

Series DMTFB Clamp-on

Series DMTFB wall-mount Clamp-on Transit Time Ultrasonic Flow Meters provide abundant capabilities for accurate liquid flow measurement from outside of a pipe. It utilizes state-of-the-art technologies in ultrasonic transmission receiving, digital signal processing and transit-time measurement. The proprietary signal quality tracking and self-adapting technologies allow the system to optimally adapt to different pipe materials automatically.

The flow meters of the DMTF family are carefully designed with their user-interfaces self-explanatory and their operation simple and easy. The unique clamp-on fixture design makes the installation very simple, requiring no special skills or tools.

Due to the non-invasive nature of clamp-on transducers, there is no pressure drop, no moving parts, no leaks, and no risk of contamination or corrosion.

Features:

- ◆ Non-invasive clamp-on style transducers
- ◆ Bi-directional flow measurement
- ◆ Able to measure positive, negative and net total flow
- ◆ Standard type and Explosion-Proof type are available
- ◆ Can measure pipe sizes from 12mm to 4570mm
- ◆ Measurable temperature range:
-40°C~250°C
- ◆ Up to 8GB SD card data logger optional
- ◆ Easy operation and quick installation



Applications:

- ◆ Water (hot water, cooling water, De-ionized water, potable water)
- ◆ Petroleum products
- ◆ Chemicals, including alcohol, acids, etc
- ◆ HVAC, energy measurement system
- ◆ Beverage, food and pharmaceutical processors

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

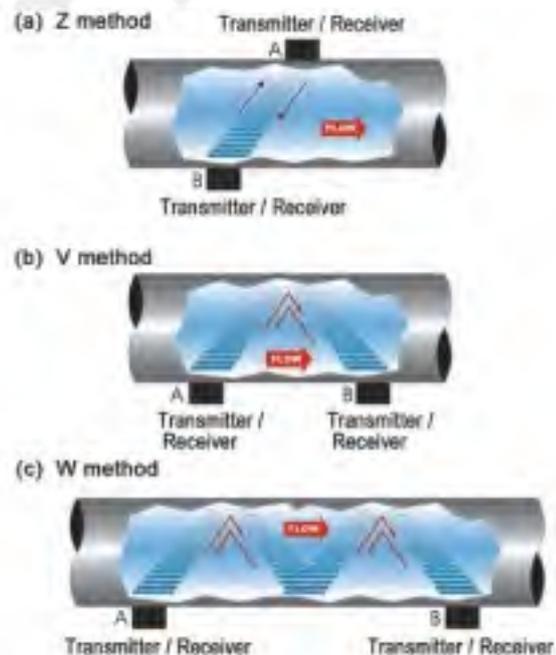


Figure 1

Selection Table of DMTFB Clamp-on Ultrasonic Flow Meter

TRANSMITTER SELECTION

Model DMTFB - 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



Note: For Magnetic force transducer, M type fit to DN80-1000mm pipe line.

Parts Number Construction example:

DMTFB-N-B1NN-N/DB-MNN-0400-030

Description: DMTFB standard Clamp-on ultrasonic flow meter, 220VAC power supply, 4-20mA output, Non-multiple output selections; standard M type transducer, standard temperature, used in pipeline DN400, transducer cable length 30m.

About K mode transducers:

K mode transducers utilize the Round-Clamp method, and the transducers' transmitting and receiving sides are connected with the pipe surface thoroughly, so that this series have the features of reliability, enough coupling area, excellent stability, etc.



