Dynasonics®
Ultrasonic Flow Meters

Transit Time Flow Meters

TFX Ultra

DESCRIPTION

The TFX Ultra transit time meter measures clean liquids as well as those with small amounts of suspended solids or aeration such as surface water or sewage.

FEATURES

- Bi-directional flow measurement system
- Totalizer options include forward, reverse and net total
- Modbus RTU or BACnet MSTP over RS485; Ethernet connections including BACnet/IP, EtherNet/IP, and Modbus TCP/IP protocols
- Large, easy-to-read digital display
- Rugged, aluminum enclosure ensures a long service life in harsh environments
- Certified for hazardous area installation in North America and Europe

APPLICATIONS

TFX Ultra ultrasonic flow and energy meters clamp onto the outside of pipes and do not contact 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, and a large, bi-directional measuring range that ensures reliable readings even at very low and high flow rates. The TFX Ultra is available in a variety of configurations that permit the user to select a meter with features suitable to meet particular application requirements.

The TFX Ultra is available in two versions:

- A flow meter
- An energy flow meter used in conjunction with dual clamp-on RTDs for temperature measurement—ideal for retrofit, hydronic process and HVAC applications

OPERATION

Transit time flow meters measure the time difference between the travel time of an ultrasound wave going with the fluid flow and against the fluid flow. The time difference is used to calculate the velocity of the fluid traveling in a closed-pipe system. The transducers used in transit time measurements operate alternately as transmitters and receivers. Transit time measurements are bi-directional and are most effective for fluids that have low concentrations of suspended solids.

Temperature measurements, when used in conjunction with flow measurement, can yield energy usage readings in the form of heat flow. To find the net heat loss or gain, energy usage is calculated by multiplying the flow rate of the heat transfer fluid by the change of heat content in that fluid after it has done some kind of work.

An ultrasonic meter equipped with heat flow capabilities is designed to measure the rate and quantity of heat delivered or removed from devices such as heat exchangers. The instrument measures the volumetric flow rate of the heat exchanger liquid, the temperature at the inlet pipe and the temperature at the outlet pipe.

$$\text{Rate of Heat Delivery} = Q \times (T_{in} - T_{out}) \times C \times \rho$$

Where

|		
Q	=	Volumetric flow rate
T_{in}	=	Temperature at the inlet
T_{out}	=	Temperature at the outlet
C	=	Heat capacity
ρ	=	Density of fluid

By applying a scaling factor this heat flow measurement can be expressed in various units: Btu, Watts, Joules, Kilowatts, and others.

Badger Meter

Product Data Sheet

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COMMON FEATURES

- Rate-Total Backlit Display

- 4…20 mA Output

- 0…1000 Hz Rate Pulse and Dual Alarm Outputs
  (Flow Meter Model only)

- Auxiliary Total Pulse Output 0…16 Hz
  (Energy Meter model only)

- USB Programming Port

- RS485 Modbus Network Connection

- Remote Totalizer Reset

METER WITH INTEGRAL FLOW TRANSDUCER

For pipe/tubing sizes of 2 in. (50 mm) and smaller, the TFX Ultra meter is available with a clamp-on transducer mounted and wired directly to the flow meter display/electronics enclosure. This design provides a convenient installation in areas where local indication is required.

Bottom View

Integral Flow Transducer

Front View

Supply

Temperature Transducers
(Energy Meter Only)

Return
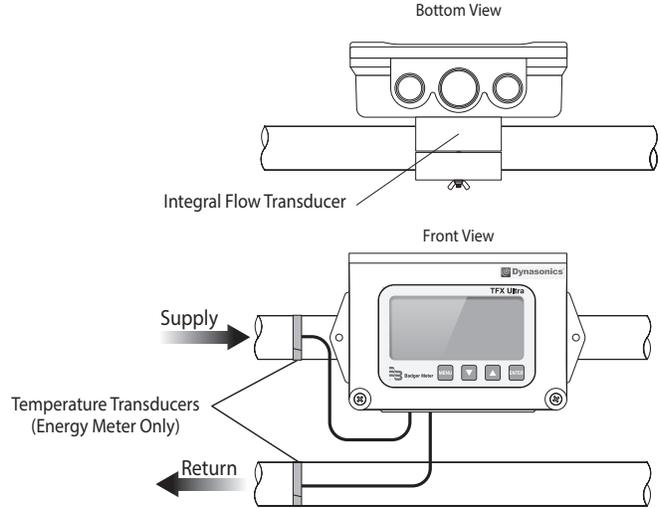
METER WITH REMOTE FLOW TRANSDUCER

The TFX Ultra is available with remote mounted transducers that permit separation of up to 990 feet (300 m). This design is used on larger pipes or when pipes are located in areas that are not convenient for viewing, or on piping systems with severe vibration.

