

DESCRIPTION

The TFX-500w ultrasonic transit time flow meter measures volumetric flow of clean water in pipes 10 in. or smaller. By clamping on the outside of the pipe, the ultrasonic meter installs without cutting or tapping the pipe.

FEATURES

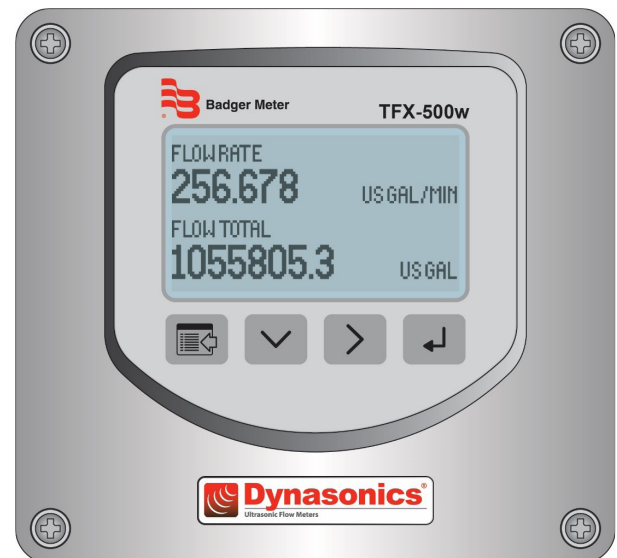
- Clamp-on, non-invasive flow meter
- Bidirectional flow measurement system
- Measures flow rate, total and velocity of water flow
- Compact enclosure uses large, easy-to-read graphical display

BENEFITS

- Install without shutting down the process for installation or maintenance
- Eliminates the costs of inline flanges and pipe fittings
- No moving parts to maintain
- No pressure head loss

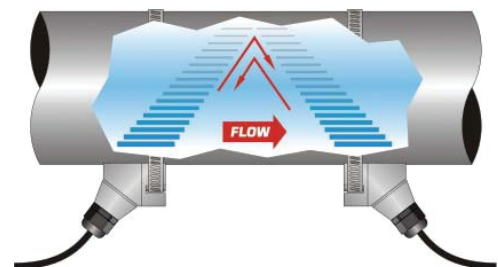
APPLICATION

The TFX-500w meter is well suited for building automation, water distribution and wastewater collection in new and retrofit applications. In addition to having lower installation costs than an inline flow meter, the TFX-500w meter can be installed while the system continues to operate without interruption.



OPERATION

Transit time flow meters use two transducers that function as both ultrasonic transmitters and receivers. The flow meters operate by alternately transmitting and receiving a frequency-modulated burst of sound energy between the two transducers. The burst is first transmitted in the direction of fluid flow and then against fluid flow. Since sound energy in a moving liquid is carried faster when it travels in the direction of fluid flow (downstream) than it does when it travels against fluid flow (upstream), a differential in the times of flight will occur. The sound's time-of-flight is accurately measured in both directions and the difference in time-of-flight calculated.



SPECIFICATIONS

System

Liquid Types	Water containing small amounts of suspended solids or gas bubbles	
Velocity Range	0.1...40 FPS (0.03...012 MPS) bidirectional	
Flow Accuracy	DTTR/DTTN DTTS/DTTC	±1% of reading or ±0.01 FPS (0.003 MPS), whichever is greater DTTS/DTTC 3/4 in. and smaller are accurate to ± 1% full scale
Repeatability	±0.2% of reading	
Transducer Type	Clamp-on ultrasonics	
Certifications	Remote mount transmitter and integral mount transmitter with transducers	CE: All models

