

Series DMTFC Insertion

Series DMTF wall-mounted Insertion Transit Time Ultrasonic Flow meter provides abundant capabilities for accurate liquid flow measurement from outside of a pipe. It utilizes state-of-the-art technologies on ultrasonic transmission /receiving, digital signal processing and transit-time measurement. The proprietary signal quality tracking and self-adapting technologies allow system to optimally adapt to different pipe materials automatically. Due to hot-tapped mounting of insertion transducers, there is no ultrasonic compound and coupling problem; Even though the transducers are inserted into pipe wall, they do not intrude into the flow, thus, do not generate disturbance or pressure drop to the flow. The insertion (wetted) type has the advantage of long-term stability and better accuracy.

Features:

- ◆ Hot-tapped Installation, no pipe line flow interrupted.
- ◆ internally configured batch controller makes batch control convenient and accurate.
- ◆ Spool-piece transducer for best accuracy with long-term stability
- ◆ No moving parts, no pressure drop, no maintenance.
- ◆ wide bi-directional flow range of 0 to ± 40 ft/s (0 to ± 12 m/s)
- ◆ wide range of pipe sizes from 65mm to 4570mm.
- ◆ Signal quality tracking and self-adjusting capabilities.
- ◆ Enhanced extended transducers for cement pipeline, less than 100mm wall thickness permitted.
- ◆ Up to 8GB SD card data logger optional, time interval can be freely setup by user.
- ◆ Suited high temperature: $-40^{\circ}\text{C} \sim 150^{\circ}\text{C}$.



Applications:

- ◆ Water, including hot water, chilled water, city water, sea water etc.
- ◆ Secondary sewage, waste treatment, etc.
- ◆ Oil, including lubricating oil, diesel oil, fuel oil, etc.
- ◆ Beverage, food and pharmaceutical processor
- ◆ HVAC, energy measurement system, etc.

Principle of Measurement

DMTF transit time flow meter utilizes two transducers that function as both ultrasonic transmitters and receivers. The transducers are clamped on the outside of a closed pipe at a specific distance from each other. The transducers can be mounted in V-method in which case the ultra sound transverses the pipe twice, or W-method in which case the ultra sound transverses the pipe four times, or in Z-method in which case the transducers are mounted on opposite sides of the pipe and the ultra sound transverses the pipe only once. The selection of mounting method depends on pipe and liquid characteristics. When the flow meter works, the two transducers transmits and receives ultrasonic signals amplified by multi beam which travels firstly downstream and then upstream (Figure 1). Because ultra sound travels faster downstream than upstream, there will be a difference of time of flight(Δt). When the flow is still, the time difference(Δt) is zero. Therefore, as long as we know the time of flight both downstream and upstream, we can work out the time difference, and then the flow velocity (V) and flow volume (Q) via the following formula.

$$V = K * D * \Delta t$$

V: Liquid velocity

K: Constant

D: Distance between the two transducers

Δt : Difference in time of flight

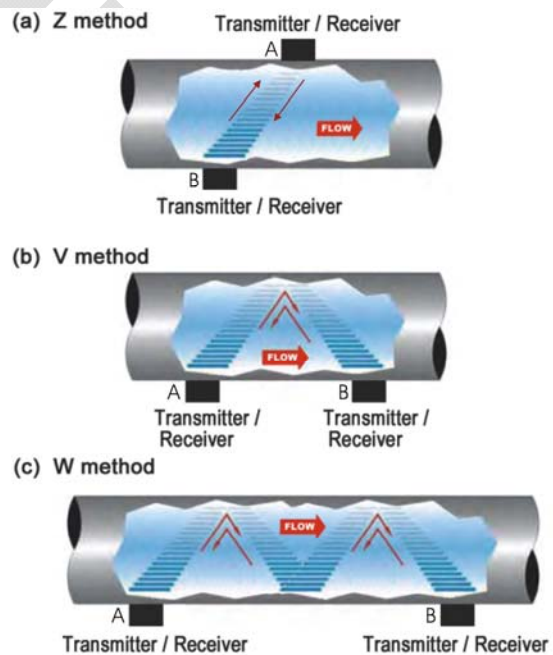


Figure 1

Selection Table of DMTFC Insertion Ultrasonic Flow Meter

TRANSMITTER SELECTION

Model	DMTFC	- X	- X	X	X	X	- X	/* (Transducers)
Clamp-on Series								
Approvals								
N—N/A								
Ex—ExdIIBT6								
Power Supply								
A—110VAC								
B—220VAC								
E—24VDC								
Output Selection 1								
N—N/A								
1—4-20mA								
2—Pulse Output (Flow rate or Totalizer Output)								
3—Relay								
4—RS232								
5—RS485								
6—Hart+(4-20mA)								
7—ModBus								
8—Data Logger & Software								
9—Heat Flow (Two loops temperature transmitter 4-20mA input)								
Output Selection 2								
Same as Output Selection 1								
Output Selection 3								
Same as Output Selection 1								
Product Service Code								
Please Contact the factory for the details, if not available, select: N								