Remote Flow Transducers

Supply

Temperature Transducers
(Energy Meters Only)
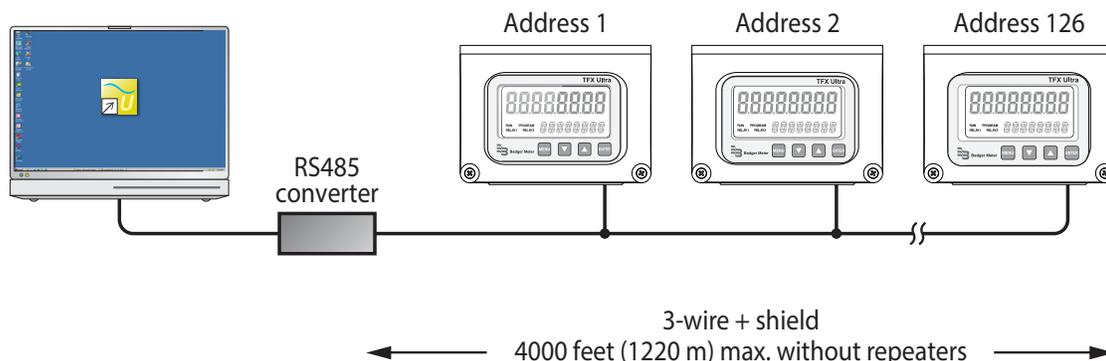
Return
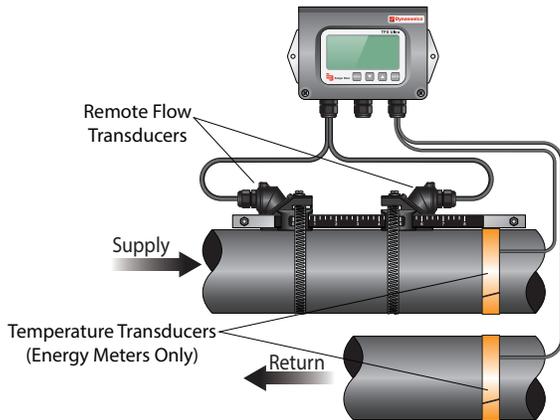
RAIL MOUNTING KIT

For remote flow DTTR transducers, the rail mounting kit aids in installation and positioning of the transducers. Transducers slide on the rails, which have measurement markings that are viewable through the sight opening.
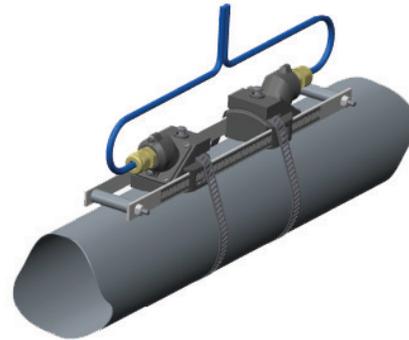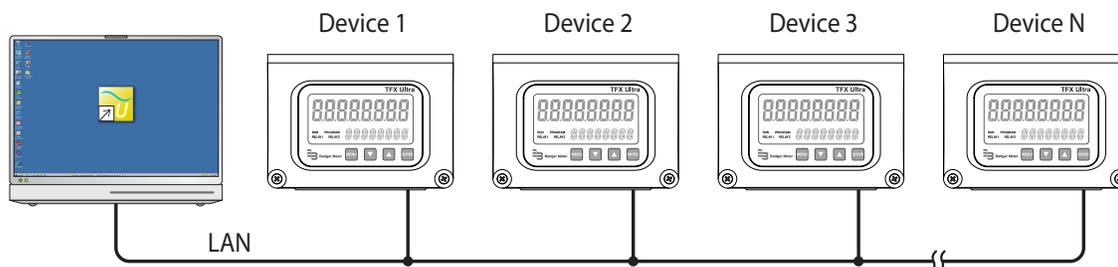
NETWORK OPTIONS

RS485 Network

All TFX Ultra meters come equipped with an RS485 and use a Modbus RTU command set (data can be returned in single-precision, double-precision, integer or floating point values) or an optional BACnet MSTP protocol. Up to 126 Ultra products can be run on a single daisy-chain network and be individually queried for flow rate, positive flow accumulator, negative flow accumulator, supply temperature, return temperature and signal strength. Flow accumulators can be cleared at discrete addresses or globally. The RS485 network is also compatible with EnergyLink, direct to Excel, application. (EnergyLink is compatible with Modbus RTU only.)