Transmitter

Power Requirements	DC	Class II power supply is required; 9...28V DC @ 5 W maximum
	Protection	Reverse polarity and transient suppression
Display	Keypad	4-button navigation, membrane keypad with domed tactile feedback
	Resolution	128 × 64 pixel LED backlit graphical display; adjustable brightness and timeout
Enclosure	IP66; polycarbonate	
Ambient Temperature	Operational ambient	With display: -4...140° F (-20...60° C); without display: -40...158° F (-40...70° C)
	Storage	-40...176° F (-40...80° C)
Units of Measure	Velocity	feet/second, meters/second
	Totals	US gallons, Imperial gallons, cubic feet, million gallons, acre-feet, cubic meters, liters, million liters
	Flow rate	Gallons (U.S. or imperial), cubic feet, liters, cubic meters per second, minute, day; mega gallons (U.S. or imperial), acre-feet per day
Mounting	Wall or pipe remote mount or integral mount; Enclosure can be rotated in 90° increments	
Inputs	Digital input	5...30V DC, externally or internally sourced; totalizer reset or alarm unlatch
Outputs	Pulse / Frequency / Digital /	Two outputs, each selectable as frequency, pulse, forward/reverse flow or alarm output; isolated open collector, 5...30V DC, externally or internally sourced with pullup resistor Digital alarm output: configurable high or low Frequency output: 50% duty cycle 63...10 kHz maximum Pulse (totalizer) output: 5 kHz maximum output open collector, pulse width 5...500 ms programmable
	Analog Output	4...20 mA (0...22 mA capable) drive up to 800 Ohms; minimum 16-bit resolution, optically isolated
Alarms	Buffer previous alarms, warnings or errors	

Transducers

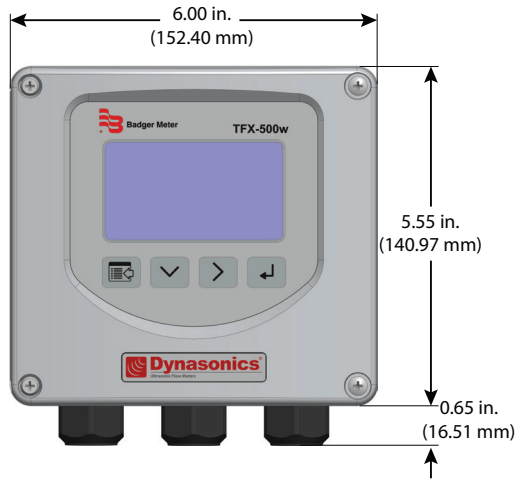
Model	Construction	Cable Length	Pipe/Tubing Sizes	Pipe/Tubing Materials	Protection
DTTC	CPVC, Ultem, Nylon cord grip Polyethylene cable jacket; -40...194° F (-40...90° C)*	300 ft (90 m) max.	0.5...2 in. (12...50 mm)	Carbon steel, stainless steel, copper and plastic	NEMA 6/IP67
DTTR	PBT glass filled, Ultem®, Nylon cord grip PVC cable jacket; -40...250° F (-40...121° C)	300 ft (90 m) max.	2...10 in. (DN50...DN250)		NEMA 6/IP67
DTTN	CPVC, Ultem, Nylon cord grip Polyethylene cable jacket; -40...194° F (-40...90° C)	300 ft (90 m) max.	2...10 in. (DN50...DN250)		NEMA 6/IP67
DTTN Submersible	CPVC, Ultem, Nylon cord grip Polyethylene cable jacket; -40...194° F (-40...90° C)	300 ft (90 m) max.	2...10 in. (DN50...DN250)		NEMA 6P/IP68

* DTTC integral mount temperature is limited by the transmitter temperature rating

DIMENSIONS

TFX-500w Meter

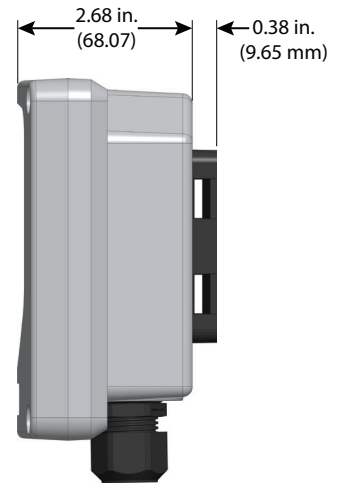
Enclosure, Integral and Remote, Front View



