Solenvis SL68 Part Filled Pipe Meters

DMDF-OP-A Combined-Type Partially Filled Pipe Ultrasonic Flow Meters

Principle

DMDF-OP-A Combined-Type Partially Filled Pipe Ultrasonic flowmeter is designed for partially filled pipe applications. **It consists of flow calculator unit, velocity measurement unit and level measurement unit.**

Velocity measurement: DMDF-OP-A utilizes ultrasonic Transit-time or Doppler measuring method on the fluid velocity measurement. Ultrasonic Transit-time measuring method is applied for clean water, and ultrasonic Doppler measuring method is applied for dirty water.

Level measurement: The level sensor uses ultrasonic level meter of special small-scale and low dead zone to measure the level. When installing the level meter, users need to fix a welding base, and the height of welding base is usually 80-100mm, so it can ensure high measurement accuracy.

The flow formula of partially filled pipe: $Q=V \cdot A$

Where V——Fluid velocity in pipe

A——Cross-sectional area of flow in pipe

A is the function of liquid level and inner diameter, $A=f(D \cdot h)$

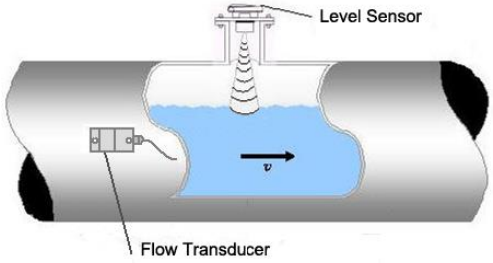
Where D——Inner diameter of pipe

h——Liquid level

Features

- Excellent low flow rate measurement ability
- Automatically signal gain adjustment
- 4-20mA, RS485(Modbus)/GPRS and SD card logger outputs
- Very suitable for large pipe sewage measurement
- Complete in specifications, and can provide a variety of applications

DMDF-OP-A Combined Partially Filled Pipe Ultrasonic Flow Meters



Measuring Diagram

Velocity and Level Measurement

Velocity and Level Measurement

Note：DMDF-OP-A is used to the situation that the liquid in pipe must be more than half filled.

Flow Calculator Unit

The flow calculator receives 4-20mA signal of velocity and level, and then calculate the flow in partially filled pipe. 4-20mA signal of velocity is from transmitter, and 4-20mA signal of level is from level sensor. The flow calculator can display the velocity, level, flow rate and flow totalizer. It also can be available with 4-20mA, RS485(Modbus)/GPRS and SD card logger outputs.

Fixed Flow Calculator

Velocity Measurement Unit

Transmitter

The transmitter receives signal from flow transducers and outputs 4-20mA velocity signal to flow calculator.

Transmitter

Flow Transducers

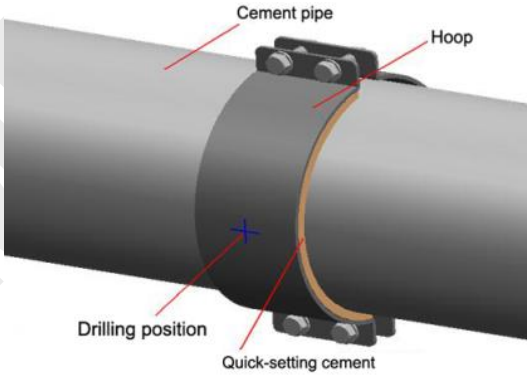
The flow transducer includes two types: Clamp-on and Insertion, both of them are hot-tapped installation and demounted online.

Clamp-on Flow Transducer

Installation Drawing of Insertion Flow Transducer

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

Extended Length Flow Transducers



Installation Drawing of Weldable Hoop

Level Measurement Unit

Level Sensor

The level sensor takes advantage of ultrasonic echo technology to get level signal, and outputs 4-20mA of level to flow calculator.

When installing the level meter, users need to fix a welding base, and the height of welding base is usually 80-100mm, so it can ensure high measurement accuracy.

Technical Specifications

Flow Calculator

Transmitter

Clamp-on of Doppler

Clamp-on of Transit-time

Standard Insertion

Level Sensor

Accuracy	Generally 2.0%F.S.
Pipe Sizes	DN100-3000
Flow Calculator Unit	
Enclosure	NEMA 4X [IP65], cast aluminum 260L×193W×80H (mm), 10.2L×7.6W×3.2H(inch)
Power Supply	Standard: 100~240VAC, 50/60HZ ±5%, 5VA Max Optional: 12~28VDC, 2.5VA Max
Outputs	4-20mA, RS485(Modbus), GPRS, SD card logger
Velocity Measurement Unit	
Transmitter	
Enclosure	NEMA 4X [IP65], cast aluminum 260L×193W×80H (mm), 10.2L×7.6W×3.2H(inch)
Power Supply	Standard: 100~240VAC, 50/60HZ ±5%, 5VA Max Optional: 12~28VDC, 2.5VA Max
Output	4-20mA
Flow Transducers	
Measuring Range	0.05m/s -12m/s
Type	Clamp-on and Insertion
Liquid Temperature	-40℃- 121℃
Cable Length	Standard Lengths: 6m [20Feet] Optional Lengths: to 300m [990 Feet]
Housing Material	Clamp-on: Aluminum for Doppler Engineering Plastic for transit-time Insertion: Stainless Steel
Protection Class	IP65, IP68 (Optional)
Level Measurement Unit	
Accuracy	±0.25% F.S.
Resolution	3mm
Process Temperature	-20 to +60℃
Power Supply	12-36 VDC
Housing Material	Engineering Plastic, NEMA 4X [IP65]
Output	4-20mA

Model Selection Table of DMDF-OP-A Flow Meters

MODEL: DMDF-OP-A -X -X -X -X -X -X -X

Flow Calculator Unit

F—Fixed

Power Supply

A—110VAC B—220VAC

E—24VDC S—Solar Supply

Output

N—None

A—4-20mA

R—RS485 (Modbus)

G—GPRS (Outputs R and G only can be selected one)

S—SD Card

Velocity Measurement Unit

FDB—Doppler transmitter and clamp-on transducers

FDC—Doppler transmitter and Insertion transducers

FTB—Transit-time transmitter and clamp-on transducers

FTC—Transit-time transmitter and Insertion transducers

Cable Length of Velocity Measurement Unit

6m—Std. 6m

Xm—Optional, up to 300m

Level Measurement Unit

N—Standard (FLOWLINE level meter, 0.15 to 5.4m)

D1—DynaProbe level meter -Complete type (see brochure for details)

D2—DynaProbe level meter -Combined type (see brochure for details)

Cable Length of Level Measurement Unit

6m—Std. 6m

Xm—Optional, up to 300m

If installation environment requires explosion-proof, please contact manufacturer to order DMDF-OP-A Explosion-proof partially Filled Pipe Flow meters.

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