Size	Material	A	B	C	D	Measuring Range
1/2" (12-15)	PTFE	50	42	44	18	2-100LPM
3/4" ~ 1" (20-25)	PTFE	50	53	44	28	4-375LPM
1-1/4" (32)	PTFE	50	63	44	35	15-570LPM
1-3/4" (40)	PTFE	66	71	44	45	18-830LPM
2" (50)	PTFE	74	92	66	56	30-1500LPM

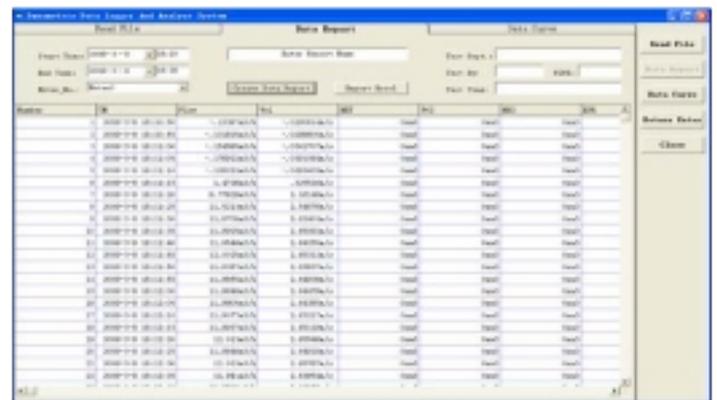
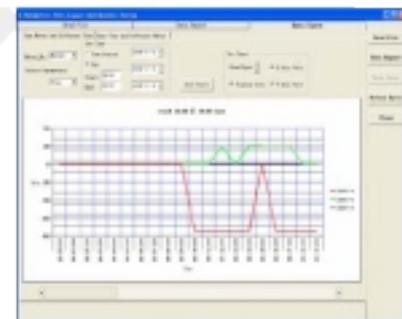
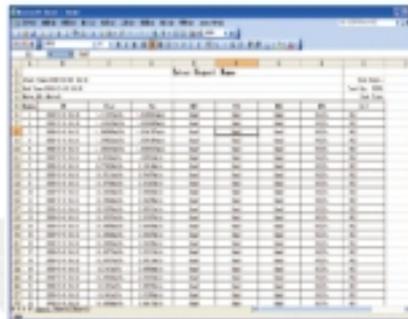
Specifications:

Transmitter	Power Supply	(Std) 10-28 VDC @ 2.5VA max., 115/230VAC 50/60Hz ±15%@ 5VA max., Solar energy 12VDC
	Velocity	-40 ~ 40 ft/s (-12 ~ 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 Protocol etc.
	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
	Dimensions and Weight	Std.:241*193*76.5, Weight: <2.5kg Exp: 255*220*110, Weight: <5.0kg
	Security	Keypad lockout, access code enable
Transducer	Liquid Types Supported	Virtually most any liquid containing less than 2% total suspended solids (TSS) or aeration
	Suited Liquid Temperature	Std. Temp. Transducer: -40°C~121°C High Temp. Transducer: -40°C~250°C
	Cable Length	Std: 20 feet (6m); Opt: Maximum: 990 feet (300m)
	Pipe Size	S transducer: 12-50mm Std M transducer:40 -1000mm L transducer: 1000-4570mm K-mode round transducer:12-50mm
Dimensions and weight	S: Size:42*25*25; weight:<0.2kg M: Size:60*43*43; weight:<0.5kg L: Size:80*53*53; weight:<1.0kg	
Accessories	Couplant	Dow Corning 111 or 732 (112 for high temp.)
	Data Logger	Optional 512M to 8GB SD card
	S-S Belt	According to the pipe line size

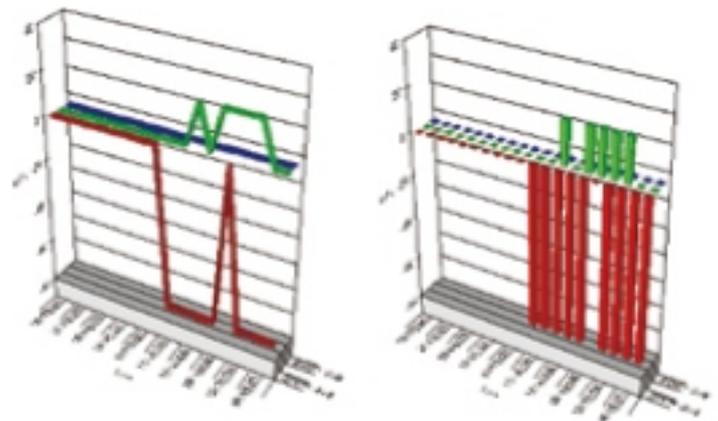
Data Logger and Software Utility

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, DMTCF, DMTFD, DMTEFF, DMHF) and Portable (DMTFP) Series, the other for Handheld (DMTFH) Series.