Integral Enclosure Side View



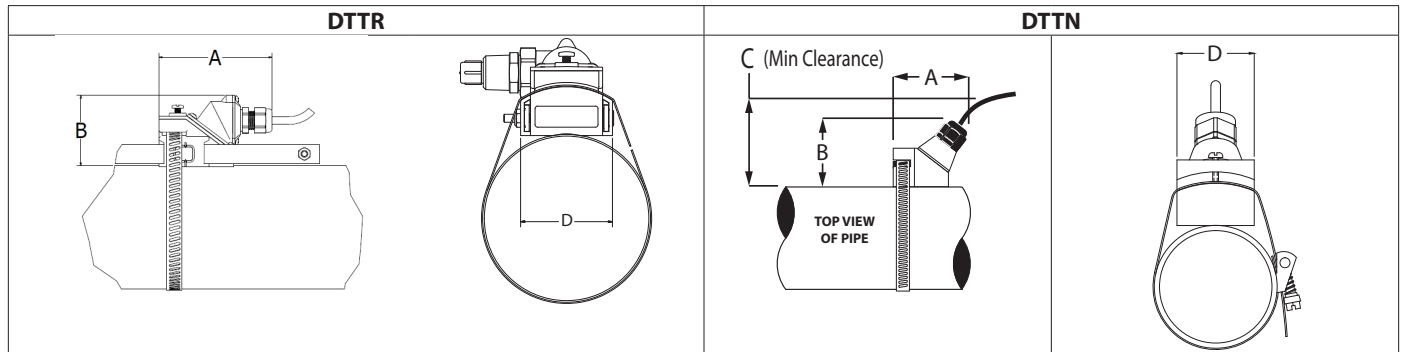
Remote Enclosure Side View



Transducers

Remote System with Large Pipes

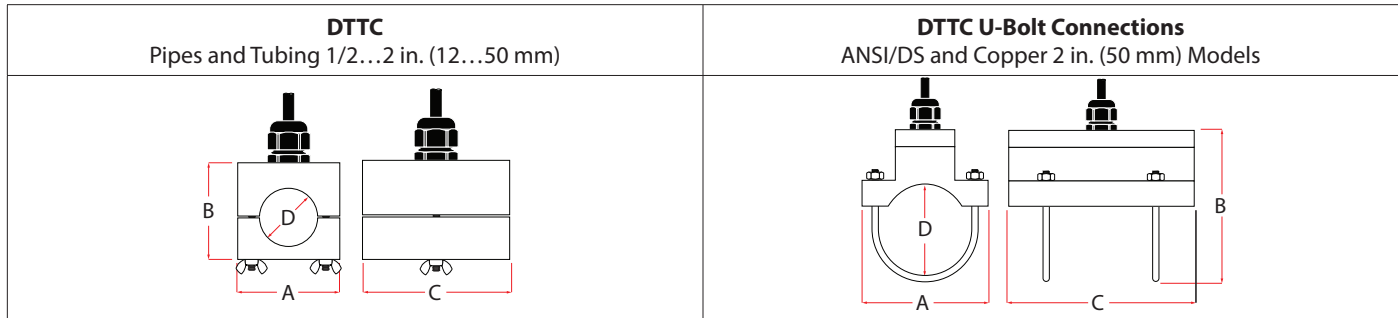
DTTR/DTTN



	DTTR	DTTN
A	3.75 in. (95 mm)	2.95 in. (74.9 mm)
B	2.35 in. (60 mm)	2.75 in. (69.8 mm)
C	—	3.00 in. (76.2 mm)
D	2.19 in. (56 mm)	1.70 in. (43.2 mm)

