vista® and Windows® 7

RS485 Network

All FDT-40 meters come equipped with RS485 drivers and utilize a MODBUS RTU command set (data can be returned in single-precision, double-precision, integer or floating point values). Up to 126 units products can be run on a single daisy-chain network and be individually queried for flow rate, positive flow accumulator, negative flow accumulator and signal strength. Flow accumulators can be cleared at discrete addresses or globally. The RS485 network is also compatible with direct to Excel, application.

To Order

Model No.	Desription
FDT-40	Flow meter display 95 to 264 Vac
FDT-40-VDC	Flow meter display 10 to 28 Vdc
FDT-40-24VAC	Flow meter display 24 Vac

Comes complete with operator's manual.

Transducers Accessories (Display Sold Separately)

Model No.	Description
FDT-41-ANSI	Remote transducer for ½" ANSI pipe
FDT-42-ANSI	Remote transducer for ¾" ANSI pipe
FDT-43-ANSI	Remote transducer for 1" ANSI pipe
FDT-44-ANSI	Remote transducer for 1¼" ANSI pipe
FDT-45-ANSI	Remote transducer for 1½" ANSI pipe
FDT-46-ANSI	Remote transducer for 2" ANSI pipe
FDT-41-CP	Remote transducer for ½" copper pipe
FDT-42-CP	Remote transducer for ¾" copper pipe
FDT-43-CP	Remote transducer for 1" copper pipe
FDT-44-CP	Remote transducer for 1¼" copper pipe
FDT-45-CP	Remote transducer for 1½" copper pipe
FDT-46-CP	Remote transducer for 2" copper pipe
FDT-41-TUBE	Remote transducer for ½" tubing
FDT-42-TUBE	Remote transducer for ¾" tubing
FDT-43-TUBE	Remote transducer for 1" tubing
FDT-44-TUBE	Remote transducer for 1¼" tubing
FDT-45-TUBE	Remote transducer for 1½" tubing
FDT-46-TUBE	Remote transducer for 2" tubing
FDT-47	Remote transducer for 2 to 24" pipe
FDT-48	Remote transducer for pipes over 24"
FDT-40-PC-CABLE	Optional USB PC programming cable
FDT-GREASE	Replacement acoustic couplant 150 g (5.3 oz)
FDT-HT-GREASE	High temperature acoustic couplant 56 g (2 oz)
FDT-NS-GREASE	Non-silicone acoustic couplant 79 g (2.8 oz)

Transducers come with mounting gel.
*For high temp transducers add **"-HT"** to the transducer model number for additional cost.*
*For transducers with 30 m (100') cable add **"-100FT"** to the transducer model number for additional cost.*
***Ordering Example: FDT-40,** flowmeter display/electronics 95 to 264 Vac, and **FDT-42-ANSI** remote transducer for ¾" ANSI pipe.*