Ethernet 10/100 Base-T Network

If equipped with the optional Ethernet communications module, the TFX Ultra can be plugged into a LAN and queried for flow rate, positive flow accumulator, negative flow accumulator, supply temperature, return temperature and signal strength. The module contains Modbus TCP/IP, EtherNet/IP and BACnet/IP network compatibility.

RTD KITS FOR INTEGRAL AND REMOTE ENERGY MEASUREMENT METERS

D010-3000-120	RTD Kit[1], clamp on, 130° C, 1000 Ohm, 20 ft	D010-3000-200	Insertion RTD Kit[2], 3 in., 1/4 in. O.D., 260° C, 1000 Ohm, 20 ft
D010-3000-121	RTD Kit[1], clamp on, 130° C, 1000 Ohm, 50 ft	D010-3000-201	Insertion RTD Kit[2], 3 in., 1/4 in. O.D., 260° C, 1000 Ohm, 50 ft
D010-3000-122	RTD Kit[1], clamp on, 130° C, 1000 Ohm, 100 ft	D010-3000-202	Insertion RTD Kit[2], 3 in., 1/4 in. O.D., 260° C, 1000 Ohm, 100 ft
D010-3000-123	RTD Kit[1], clamp on, 200° C, 1000 Ohm, 25 ft	[1]RTD Kits include: 2 RTDs, heat sink compound and installation tape	
D010-3000-124	RTD Kit[1], clamp on, 200° C, 1000 Ohm, 50 ft	[2]Insertion RTD Kits include: A set of 2 RTD	
D010-3000-125	RTD Kit[1], clamp on, 200° C, 1000 Ohm, 100 ft		

MOUNTING SYSTEM FOR DTTR TRANSDUCERS

D010-2102-310	10 in. scaled mounting rail system

MOUNTING SYSTEM FOR DTTN TRANSDUCERS

D010-2102-010	10 in. scaled mounting rail system
D010-2102-016	16 in. scaled mounting rail system

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	DTTR/DTTN/DTTH/DTTL/ Easy Rail (DTTJ/DTTK): ±1% of reading or ±0.01 FPS (0.003 MPS), whichever is greater DTTS/DTTC: 1 in. (25 mm) and larger = ±1 % above 1 FPS (0.3 MPS) and ±0.01 FPS below 1 FPS DTTS/DTTC: 3/4 in. (19 mm) and smaller = ±1% of full scale
Temperature Accuracy (Energy Models Only)	Option A: 32…122° F (0…50° C) Absolute: 0.22° F (0.12° C) Difference: 0.09° F (0.05° C) Option B: 32…212° F (0…100° C) Absolute: 0.45° F (0.25° C) Difference: 0.18° F (0.1° C) Option C: −40…350° F (−40…177° C) Absolute: 1.1° F (0.6° C) Absolute: 1.1° F (0.6° C) Difference: 0.45° F (0.25° C) Option D: −4…85° F (−20…30° C) Absolute: 0.22° F (0.12° C) Absolute: 0.22° F (0.12° C)Difference: 0.09° F (0.05° C)
Sensitivity	Flow: 0.001 FPS (0.0003 MPS) Temperature: Option A: 0.03° F (0.012° C) Option B: 0.05° F (0.025° C) Option C: 0.1° F (0.06° C) Option D: 0.03° F (0.012° C)
Repeatability	0.5% of reading
Installation Compliance	General Safety (all models): UL 61010-1, CSA C22.2 No. 61010-1; (power options A and D only) EN 61010-1 Hazardous Location (power supply options A and D only): Class I Div. 2 Groups C, D, T4; Class II, Division 2, Groups F, G, T4; Class III Division 2 for US/CAN; Standards: UL 1604, CSA 22.2 No. 213, ANSI/ISA 12.12.01 (2013) Compliant with directives 2004/108/EC, 2006/95/EC and 94/9/EC on meter systems with integral flow transducers, transducers constructed with twinaxial cable (all transducers with cables 100 ft (30 m) and shorter) or remote transducers with conduit

