



**MIAL**<sup>®</sup>  
**INSTRUMENTS PVT. LTD.**  
*Measuring & Beyond*

## **MVF 300**

VORTEX FLOW METER



| Measuring & Beyond

**CE**

[www.mialinstruments.com](http://www.mialinstruments.com)

# MVF 300



## Vortex Flow meter

### DESCRIPTION

#### Flow Meter:

Mial MVF 300 Vortex Flow Meter is a type of velocity-based flow meter that operates on the principle of the Karman vortex street. This device uses piezoelectric crystals to detect the frequency of vortices shed by a bluff body (typically a triangular prism) placed in the flow path of a fluid. The shedding frequency of these vortices is directly proportional to the velocity of the fluid, which allows the flow meter to measure the flow rate.

### APPLICATIONS

#### Oil and Gas Industry:

In the oil and gas industry, MVF 300 vortex flow meters are used to measure the flow of natural gas and crude oil during extraction and refining processes. They monitor pipeline flow for transportation and distribution, ensuring accurate measurement and leak detection. MVF 300 Vortex flow meters are crucial in optimizing process control, enhancing safety, and improving efficiency in both upstream and downstream operations. Their robustness and low maintenance make them ideal for harsh industrial environments.

#### Power Generation:

In power generation, MVF 300 vortex flow meters are used to measure steam flow in boilers, ensuring efficient energy production and control. They monitor cooling water flow in thermal and nuclear power plants to maintain optimal operating temperatures. MVF 300 meters also measure fuel gas flow in combustion processes, aiding in efficient fuel management. Additionally, it is employed in monitoring and controlling feedwater flow to boilers. Their accuracy and reliability help optimize overall plant performance and safety.

#### Chemical and Petrochemical Industries:

In chemical and petrochemical industries, MVF 300 vortex flow meters are used for precise measurement of flow rates of various chemicals to ensure accurate mixing and reaction control. They are vital for monitoring the flow of both corrosive and non-

corrosive fluids, enhancing safety by detecting leaks and abnormal flow conditions. MVF 300 meter helps optimize process efficiency and product quality by providing reliable and repeatable measurements. Their robust design handles aggressive fluids and high temperatures, making them ideal for harsh industrial environments. Additionally, MVF 300 vortex flow meters support compliance with industry regulations through accurate flow monitoring and reporting.

#### Heat-Supply Systems:

Vortex flow meters in heat-supply systems accurately measure fluid flow rates, optimizing heat transfer efficiency. They monitor the flow of hot water or steam in heating networks, ensuring precise distribution and energy conservation. These meters offer reliability, low maintenance, and compatibility with high temperatures, essential for effective heat-supply system operation.



Vortex Fow Meter

## FEATURES

### **The Integrated Pressure and Temperature Compensation:**

This feature adjusts flow measurements based on variations in pressure and temperature, ensuring accurate readings despite changing conditions. By compensating for these factors, the meter maintains reliability and consistency in flow measurement, critical for precise control and monitoring in industrial processes.

### **Selectable Output Signals:**

The meter offers versatility in data transmission with selectable output formats including 4–20mA, pulse with RS485. This flexibility enables seamless integration with various control systems and protocols commonly used in industrial settings, enhancing compatibility and ease of use.

### **Wide Temperature Range:**

With the capability to measure flow rates in environments with temperatures up to 250°C, the meter accommodates high-temperature applications such as steam flow measurement in industrial processes. This broad temperature range ensures the meter's suitability for diverse operating conditions, contributing to its versatility and utility in industrial settings.

### **Embedded Sensor with Piezoelectric Crystals:**

Featuring four piezoelectric crystals encapsulated within the sensor, the meter eliminates the need for moving parts, enhancing durability and reliability. This robust design minimizes the risk of mechanical failure and extends the lifespan of the meter, reducing maintenance requirements and operational costs over time.

### **Fully welded SS304 body (SS316 selectable):**

The meter's construction from fully welded SS304 (or optionally SS316) ensures corrosion resistance and durability, making it suitable for use in harsh industrial environments. This robust construction minimizes the risk of damage or degradation due to exposure to corrosive substances or abrasive materials, ensuring long-term reliability and performance.

## BENEFITS OF FLOW METER

- Provides high accuracy and repeatability, essential for process control and monitoring.
- No moving parts reduce the need for maintenance and increase the meter's lifespan.
- It can be installed in a wide range of pipe sizes and orientations with minimal pressure drop.
- Provides a cost-effective solution for flow measurement in various industrial applications.

