

# F Series Flow Meter F300

## User Manual

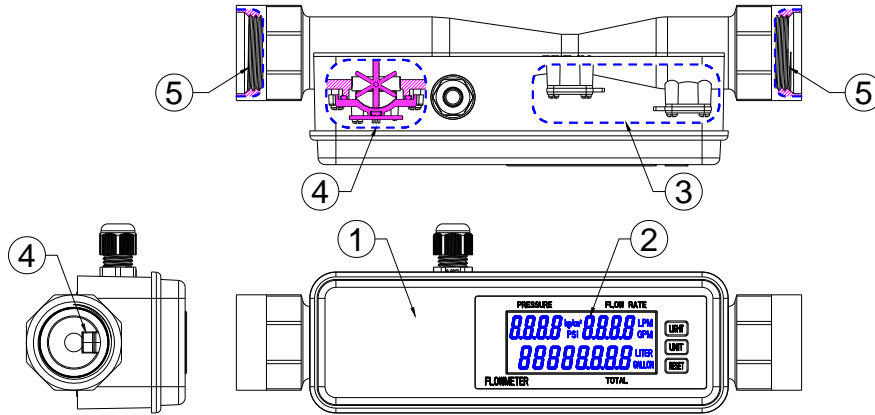


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# 1. F300 Series Flow Meter

## 1.1 F300 Series Flow Meter structure Drawing



1. Electronic Module
2. Display
3. Sensor
4. Start-up Sensor
5. Main Flow Meter

## 1.2 Introduction

Venturi tube is a common apparatus for measuring flow. In general, it is a tubular setup and is made of casting. Venturi tube is expensive and heavy. A fluid passing through smoothly varying constrictions is subject to changes in velocity and pressure in order to satisfy the conservation of mass-flux (flow rate). The reduction in pressure in the constriction can be understood by conservation of energy : the fluid (or gas) gains kinetic energy as it enters the constriction, and that energy is supplied by a pressure gradient of force from behind. The pressure gradient reduces the pressure in the constriction, in reaction to the acceleration. Likewise, as the fluid leaves the constriction, it is slowed by a pressure gradient force that raises the pressure back to the ambient level.

## 1.3 Range and Environment

### Range and Environment

MeterTek is specialized at electronics circuit design, wafer level package and mechanical field. And MeterTek designs a state of the art Venturi tube flow meter. Its advantages are easy-installation, endurable for high pressure and no effect for installation position.

### Remind you:

1. please read the user guides and installation conditions ( ex: water quality, environment, installation position, distance from high-voltage source ..etc.) for more details before purchasing. The suspension and the impurity can not exist In the liquid, otherwise the current sensory hole will be blocked, even generating inaccuracy or loss of function .
2. Flowmeter should not be near the magnetic material or it will be causing inaccuracy or loss of function .

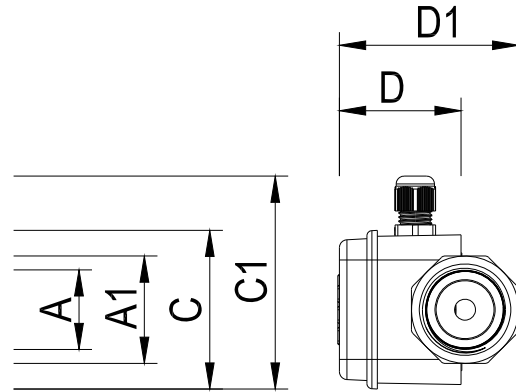
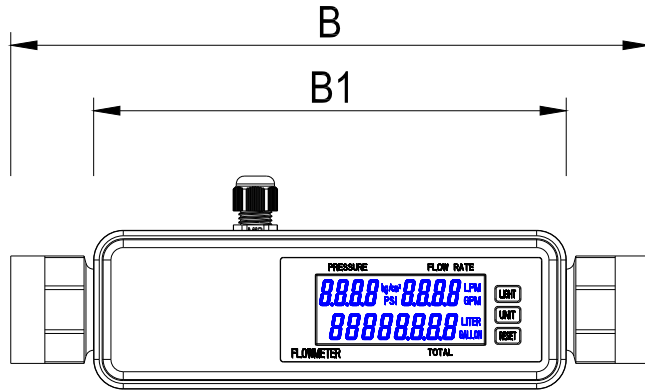
## Suitable Range and Environment for F300 Series Flow Meter