Transmitter

Power Requirements	AC:	95…264 V AC 47…63 Hz @ 17 VA max. or 20…26 V AC 47…63 Hz @ 0.35 A max.
	DC:	10…28 V DC @ 5 W max.
	Protection:	Auto resettable fuse, reverse polarity and transient suppression
Display	Two line LCD, LED backlit:	Top row 0.7 inch (18 mm) height, 7-segment Bottom row 0.35 inch (9 mm) height, 14-segment
	Icons:	RUN, PROGRAM, RELAY1, RELAY2
	Flow rate indication:	8-digit positive, 7-digit negative max. Auto decimal, lead zero blanking
	Flow accumulator (totalizer):	8-digit positive, 7-digit negative max. Reset via keypad, ULTRALINK, network command or momentary contact closure
Enclosure	NEMA Type 4 (IP-65) Construction:	Powder-coated aluminum, polycarbonate, stainless steel, polyurethane, nickel-plated steel mounting brackets
	Size:	6.0 in. W x 4.4 in. H x 2.2 in. D (152 mm W x 112 mm H x 56 mm D)
	Conduit Holes:	(2) 1/2 in. NPT female; (1) 3/4 in. NPT female; Optional Cable Gland Kit
Temperature	−40…131° F (−40…55° C) for line AC power with Ethernet option; −40…149° F (−40…65° C) for all others	
Configuration	Via optional keypad or PC running ULTRALINK software (**Note:** not all configuration parameters are available from the keypad—for example flow and temperature calibration and advanced filter settings)	
Engineering Units	Flow-Only Model:	Feet, gallons, cubic feet, million gallons, barrels (liquid and oil), acre-feet, pounds, meters, cubic meters, liters, million liters, kilograms
	Energy Model:	Btu, mBtu, mmBtu, tons, kJ, kW, MW, kilocalorie, megacalorie
Inputs/Outputs	USB 2.0:	For connection of a PC running ULTRALINK configuration utility
	RS485:	Modbus RTU command set or BACnet® MSTP; Baud rates 9600, 14400,19200, 38400, 56000, 57600, 76800
	Ethernet:	Optional 10/100 Base T RJ45, communication via Modbus TCP/IP, EtherNet/IP, or BACnet/IP
	4-20 mA:	12-bit, internal power, can span negative to positive flow/energy rates
	Input:	Reset totalizer when input is connected to signal ground
	Energy Model:	Total Pulse: Opto isolated open collector transistor 2…28V DC, 100 mA max, 30 ms pulse width up to 16 Hz, 12-bit resolution, can span negative to positive rates; square-wave or turbine meter simulation outputs. Cannot be used with Ethernet option
	Flow-Only Model:	Frequency Output: Open collector, 10…28V DC, 100 mA max, 0…1000 Hz; square wave or turbine meter simulation
		Two Alarm Outputs: Open-collector, 10…28V DC, 100 mA max, configure as rate alarm, signal strength alarm or totalizer pulse (100 ms pulse width up to 1 Hz max)

Transducers

| Construction	DTTR/Easy Rail (DTTJ/DTTK)	NEMA 6*/IP67	PBT glass filled, Ultem, Nylon cord grip, PVC cable jacket; –40…250° F (–40…121° C)
	DTTC/DTTL	NEMA 6*/IP67	CPVC, Ultem, Nylon cord grip, PVC cable jacket; –40…194° F (–40…90° C)
	DTTN (IS)	NEMA 6*/IP67	CPVC, Ultem, Nylon cord grip, PVC cable jacket; –40…185° F (–40…85° C)
	DTTN/DTTL (Submersible)	NEMA 6P*/IP68	CPVC, Ultem, Nylon cord grip Polyethylene cable jacket; –40…194° F (–40…90° C)
	DTTH	NEMA 6*/IP67	PTFE, Vespel, Nickel-plated brass cord grip PFA cable jacket; –40…350° F (–40…176° C)
	DTTS	NEMA 6*/IP67	PVC, Ultem, Nylon cord grip, PVC cable jacket; –40…140° F (–40…60° C)
	*NEMA 6 units: to a depth of 3 ft (1 m) for 30 days max. NEMA 6P units: to a depth of 100 ft (30 m) seawater equivalent density indefinitely.		
Frequency	DTTS/DTTC: DTTR/DTTN/DTTH/ DTTJ/DTTK: DTTL:	2 MHz 1 MHz 500 KHz	
Cables	RG59 Coaxial or Twinaxial (optional armored conduit)		
Cable Length	990 ft (300 meter) max. in 5 ft (1.5 m) increments; Submersible Conduit limited to 100 ft (30 m)		
RTDs (Energy Models Only)	Platinum 385, 1000 Ohm, 3-wire; PVC jacket cable		
Installation	DTTN (option N) /DTTR/DTTS/DTTH/DTTC:	General (see *"Installation Compliance" on page 4*)	
	DTTN Transducer (option F) and IS Barrier D070-1010-002:	Class I Div. 1, Groups C&D T5 Intrinsically Safe Ex ia; CSA C22.2 No. 142 & 157; UL 913 & 916	

Software Utilities

| ULTRALINK	Used to configure, calibrate and troubleshoot Flow-Only and Energy models. Connection via USB A/B cable; software is compatible with Windows® 2000, Windows XP, Windows Vista and Windows 7
Programming Cable	USB A/B cable; 10 ft (3.05 m); part number D005-2117-003

ULTRALINK SOFTWARE UTILITY

In addition to, or as a replacement for, the keypad entry programming, the flow meter can be used with the ULTRALINK software utility. The software is used to configure, calibrate and communicate with TFX Ultra flow meters. Additionally, it has numerous troubleshooting tools to make diagnosing and correcting installation problems easier.