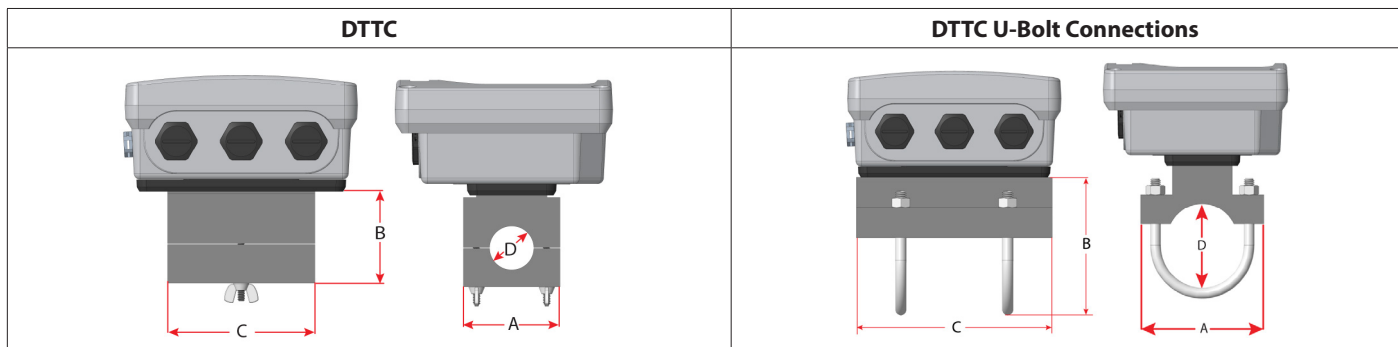
Remote System with Small Pipes

DTTC



Integral System

DTTC



Pipe Size	Pipe Material	A	B	C	D
1/2 in.	ANSI/DN	2.46 in. (62.5 mm)	2.36 in. (59.9 mm)	2.66 in. (67.6 mm)	0.84 in. (21.3 mm)
	Copper	2.46 in. (62.5 mm)	2.36 in. (59.9 mm)	3.33 in. (84.6 mm)	0.63 in. (15.9 mm)
	Tubing	2.46 in. (62.5 mm)	2.28 in. (57.9 mm)	3.72 in. (94.5 mm)	0.50 in. (12.7 mm)
3/4 in.	ANSI/DN	2.46 in. (62.5 mm)	2.57 in. (65.3 mm)	2.66 in. (67.6 mm)	1.05 in. (26.7 mm)
	Copper	2.46 in. (62.5 mm)	2.50 in. (63.5 mm)	3.56 in. (90.4 mm)	0.88 in. (22.2 mm)
	Tubing	2.46 in. (62.5 mm)	2.50 in. (63.5 mm)	3.56 in. (90.4 mm)	0.75 in. (19.0 mm)
1 in.	ANSI/DN	2.46 in. (62.5 mm)	2.92 in. (74.2 mm)	2.86 in. (72.6 mm)	1.32 in. (33.4 mm)
	Copper	2.46 in. (62.5 mm)	2.87 in. (72.9 mm)	3.80 in. (96.5 mm)	1.13 in. (28.6 mm)
	Tubing	2.46 in. (62.5 mm)	2.75 in. (69.9 mm)	3.80 in. (96.5 mm)	1.00 in. (25.4 mm)
1-1/4 in.	ANSI/DN	2.80 in. (71.0 mm)	3.18 in. (80.8 mm)	3.14 in. (79.8 mm)	1.66 in. (42.2 mm)
	Copper	2.46 in. (62.5 mm)	3.00 in. (76.2 mm)	4.04 in. (102.6 mm)	1.38 in. (34.9 mm)
	Tubing	2.46 in. (62.5 mm)	3.00 in. (76.2 mm)	4.04 in. (102.6 mm)	1.25 in. (31.8 mm)
1-1/2 in.	ANSI/DN	3.02 in. (76.7 mm)	3.40 in. (86.9 mm)	3.33 in. (84.6 mm)	1.90 in. (48.3 mm)
	Copper	2.71 in. (68.8 mm)	2.86 in. (72.6 mm)	4.28 in. (108.7 mm)	1.63 in. (41.3 mm)
	Tubing	2.71 in. (68.8 mm)	3.31 in. (84.1 mm)	4.28 in. (108.7 mm)	1.50 in. (38.1 mm)
2 in.	ANSI/DN	3.70 in. (94.0 mm)	3.42 in. (86.9 mm)*	5.50 in. (139.7 mm)	2.38 in. (60.3 mm)*
	Copper	3.70 in. (94.0 mm)	3.38 in. (85.9 mm)*	5.50 in. (139.7 mm)	2.13 in. (54.0 mm)*
	Tubing	3.21 in. (81.5 mm)	3.85 in. (98.0 mm)	4.75 in. (120.7 mm)	2.00 in. (50.8 mm)

*Varies due to U-bolt configuration

PART NUMBER CONSTRUCTION

Dynasonics Ultrasonic Flow Meters
TFX-500w Transit Time Clamp-On
Adjustable Pipe Size Meter for Water



