DYNAMETERS DMTF-Ex Explosion-proof Doppler Flow Meter

Series DMTF-Ex Doppler ultrasonic flow meter is designed to measure volumetric flow of liquid within closed conduit, the pipe line must be filled full of liquids, there must be a certain amount of air bubbles or suspended solids in liquid.

The Doppler ultrasonic flow meter can display flow rate and flow totalizer, etc, and is configured with 4-20mA, Totalizer Pulse and Relay Alarm output.

Features:

- The system can be field configured to pipe sizes ranging from 40 to 4000mm.
- For dirty liquids, a certain amount of air bubbles or suspended solids contain
- Excellent low flow rate measurement ability, low to 0.05 m/s
- A wide range of flow measurement, high flow rate can reach 12m/s
- Automatically signal gain adjustment
- Do not need to shut down the pipe flow when installing the transducers.
- User-friendly configurations
- 4-20mA, totalizer pulse and relay alarm output
- Accuracy: 2.0% Calibrated span

Approvals: Ⅱ 2G, Exd Ⅱ BT6, LCIE 09 ATEX 3088

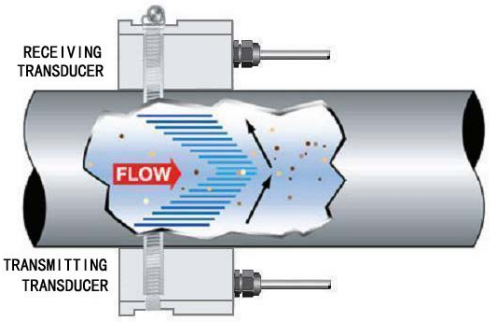
Principle of Measurement

The Doppler ultrasonic flow meter is designed to measure volumetric flow of liquid within closed conduit, the pipe line must be filled full of liquids, there must be a certain amount of air bubbles or suspended solids in liquid.

Transducers are clamp-on or hot-tapped probe types, user don't need to shut down the pipe flow when install the clamp-on transducers.

The flow meter operates by transmitting an ultrasonic sound from its transmitting transducer, the sound will be reflected by useful sonic reflectors suspended within the liquid and recorded by the receiving transducer. If the sonic reflectors are moving within the sound transmission path, sound waves will be reflected at a frequency shifted (Doppler frequency) from the transmitted frequency. The shift in frequency will be directly related to the speed of the moving particle or bubble. This shift in frequency is interpreted by the instrument and converted to various user defined measuring units.

There must be some particles large enough to cause longitudinal reflection – particles larger than 100 micron.
When install the transducers, the installation location must have enough straight pipe length upstream and downstream. Commonly, the upstream needs 10D and downstream needs 5D straight pipe length, where D is pipe diameter.



Solutions:

For petrochemical plant and oil field, oily wastewater discharge, wastewater, sewage, oil drilling slurry, or all explosion-proof occasion of flow monitoring and measurement.

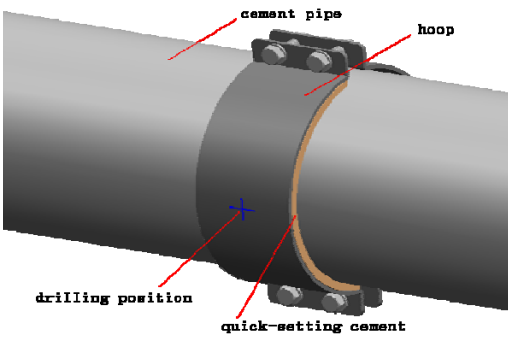
When installing insertion transducer, Hot-tapped installation and demounted online, do not need to shut down the pipe flow when install the transducers.

Standard Explosion-proof Clamp-On

Standard Explosion-proof Insertion

When installing insertion transducer, the pipe can't be welded directly, such as cement pipe, ductile iron or other unweldable material, please notify manufacturer for extended transducers (wall thickness of pipe can be up to 110mm). In this case, it also need to install a weldable (usually carbon steel) hoop shown as below.

Extended Explosion-proof Transducers



Installation Drawing of Weldable Hoop

Technical Parameters:

Transmitter

Ex-Clamp-On Transducer

Ex-Insertion Transducer

Extended Ex-Insertion Transducer

Couplant

S-S belt

Accuracy	0.5%～2.0%F.S.
Flow Velocity Range	0.05m/s～12m/s
Liquid Types	Liquids containing 100ppm of reflectors and at least 20% of the reflectors are larger than 100 micron.
Transmitter	
Enclosure	NEMA 4X [IP65], cast aluminum 310L×226W×127H (mm) 12.2L×8.9W×5H (inch)
Power Supply	24VDC±5%, 2.5VA Max
Display	2 line × 8 characters LCD 8-digit rate or 8-digit total (resettable)
Response Time	User selectable: 0-99 seconds
Outputs	4-20mA, Totalizer pulse and Relay alarm output
Temperature	-40 to +70℃
Approval	Ⅱ2G, ExdⅡBT6, LCIE 09 ATEX 3088
Transducer	
Measuring Range	0.05m/s ～12m/s
Type	Clamp-on and Insertion
Liquid Temperature	Standard: -40 to +121℃ Optional high temperature: -40 to +250℃ (-40 to +150℃ for Insertion Type)
Cable Length	Standard Lengths: 6m [20Feet] Optional Lengths: to 300m [990 Feet]
Housing Material	Clamp-On: Aluminum Insertion: Stainless Steel
Protection Class	Standard: IP65 Optional: IP68, can work under water
Approval	Ⅱ2G, ExdⅡBT6, LCIE 09 ATEX 3088

Model Selection Table of DMTF-Ex ultrasonic flow meter

MODEL DMTF -X -X -X -X -X -X -X -X

Approvals
Ex-ExdIIBT6

Power supply
E-24VDC

Output Selection
N-None
1- 4-20mA
2- Relay for Totalizer pulse
3- Relay for Alarm output
(Can select the three outputs at the same time)

Transducer Type
DDB1_Ex -Standard Explosion-proof Clamp-On (40～4000mm)
DDC1_Ex -Standard Explosion-proof Insertion (65～4000mm)
DDC2_Ex -Extended Explosion-proof Insertion (65～4000mm, wall thickness is up to 110mm)

Transducer Material
N- Standard material
S- Stainless Steel (Only for Standard Clamp-on transducer)

Liquid Temperature
N- -40～121℃
H- -40～150℃

Transducer Cable
6m - 6 meters straight cable (STD.)
Xm - Common cable, Max 300m
XmH - High temp. cable Max 300m

Work underwater
0- No
1- Yes

Selection example:
DMTF-Ex-E-123- DDC1_Ex –N-N -6m-0

Description: DMTF-Ex Doppler ultrasonic flow meter; ATEX certificate; 24VAC power supply; 4-20mA, Totalizer pulse and Relay alarm output; Standard Explosion-proof Insertion Transducer; standard material, transducer cable length is 6m; Liquid Temperature: -40 to 121℃; don't need to work underwater.