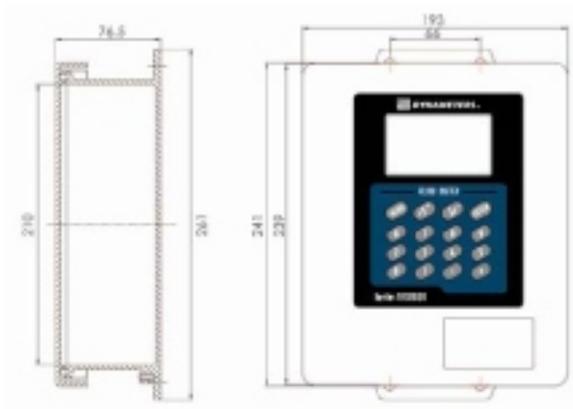
Users can download the software from our website:
www.dynameters.com



Parts & Dimensions

<p>Standard Transmitter</p>  A rectangular, light-colored transmitter with a digital display and a keypad.	<p>Explosion-proof</p>  A yellow and blue transmitter with a rugged, explosion-proof housing and multiple connection ports at the bottom.	
<p>L Transducer</p>  A white, L-shaped transducer with two black cables attached to its ends.	<p>S Transducer</p>  A white, S-shaped transducer with two black cables attached to its ends.	
<p>Std. M Transducer</p>  A white, rectangular transducer with two black cables attached to its ends.	<p>K mode round</p>  A small, white, round transducer with two black cables attached to its ends.	
<p>S-S Belts</p>  A black, flat, wide belt with a metal buckle.	<p>Couplant</p>  Two green boxes of couplant, labeled '111' and '172'.	<p>Elastic Belts</p>  Two black, elastic belts with metal buckles.

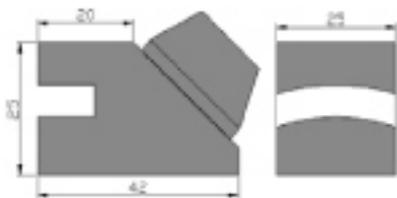
Parts & Dimensions



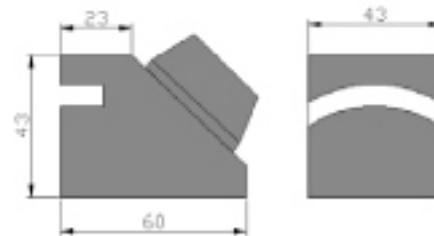
Standard Transmitter



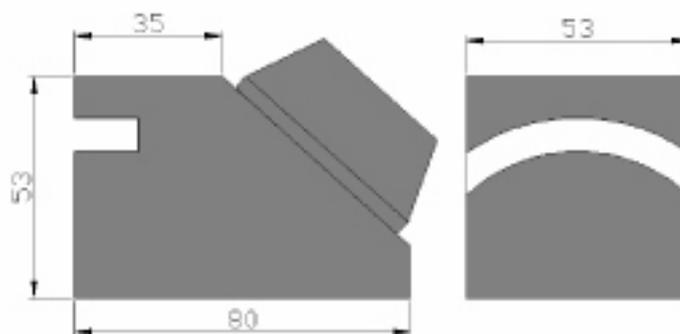
Explosion-proof Transmitter



S Transducer



Std. M Transducer



L Transducer

Wiring Terminals

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

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