Model

Base DW

Certification

CE C

Transducer Type

Medium pipe, DTTN NZ
Medium pipe, submersible DTTN WZ
Medium pipe, DTTR RZ

Transmitter Type

24 VDC Remote Mounted F

Display

Standard S

Remote Cable Length

15 feet AC
30 feet AF
50 feet AK
75 feet AR
100 feet BW
150 feet BK
200 feet DW
250 feet DK
300 feet EW

Conduit Type and Length ¹

None WW
15 feet AC
30 feet AF
50 feet AK
75 feet AR
100 feet BW
150 feet BK
200 feet DW
250 feet DK
300 feet EW

Reserved

Standard S

Units of Measure Totalizer/Flow Rate

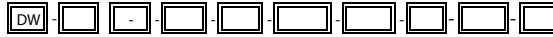
Gallons/gallons per minute G
Gallons/cubic feet per minute B
Gallons/cubic meters per second D
Cubic Meters/cubic meters per second E
Cubic Meters/cubic meters per minute T
Cubic Meters/cubic meters per hour H
Cubic Feet/gallons per minute F
Cubic Feet/cubic feet per minute J
Cubic Feet/cubic meters per hour K
Liters/liters per second N
Liters/liters per minute P
Liters/liters per hour Q
Million Gallons/gallons per minute M
Gallons/millions gallons per day R
Acre Feet/gallons per minute A

Testing & Tagging

Factory Calibrated F
Factory Calibrated/ID Tag S

¹ Conduit length must be less than or equal to cable length. Submersible Conduit limited to 100 ft (30 m).

Dynasonics Ultrasonic Flow Meters
 TFX-500w Transit Time Clamp-On
 Fixed Pipe Size Meter for Water



Model		
Base	DW	
Certification		
CE	C	
Transducer Type		
1/2 inch ANSI Pipe	CA	
3/4 inch ANSI Pipe	CB	
1 inch ANSI Pipe	CC	
1-1/4 inch ANSI Pipe	CD	
1-1/2 inch ANSI Pipe	CE	
2 inch ANSI Pipe	CF	
1/2 inch Copper Tube	CG	
3/4 inch Copper Tube	CH	
1 inch Copper Tube	CT	
1-1/4 inch Copper Tube	CJ	
1-1/2 inch Copper Tube	CK	
2 inch Copper Tube	CL	
1/2 inch Stainless Steel Tube	CM	
3/4 inch Stainless Steel Tube	CN	
1 inch Stainless Steel Tube	CP	
1-1/4 inch Stainless Steel Tube	CQ	
1-1/2 inch Stainless Steel Tube	CR	
2 inch Stainless Steel Tube	CS	
Transmitter Type		
24V DC Meter Mounted	E	
24V DC Remoted Mounted	F	
Remote (Transducer only)	Z	
Display		
Standard	S	
None (Transducer only)	X	
Remote Cable Length		
None (Meter Mounted or Transducer only)	WW	
15 feet	AC	
30 feet	AF	
50 feet	AK	
75 feet	AR	
100 feet	BW	
Conduit Type and Length¹		
None	WW	
15 feet	AC	
30 feet	AF	
50 feet	AK	
75 feet	AR	
100 feet	BW	
Reserved		
Standard	S	
Units of Measure Totalizer/Flow Rate		
Gallons/gallons per minute	G	
Gallons/cubic feet per minute	B	
Gallons/cubic meters per second	D	
Cubic Meters/cubic meters per second	E	
Cubic Meters/cubic meters per minute	T	
Cubic Meters/cubic meters per hour	H	
Cubic Feet/gallons per minute	F	
Cubic Feet/cubic feet per minute	J	
Cubic Feet/cubic meters per hour	K	
Liters/liters per second	N	
Liters/liters per minute	P	
Liters/liters per hour	Q	
Million Gallons/gallons per minute	M	
Gallons/millions gallons per day	R	
Acre Feet/gallons per minute	A	
None (Transducer only)	X	
Testing & Tagging		
Factory Calibrated	F	
Factory Calibrated/ID Tag (Not available for transducers only)	S	

¹ Conduit length must be less than or equal to cable length. Submersible Conduit limited to 100 ft (30 m).

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