# MVF specifications\*

## Operation and performance

### Flow measurement

Vortex

### Fluid types

Steam

### Fluid properties

Newtonian and non-Newtonian fluids

*capable of producing vortices*

### Pipe Size

DN 15mm – DN 300mm

### Flow Range

Steam: 5 -70 m/s

### Accuracy

±1%

### Measurement parameters

Instantaneous Flow, Totalized Flow,

Frequency, Pressure, Temperature

Density, Current or the percentage

### Certification

Calibration certification

## Electronics

### Enclosures

Aluminium

### Transmitter Type

Integral, Remote Type (Converter display)

### Enclosure IP rating

IP65

### Power supply

24 VDC

*Use SMPS when employing AC power*

### Ambient temperature

-40°F to 149°F (-40°C to 65°C)

### Relative Humidity

≤85%

### Standard output

Analog output : 4 to 20 mA

Pulse Output

### Network Connection

Modbus RTU RS 485

## Flow Tube

### Operating Temperature range (Fluid)

-40°F to 482°F (-40°C to 250°C)

### Nominal Pressure

1.6 Mpa

### Process connections

ANSI Class 150 Flanges

### Body Materials

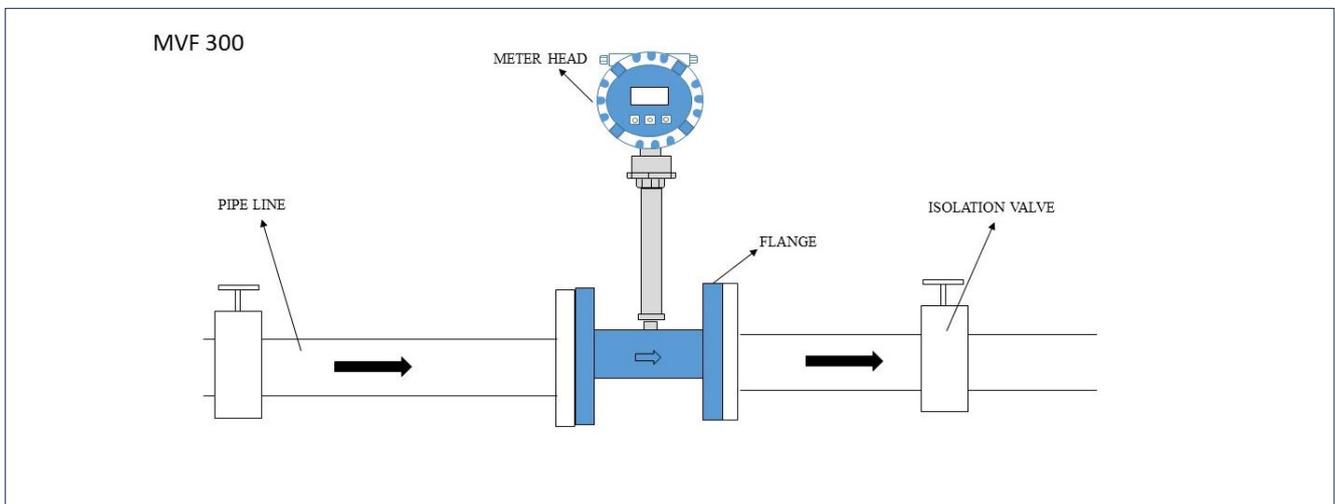
Standard: SS304

Optional: SS316

### IP rating

IP65

## INSTALLATION DIAGRAM



## ORDERING CODE

### Meter Model Number Coding = MVF 300-DN BB-CDE-FGH-IJ

**MVF 300 = Mial Vortex Inline Flow Meter**

**BB= Meter Size**

21 = 1/2"	25 = 2.5"
34 = 3/4"	04 = 4"
01 = 1"	05 = 5"
15 = 1.5"	06 = 6"
02 = 2"	08 = 8"
03 = 3"	nn = meter size upto 12"

**C = Nominal Temperature**

1 = -40°C to 250°C

**D = Structure**

- 1 = Compact Type
- 2 = Remote Type (Converter display)

**E = Process Connection**

1 = ANSI Class 150 Flanges

**F = Body Material**

- 1 = SS304
- 2 = SS316

**G = Compensation**

- 1 = Without
- 2 = Temperature & Pressure Compensation

**H = Measuring Medium**

- 1 = Saturated Steam
- 2 = Superheated Steam

**I = Signal Output**

1 = 4~20 mA, Pulse, Modbus RS485

**J = Power Supply**

1 = 24 V DC

All future orders will adhere to the standard specifications outlined in the order code, ensuring consistency and quality across items



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