A PC can be hard-wired to the TFX Ultra through a standard USB connection found on most current computers.
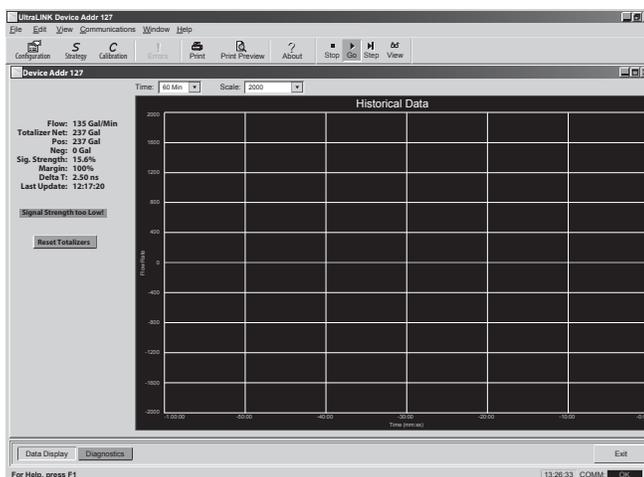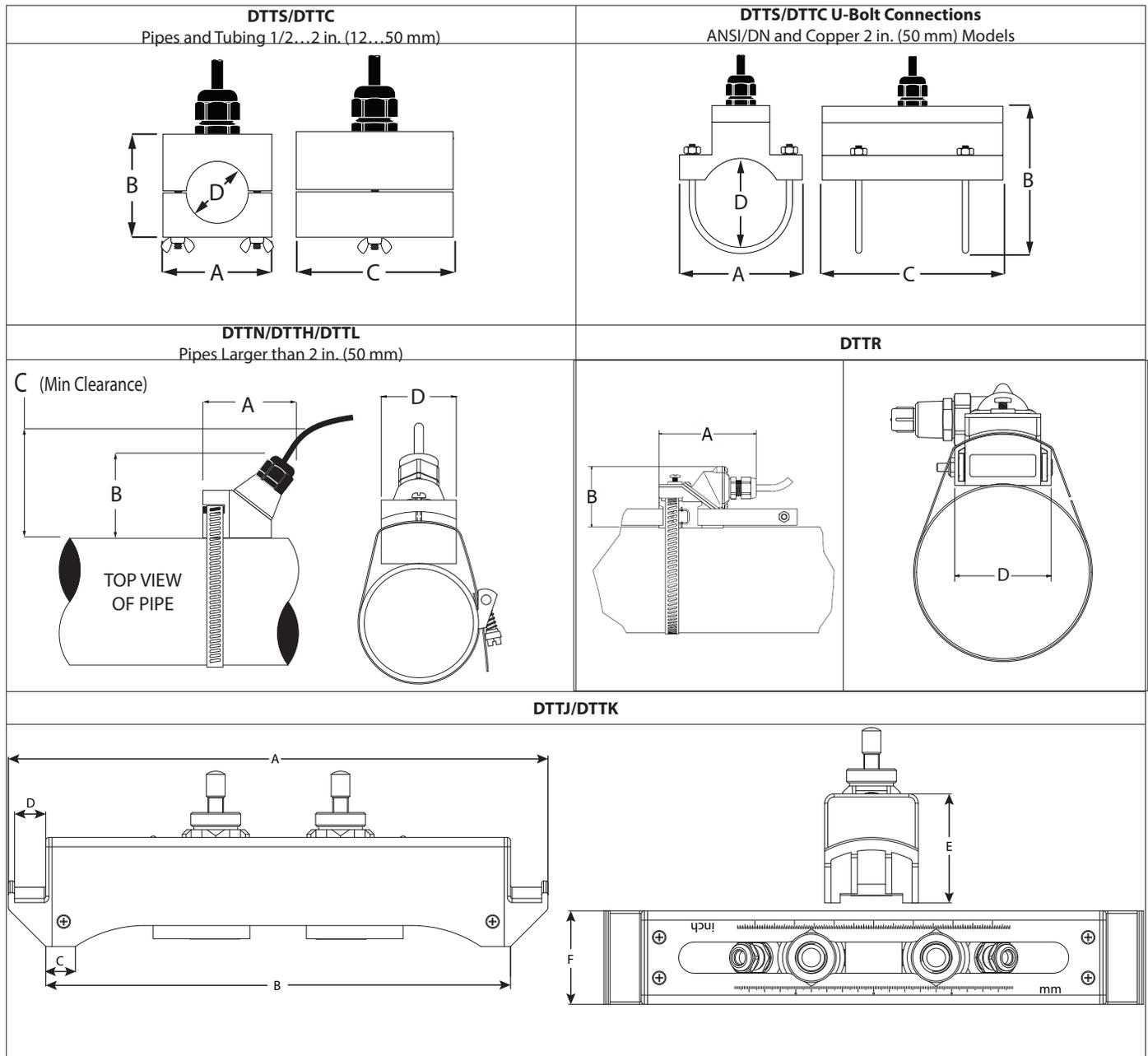
DIMENSIONS

