Series DMTFC Insertion

Series DMTFC 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.

▲Transmitter &Transducer

▲Wireless Handheld Operator

Features:

1. Hot-tapped installation, no pipe line flow interrupted.
2. No moving parts, no pressure drop, no maintenance.
3. Spool-piece transducer for best accuracy and better long-term stability.
4. High temp. Insertion transducers are suitable for high temperature of -40℃~150℃.
5. Wide bi-directional Flow range of 0.03 to 12 m/s, and wide range of pipe sizes from DN80 to DN4500.
6. Remote operation by the wireless handheld operator. No matter the pipeline in high altitude or underground, users can install or adjust the transducers more convenient.
7. The wireless handheld operator has wireless remote reading function and it also can operate the meters instead of panel operations.
8. Built-in large capacity memory and USB data download function. The downloaded data can be opened by EXCEL directly.
9. The heat measurement function by configuring with paired Pt1000 temperature sensors.

Applications:

- Water (hot water, cooling water, potable water, sea water etc.)
- Petroleum products
- Chemicals, including alcohol, acids, etc

- HVAC, energy measurement system
- Beverage, food and pharmaceutical processors
- Secondary sewage, waste treatment, etc.
- Power plants (nuclear power plants, thermal & hydropower plants), heat energy boiler feed water.
- Metallurgy and miming applications
- Pipeline leak detection, inspection, tracking and collection
- Network monitoring

Principle of Measurement

DMTF transit time flow meter utilizes two transducers that function as both ultrasonic transmitters and receivers. The transducers are inserted in a closed pipe at a specific distance from each other. The transducers can be mounted 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. 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 (△t). When the flow is still, the time difference (△t) 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.

$$V=K*\triangle t$$

$$Q=S*V$$

Where: V Liquid velocity
K Constant
△t Difference in time of flight
Q Flow rate
S Sectional area of pipe

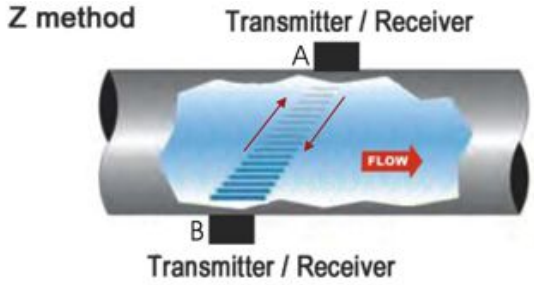


Figure 1

Specifications

Transmitter	Power Supply	100-240VAC 50/60Hz ±15% 12 - 36 VDC Solar supply 12VDC
	Velocity	0.003 to 12 m/s, bi-directional
	Display	4 line×16 English letters LCD, it can display total flow, flow rate, velocity and meter running status etc.
	Units Rate Totalized	User Configured (English and Metric) Rate and Velocity Display gallons, ft³, barrels, lbs, liters, m³
	Output	Data storage function, 4~20mA, Frequency (For Flow rate or Total flow), Relay (For Total flow or Alarm), RS485(Modbus-RTU) options: Wireless handheld operator, GPRS
	Accuracy	±1.0% of reading at rates >0.5 m/s
		±0.005 m/s of reading at rates <0.5 m/s
	Sensitivity	0.003m/s
	Repeatability	0.2% of reading
	Security	Keypad lockout, access code enable
	Dimensions and Weight	Std.:261*193*80, Weight: <2.5kg Exp: 310*226*127, Weight: <7.5kg
Transducer	Liquid Types Supported	Virtually most any liquid containing less than 5% total suspended solids (TSS) or aeration
	Pipe Range	DN80-DN4500
	Suited Liquid Temperature	Std. Temp.: -40℃~121℃ High Temp.: -40℃~150℃
	Cable Length	Shielded transducer cable. Standard length 6m (20fts). Can be extended to 300m (990fts). 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, 292.6mm; weight:<3.2kg

Parts Identification:

Transmitters:

Standard wall-mounted

Explosion-proof **(ATEX)**

Transducers:

Standard type (It also can be used for Explosion-proof environment)