TRANSDUCER SELECTION

	DC	-	X	X	-	X	-	X	-	X
Transducer Type _____										
1—For Welded Pipe										
2—For Cast Iron Pipe										
3—For Cement Pipe(extended) (Cement Pipe Wall thickness less tan 110mm)										
Transducers Temperature _____										
N--40~121°C										
H--40~150°C										
Pipeline Diameter _____										
0065—DN65										
4500—DN4500										
Cable Length _____										
XXX (meter)										
The Maximum can reach to 300m, also can contact with the factory for details.										
Work Underwater _____										
0—NO										
1—YES										

Parts Number Construction example:

For example: DMTFC-N-B1NN-N/DC-I-N-0400-030-0

Description: DMTFC insertion ultrasonic flow meter, 220VAC power supply, 4-20mA output, Non-multiple output selections; welded directly for the pipe of transducers, standard transducer temperature, installing pipeline DN400, transducer cable length is 30m, no underwater working conditions.

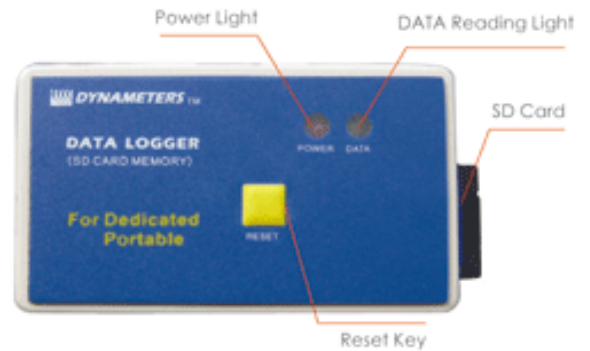
Specifications

Transmitter	Power Supply	(Std) 10-28 VDC @ 2.5VA max.115/230VAC 50/60Hz ±15%@ 5VA max. Solar energy
	Velocity	0~ 40 ft/s (0 ~ ±12m/s), bi-directional
	Display	4 line×16 English letters LCD back lit, can display total flow, flow rate, velocity and meter running status etc.
	Units Rate Totalized	User Configured (English and Metric); Rate and Velocity Display; (FWD, NET, REV or BATCH) gallons, ft ³ , barrels, lbs liters, m ³ ,kg
	Output	4~20mA, OCT Pulse, Relay, RS232C or RS485, options: up to 8 GB Data logger, Hart +(4~20mA), Modbus
	Accuracy	±1.0% of reading at rates >0.5 m/s ±0.005 m/s of reading at rates<0.5 m/s
	Sensitivity	Flow Rate: 0.001ft/s (0.0003m/s)
	Repeatability	0.2% of reading
	Security	Keypad lockout, access code enable
	Dimensions and Weight	Std.:241*193*76.5 Weight: <2.5kg Exp: 255*220*110 Weight: <5.0kg
Transducer	Liquid Types Supported	Virtually most any liquid containing less than 2% total suspended solids (TSS) or aeration
	Pipe Range	65mm-4570mm
	Suited Liquid Temperature	Std. Temp. Transducer: -40°C~121°C High Temp. Transducer: -40°C~150°C
	Cable Length	Shielded transducer cable. Standard length 20fts (6m). Can be extended to 990fts (300m). Contact the manufacturer for longer cable requirement. Cable should not be laid in parallel with high-voltage power line; neither should it be close to strong interference source such as power transformers.
	Dimensions	Std.: φ20mm, 190mm; weight:<0.6kg Extended: φ20mm, 325mm; weight:<1.6kg

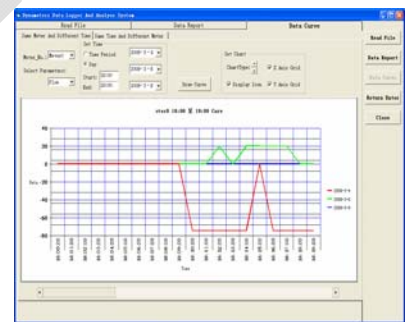
Data Logger and Software Utility

Features:

1. Provides data logging, based on SD card data memory, the memory capacity can be 512M,1GB, 2GB, 4GB, 8GB. Normally, 1GB can store 5 year data with 5 minutes logging interval.
2. Very easy to read data from SD card (just plug it out from Dynameters Data Logger, and run Dynameters Data Logging and Analyze software, browse the SD card file).
3. Data report and Data Curve functions (showed in the right).
4. User can edit and Excel report and print it on PC (showed in the right).
5. Analyze Functions Included (showed in the right).
6. Logging Parameters: Flow Rate, Velocity, Positive total flow, Negative total flow, Net total flow, Total Heat flow, and Heat flow rate. If user is interested in other parameters, please consult us. Users can delete the unnecessary parameters from Excel Table and then print the data table.
7. We have two types of data logger, one for dedicated (including DMTFB, DMTFC, DMTFD, DMTFF, DMHF) and Portable (DMTFP) Series, the other for Handheld (DMTFH) Series.