### Remote System Electronics Enclosure

Wall mount

Pipe mount

C
DIA Mounting
holes (2)
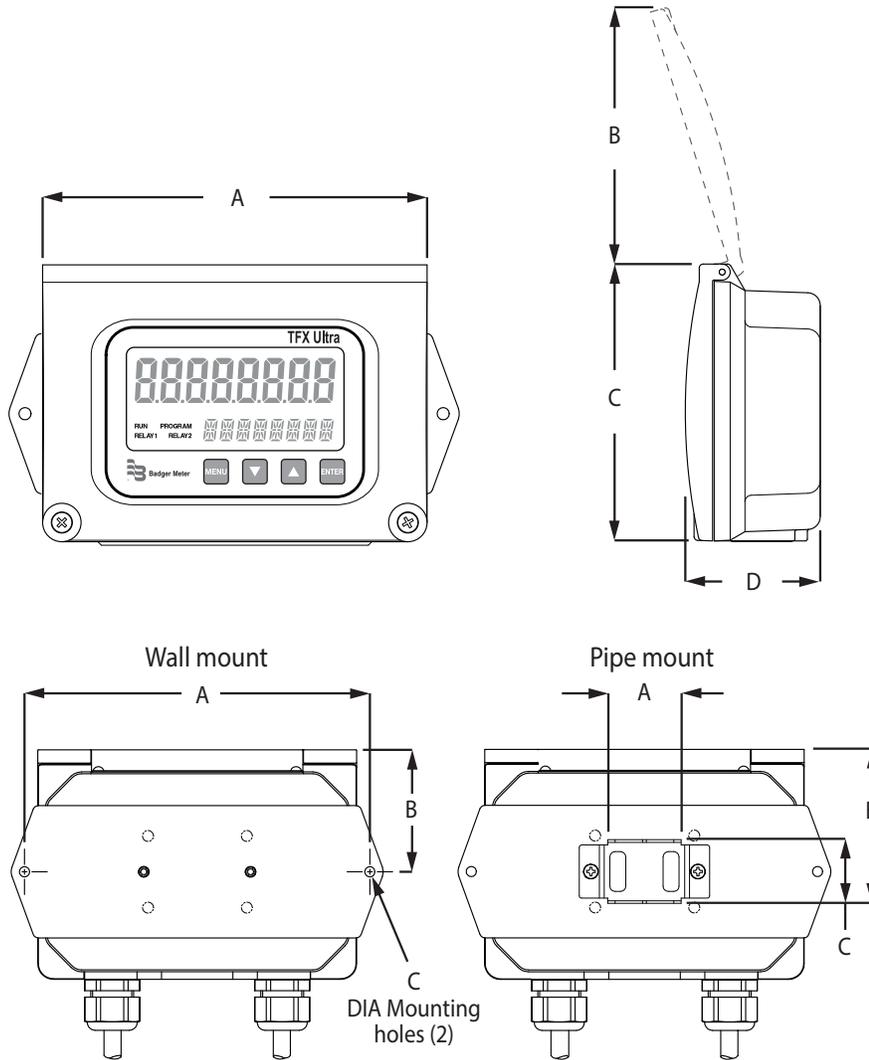
	Enclosure	Wall Mount	Pipe Mount
A	6.00 in. (132.4 mm)	6.50 in. (165.1 mm)	1.38 in. (35.1 mm)
B	4.20 in. (106.7 mm)	2.30 in. (58.4 mm)	2.90 in. (73.7 mm)
C	4.32 in. (110 mm)	0.19 in. (4.8 mm)	1.20 in. (30.5 mm)
D	2.12 in. (53.8 mm)		