DMTFC Insertion Ultrasonic Flow Meter Selection Table

Model DMTFC -X -X -X -X -X -X / *（Transducers）

Clamp-on Series

Approvals

N—N/A

Ex—ATEX (ExdIIBT6)

Power Supply

A—110VAC

B—220VAC

E—24VDC

S—Solar supply (including solar board)

Output Selection 1

N—N/A

0—Data storage function

1—4-20mA

2—Frequency Output (Flow rate or Totalizer)

3—Relay Output (Totalizer or Alarm)

4—RS485 Output (ModBus-RTU)

5—Wireless handheld operator

6—GPRS Wireless Module (Excluding software)

Output Selection 2

Same as above

Output Selection 3

Same as above

Output Selection 4

Same as above

Note:

Output Selections 4 and 6 can be selected one.

Transducer Selection for DMTFC Insertion Ultrasonic Flow Meter

Model DC -X -X -X -X -X

Transducer Type

N—Standard Insertion (explosion-proof) if the pipe thickness more than 50mm, pls contact the factory

Transducers Temperature

N— - 40～121℃

H— - 40～150℃

Pipeline Diameter

DNX— DN80, DN4500

Cable Length

Xm - Common cable, Max 300m

XmH - High temp. cable, Max 300m

Work Underwater

0—NO

1—YES

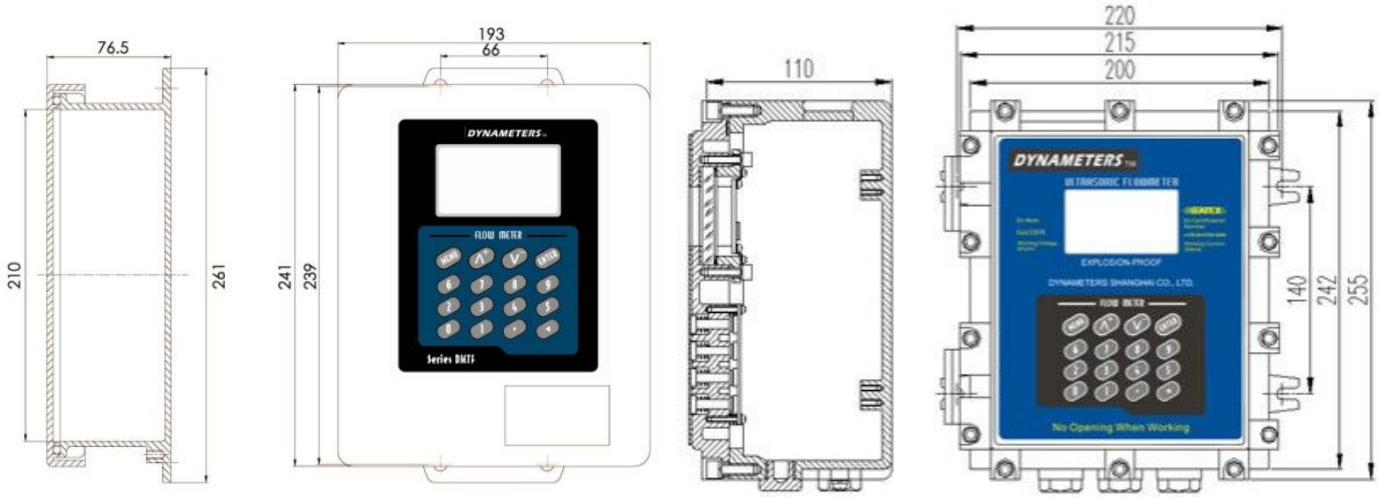
Note: For Insertion and Centre-Insertion transducers, customers need buy our specially-made drilling tools; customers need to ensure whether a pair of spare ball valves are needed or not.