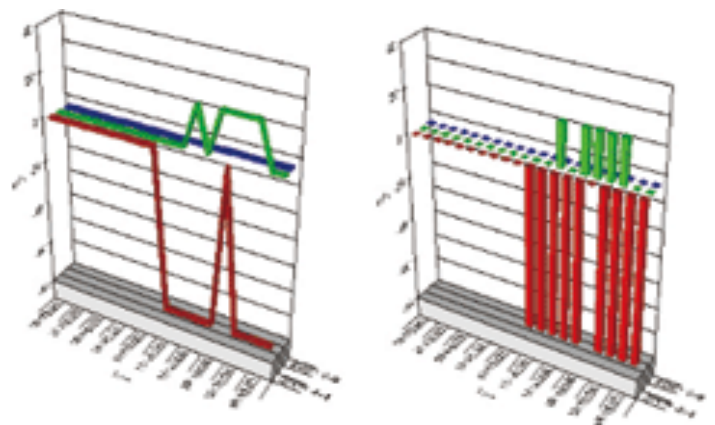


Time	Flow	Vel	...
2009-3-8 18:10:50	-1330762/A	-0.0290146/f	...
2009-3-8 18:10:55	-13182562/A	-0.0290076/f	...
2009-3-8 18:11:00	-1348082/A	-0.0241707/f	...
2009-3-8 18:11:05	-13022262/A	-0.0251046/f	...
2009-3-8 18:11:10	-12822262/A	-0.0253433/f	...
2009-3-8 18:11:15	1.472562/A	0.2251626/f	...
2009-3-8 18:11:20	6.778262/A	2.162486/f	...
2009-3-8 18:11:25	11.522262/A	2.648706/f	...
2009-3-8 18:11:30	11.97082/A	2.624626/f	...
2009-3-8 18:11:35	11.90262/A	2.620226/f	...
2009-3-8 18:11:40	11.95862/A	2.642556/f	...
2009-3-8 18:11:45	12.00262/A	2.652226/f	...
2009-3-8 18:11:50	11.90762/A	2.620376/f	...
2009-3-8 18:11:55	11.98562/A	2.648396/f	...
2009-3-8 18:12:00	11.96862/A	2.644796/f	...
2009-3-8 18:12:05	11.90962/A	2.642896/f	...
2009-3-8 18:12:10	11.90762/A	2.621176/f	...
2009-3-8 18:12:15	11.90762/A	2.621106/f	...
2009-3-8 18:12:20	12.01262/A	2.655866/f	...
2009-3-8 18:12:25	11.98862/A	2.642126/f	...
2009-3-8 18:12:30	12.02262/A	2.651976/f	...
2009-3-8 18:12:35	11.94162/A	2.629546/f	...