DTTR/DTTN/DTTH/DTTL/DTTJ/DTTK (EasyRail) Transducers

DTTS/DTTC
Pipes and Tubing 1/2…2 in. (12…50 mm)

DTTS/DTTC U-Bolt Connections
ANSI/DN and Copper 2 in. (50 mm) Models

DTTN/DTTH/DTTL
Pipes Larger than 2 in. (50 mm)

DTTR

DTTJ/DTTK

	DTTR	DTTN	DTTH	DTTL	DTTJ	DTTK
A	3.75 in. (95 mm)	2.95 in. (74.9 mm)	2.95 in. (74.9 mm)	3.40 in. (86.4 mm)	13.62 in. (345.95 mm)	19.92 in. (505.97 mm)
B	2.35 in. (60 mm)	2.75 in. (69.8 mm)	2.75 in. (69.8 mm)	2.94 in. (74.7 mm)	11.73 in. (297.94 mm)	18.03 in. (457.96 mm)
C	—	3.00 in. (76.2 mm)	3.00 in. (76.2 mm)	3.20 in. (81.3 mm)	0.75 in. (19.05 mm)	0.75 in. (19.05 mm)
D	2.19 in. (56 mm)	1.70 in. (43.2 mm)	1.71 in. (43.4 mm)	2.50 in. (63.5 mm)	0.79 in. (20.06 mm)	0.79 in. (20.06 mm)
E	—	—	—	—	2.76 in. (70.10 mm)	2.76 in. (70.10 mm)
F	—	—	—	—	2.36 in. (59.94 mm)	2.36 in. (59.94 mm)

Integral System
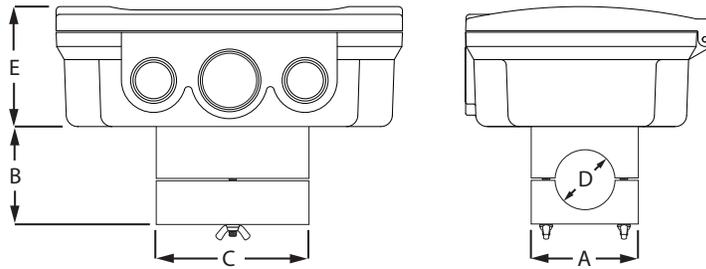
DTTS/DTTC Transducers

Pipe Size	Pipe Material	A	B	C	D	E	Measuring Range
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)	2.12 in. (53.8 mm)	2.0…38 gpm (8…144 lpm)
	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)	2.12 in. (53.8 mm)	1.8…27 gpm (7…102 lpm)
	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)	2.12 in. (53.8 mm)	1.5…18 gpm (6…68 lpm)
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)	2.12 in. (53.8 mm)	2.75…66 gpm (10…250 lpm)
	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)	2.12 in. (53.8 mm)	2.5…54 gpm (10…204 lpm)
	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)	2.12 in. (53.8 mm)	2.5…45 gpm (10…170 lpm)
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)	2.12 in. (53.8 mm)	3.5…108 gpm (13…409 lpm)
	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)	2.12 in. (53.8 mm)	3.5…95 gpm (13…320 lpm)
	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)	2.12 in. (53.8 mm)	3.5…85 gpm (13…320 lpm)
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)	2.12 in. (53.8 mm)	5.0…186 gpm (19…704 lpm)
	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)	2.12 in. (53.8 mm)	4.5…152 gpm (17…575 lpm)
	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)	2.12 in. (53.8 mm)	4.0…136 gpm (15…514 lpm)
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)	2.12 in. (53.8 mm)	6.0…250 gpm (23…946 lpm)
	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)	2.12 in. (53.8 mm)	5.0…215 gpm (19…814 lpm)
	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)	2.12 in. (53.8 mm)	5.0 …200 gpm (19…757 lpm)
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)*	2.12 in. (53.8 mm)	8.0…420 gpm (30…1590 lpm)
	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)*	2.12 in. (53.8 mm)	8.0…375 gpm (30…1419 lpm)
	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)	2.12 in. (53.8 mm)	8.0…365 gpm (30…1381 lpm)

* Varies due to U-bolt configuration

PART NUMBER CONSTRUCTION—TFX ULTRA FLOW METERS

DTFX ☐☐ - Z N - ☐☐☐☐☐☐ - ☐☐☐ - ☐

MODEL
Flow [1]	B
Energy [2]	E

PIPE SIZE / MEASUREMENT RANGE
Remote Mount [3]	Z

TRANSDUCER MATERIAL / TEMPERATURE
None	N

POWER
AC (Universal) | 95…264V AC	A
AC | 20…26V AC, General Safety Only	C
DC | 11…28V DC	D