Parts Number Construction example:

DMTFC-N-B-0 4 N N/DC-1-N-DN400-30m-0

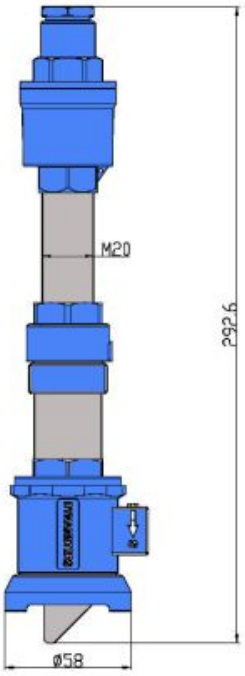
Description: DMTFC insertion ultrasonic flow meter, no explosion-proof, 220VAC power supply, Data storage function and RS485 output; standard transducers, standard transducer temperature, installing pipeline DN400, transducer cable length is 30m, no underwater working conditions.

Parts & Dimensions



Standard Transmitter

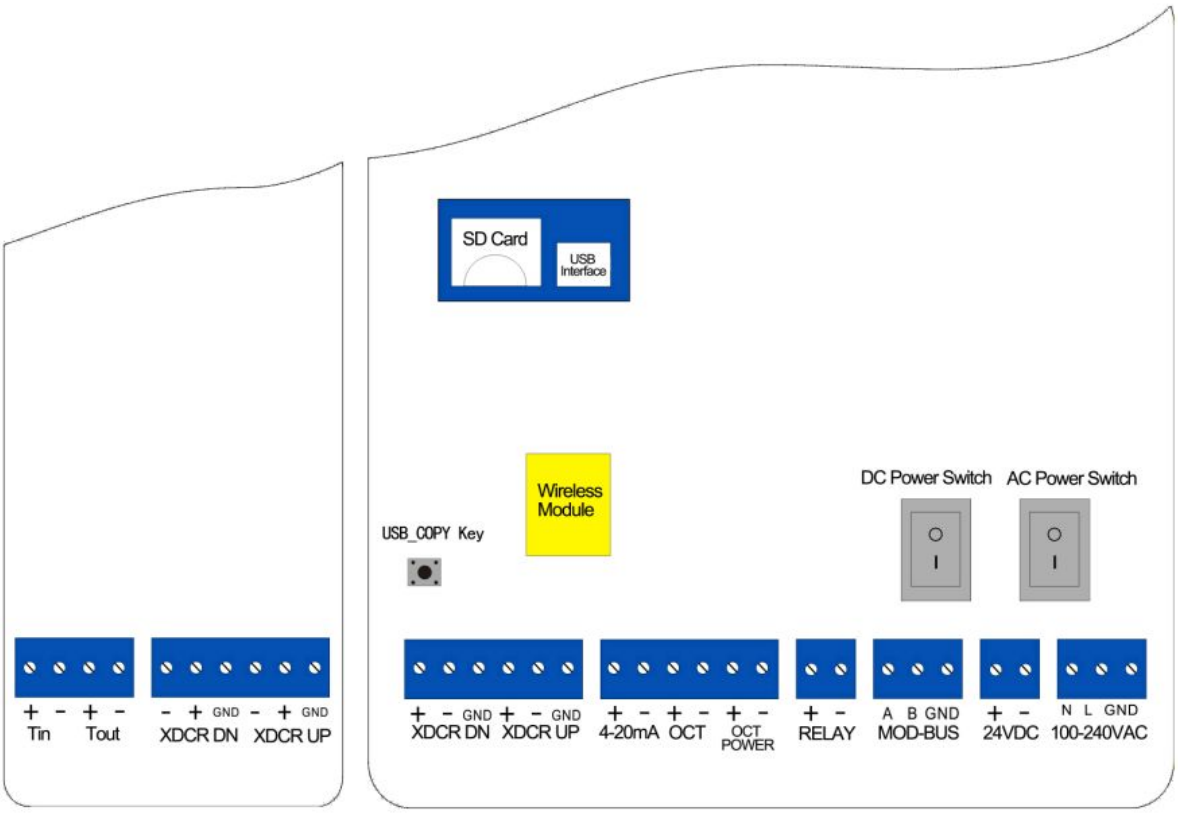
Explosion-proof Transmitter



Standard Transducer

Wiring Terminals

Conduit holes: M18×1.5 for DMTFC, and M20×1.5 for DMTF-Ex.
Housing: NEMA 4 X [IP65], aluminum alloy diecasting for DMTFC.
NEMA 4 X [IP65], aluminum casting alloy for DMTF-Ex.



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