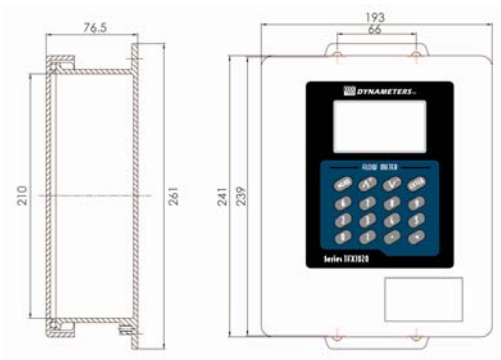


Rank	TM	Flow	Vel	MT	POS	MSD	SPK
1	2009-3-8 18:10:50	-1330762/A	-0.0290146/f	0x03	0x03	0x03	0x03
2	2009-3-8 18:10:55	-13182562/A	-0.0290076/f	0x03	0x03	0x03	0x03
3	2009-3-8 18:11:00	-1348082/A	-0.0241707/f	0x03	0x03	0x03	0x03
4	2009-3-8 18:11:05	-13022262/A	-0.0251046/f	0x03	0x03	0x03	0x03
5	2009-3-8 18:11:10	-12822262/A	-0.0253433/f	0x03	0x03	0x03	0x03
6	2009-3-8 18:11:15	1.472562/A	0.2251626/f	0x03	0x03	0x03	0x03
7	2009-3-8 18:11:20	6.778262/A	2.162486/f	0x03	0x03	0x03	0x03
8	2009-3-8 18:11:25	11.522262/A	2.648706/f	0x03	0x03	0x03	0x03
9	2009-3-8 18:11:30	11.97082/A	2.624626/f	0x03	0x03	0x03	0x03
10	2009-3-8 18:11:35	11.90262/A	2.620226/f	0x03	0x03	0x03	0x03
11	2009-3-8 18:11:40	11.95862/A	2.642556/f	0x03	0x03	0x03	0x03
12	2009-3-8 18:11:45	12.00262/A	2.652226/f	0x03	0x03	0x03	0x03
13	2009-3-8 18:11:50	11.90762/A	2.620376/f	0x03	0x03	0x03	0x03
14	2009-3-8 18:11:55	11.98562/A	2.648396/f	0x03	0x03	0x03	0x03
15	2009-3-8 18:12:00	11.96862/A	2.644796/f	0x03	0x03	0x03	0x03
16	2009-3-8 18:12:05	11.90962/A	2.642896/f	0x03	0x03	0x03	0x03
17	2009-3-8 18:12:10	11.90762/A	2.621176/f	0x03	0x03	0x03	0x03
18	2009-3-8 18:12:15	11.90762/A	2.621106/f	0x03	0x03	0x03	0x03
19	2009-3-8 18:12:20	12.01262/A	2.655866/f	0x03	0x03	0x03	0x03
20	2009-3-8 18:12:25	11.98862/A	2.642126/f	0x03	0x03	0x03	0x03
21	2009-3-8 18:12:30	12.02262/A	2.651976/f	0x03	0x03	0x03	0x03
22	2009-3-8 18:12:35	11.94162/A	2.629546/f	0x03	0x03	0x03	0x03

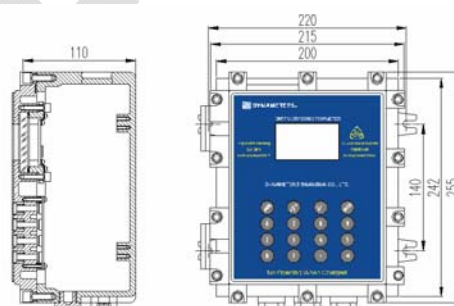
Users can download the software from our website: www.dynameters.com



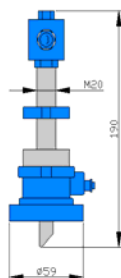
Parts & Dimensions



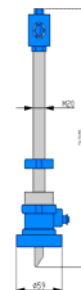
Standard Transmitter



Explosion-proof Transmitter



Standard Transducer

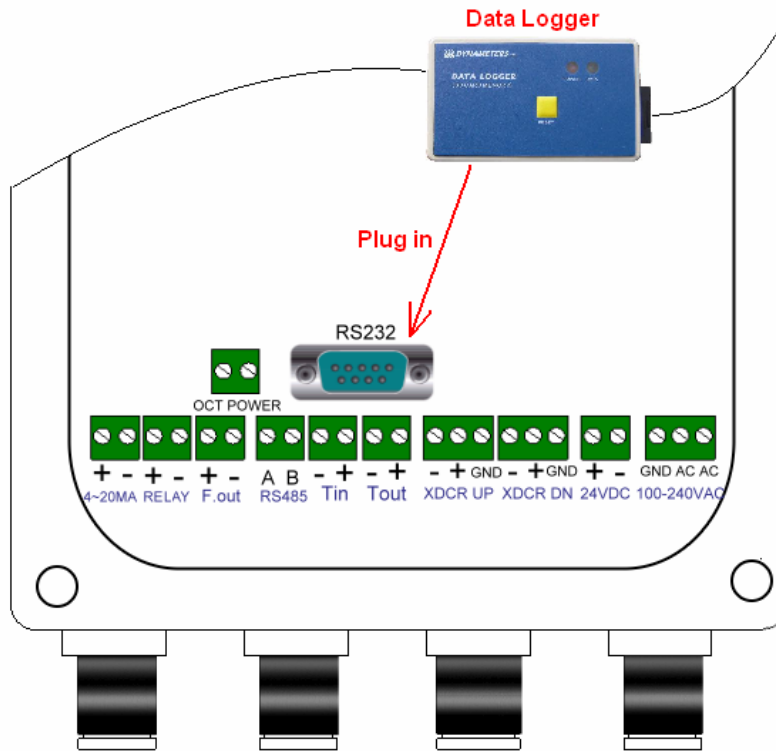


Extended Transducer

Wiring Terminals

Conduit holes: NPT1/2 and NPT3/4 can be selected.

Housing: NEMA 4 * [IP65] ,aluminum alloy casting.



DYNAMETERS™

Dynameters Shanghai Co., Ltd

No.751 Shulin Rd, Eastward New Area,

Songjiang Industrial Zone, Shanghai 201611

Tel : (86)21 6760 2289 Fax : (86)21 6760 2287