KEYPAD
No Keypad	N
4 Button Keypad	K

ADVANCED COMMUNICATIONS
Modbus RTU	N
BACnet MS/TP	B
BACnet MS/TP 76800 Baud	H
BACnet MS/TP; 10/100 Base-T (EtherNet/IP, BACnet/IP, Modbus TCP/IP)	C
Modbus RTU and 10/100 Base-T (EtherNet/IP, BACnet/IP, Modbus TCP/IP)	E
Totalizing Pulse - Modbus RTU	P
Totalizing Pulse - BACnet MS/TP	Q

RTD TEMPERATURE RANGE [4]
None | **Select for DTFXB**	N
32…122° F (0…50° C) | **DTFXE Only**	A
32…212° F (0…100° C) | **DTFXE Only**	B
-40…350° F (-40…177° C) | **DTFXE Only**	C
4…85° F (-20…35° C) | **DTFXE Only**	D

APPROVALS
Class I Div 2, Groups C, D T4; Class II Div 2, Groups F, G T4; Class III Div 2 | **For Power Supply Options A or D**	F
General Safety	N

OPTIONS
None	N
Cable Gland Kit	A

LANGUAGE
English	
French	F
German	G
Spanish	S

[1] 4…20 mA Output; 0…1000 Hz Frequency Pulse Output; Dual Open Collector Outputs; communication options

[2] 4…20 mA output; Dual 1000 Ohm RTD Connections; communication options; order RTD kits separately

[3] Transducers sold separately

[4] RTDs sold separately

PART NUMBER CONSTRUCTION—REMOTE FLOW TRANSDUCERS, SMALL PIPES 1/2…2 IN. (15…50 MM)

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DTT [  ][  ][  ] - [  ] - [  ][  ]
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Piping Environment
PVC -40…140° F (-40…60° C)	S
CPVC -40…194° F (-40…90° C)	C

Nominal Pipe Size
1/2 in.	D
3/4 in.	F
1 in.	G
1-1/4 in.	H
1-1/2 in.	J
2 in.	L

Pipe Type
ANSI Pipe	P
Copper Pipe	C
Tubing	T

Cable Length
20 ft (6.10 m)	020
50 ft (15.24 m)	050
100 ft (30.48 m)	100

Conduit Type
None (Bare Twinax Cable)	N
Flexible Armored (LiquidTite)	A

Conduit Length
None	000
20 ft (6.10 m)	020
50 ft (15.24 m)	050
100 ft (30.48 m)	100

PART NUMBER CONSTRUCTION—REMOTE FLOW TRANSDUCERS, PIPES LARGER THAN 2 IN. (50 MM)

General Purpose

DTT☐	- ☐	- ☐☐	- N

Transmitter Type

Standard (1 MHz), 250° F (121° C) Max Temp.	R
Large Pipe (500 kHz), 194° F (90° C) Max Temp.	L
High Temperature (1 MHz), 350° F (176° C) Max Temp.	H
Easy Rail (1 MHz), 2…6 in. (50…150 mm), 250° F (121° C) Max Temp.	J
Easy Rail (1 MHz), 2…10 in. (50…250 mm), 250° F (121° C) Max Temp.	K

Cable Length

20 ft (6.10 m)	020
50 ft (15.24 m)	050
100 ft (30.48 m)	100

Conduit Type

None, Bare Twinax Cable	N
Flexible Armored |***Not available with Easy Rail or high temperature DTTH transducer***	A

Conduit Length

None	000
20 ft (6.10 m)	020
50 ft (15.24 m)	050
100 ft (30.48 m)	100

General Purpose, Submersible (IP68)

DTT☐	- ☐	- S 000	- N

Transmitter Type

Standard: 1 MHz	N
Large Pipe: 500 kHz	L

Cable Length

20 ft (6.10 m)	020
50 ft (15.24 m)	050
100 ft (30.48 m)	100

Hazardous Location (Class 1, Division 1, Groups C and D)

DTT N	- ☐	- ☐☐	- F

Cable Length

20 ft (6.10 m)	020
50 ft (15.24 m)	050
100 ft (30.48 m)	100

Conduit Type

None, Bare Twinax Cable	N
Flexible Armored	A

Conduit Length

None	000
20 ft (6.10 m)	020
50 ft (15.24 m)	050
100 ft (30.48 m)	100

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