Pipe Size	1/2"	3/4"	1"	1-1/2"	2"
Flow Range    Type I	2.5~20 LPM (0.66~5.28 GPM) DN15A	3~24 LPM (0.8~6.34 GPM) DN20A	7~56 LPM (1.85~14.78 GPM) DN25A	15~120 LPM (3.96~31.68 GPM) DN40A	25~200 LPM (6.6~52.8 GPM) DN50A
Type II	5~40 LPM (1.32~10.56GPM) DN15B	8~64 LPM (2.11~16.91GPM) DN20B	13~104 LPM (3.43~27.47GPM) DN25B	25~200 LPM (6.6~52.8 GPM) DN40B	40~320 LPM (10.56~84.48 GPM) DN50B
Fluid	Water · Non Corrosive Fluid or Chemical Industrial Application				
Operation Temp.	0~60°C				
Storage Temp.	-5~70°C				
Humidity	30~95% RH				
Flow Accuracy	± 2.5% F.S. @25°C (77°F)				
Response Time	1 Sec				
Operation Pressure	120 PSI				
Pressure Gauge Measurement Range	0~120 PSI				
Pressure Accuracy	±1% F.S. @25°C				
Piping	1/2" ~ 1" NPT (F)    1 1/2" ~ 2" Flange				
Wetted Material	PP · Ceramic				
O-ring	Silicon or Viton				
LCD Backlight	YES				
Waterproof Rating	IP65				
Signal Output	Flow Signal Output 4~20 mA (Three wires) Pressure Signal Output 4~20 mA (Three wires)				

## F300 Dimensions

Unit: mm

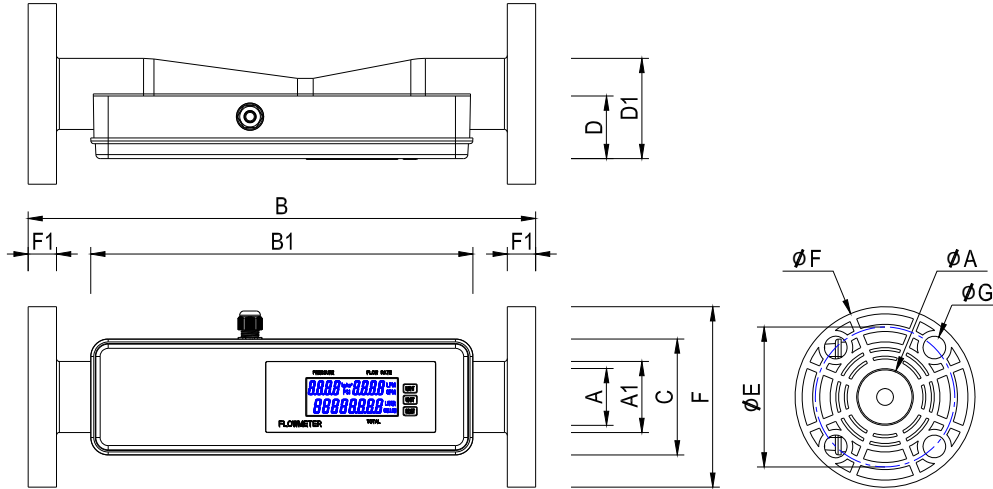
MODEL	A (FITTING SIZE)	A1	B	B1	C	C1	D	D1
DN15A / DN15B	1/2"	Ø 29	234	180.6	60.6	81.3	43.5	59.5
DN20A / DN20B	3/4"	Ø 33	238	180.6	60.6	81.3	45.0	63.0
DN25A / DN25B	1"	Ø 41	244	180.6	60.6	81.3	46.5	68.5



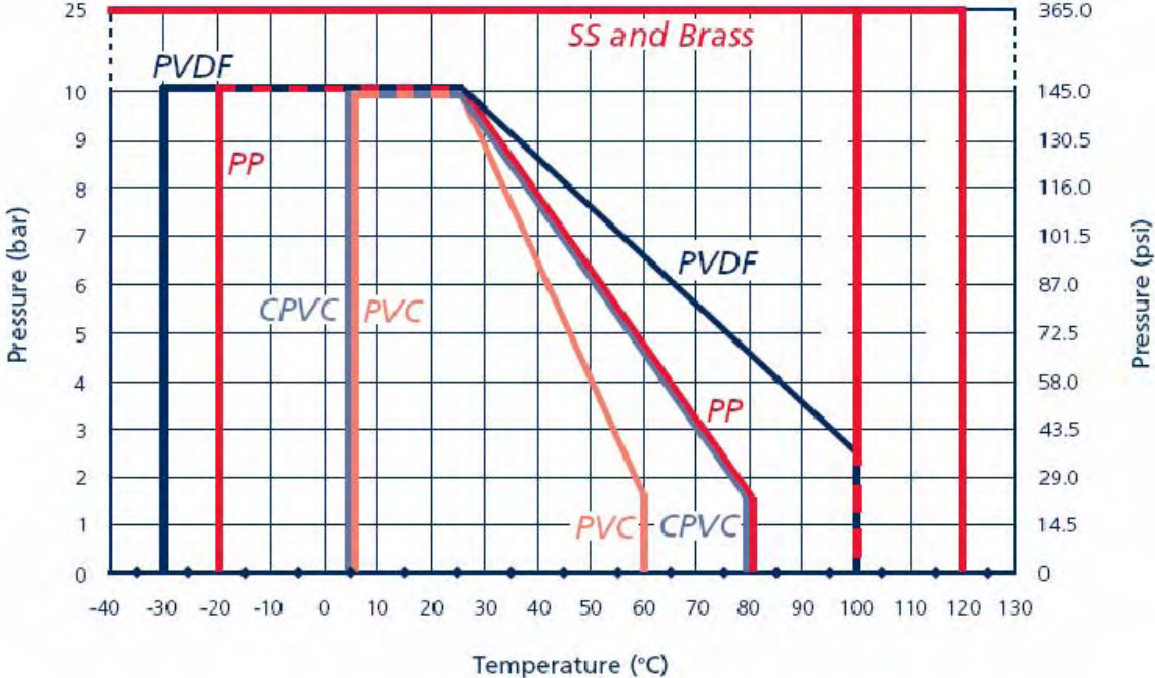
# F300 Dimensions

Unit: mm

MODEL	A (FITTING SIZE)	A1	B	B1	C	D	D1	E	F	F1	G
DN40A / DN40B	1 1/2"	Ø 50	358	269.7	81.6	44.0	70.5	Ø 98.4	Ø 127	20	Ø 16
DN50A / DN50B	2"	Ø 61	411	322.6	92.1	49.0	81.0	Ø 120.7	Ø 152	20	Ø 19



# Maximum Operation Pressure/Temperature





## 2. Installation

F300 series Venturi tube flow meter features with MeterTek patented sensor. There will be more requirements for installation position than traditional one. Please follow the below instructions for installation:

### 2.1 Notices for Installation

#### 2.1.1 An axis of flow meter levels at the axis of pipelines.

There will be fluid disturbance if mismatch or anti-leakage spacer shift happens. In this condition, fluid disturbance may make metering error. So we have to make sure that axis of flow meter aims at the axis of pipelines by proper position tool during installation.

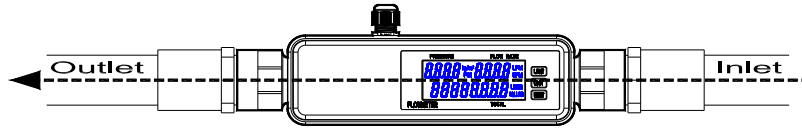
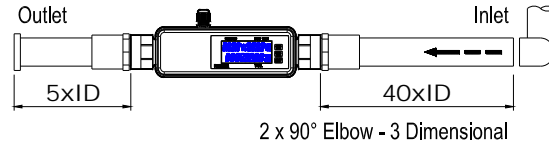
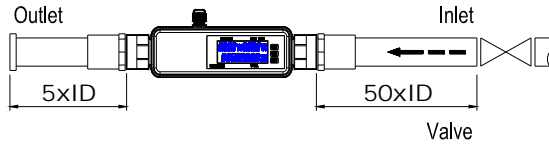
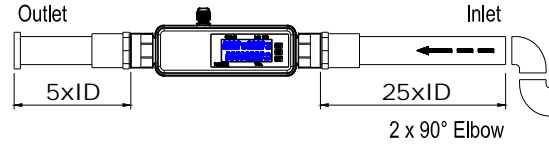
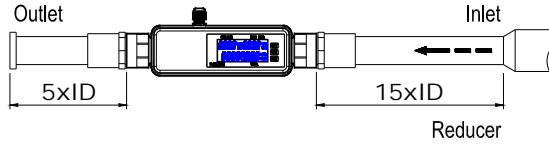
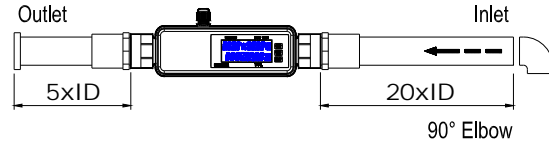
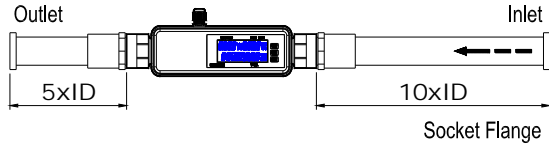


Figure: An axis of flow meter has to aim at the axis of pipelines while installation.

#### 2.1.2 Reserve straight pipe segment

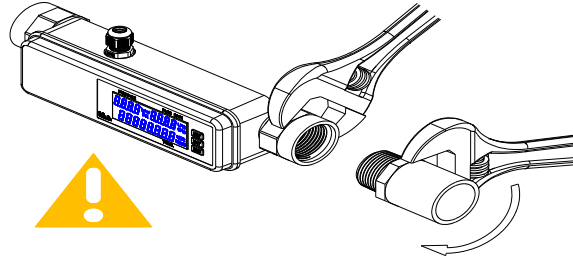
Reserving the straight pipe segment is to make fluid smooth. In general, this requirement is the 10-times-diameter length of straight pipe segment for the entry of flow meter and the 5-times-diameter length for another end. If there is any shirk, bend, valve or rectifier connected with the entry of flow meter, any device make fluid disturbed; we have to extend the length of straight segment. Please refer the following suggestion to choose the suitable length of straight segment for fluid smoothness.

Installation position is shown in the diagram



← FLOW

2.1.3 In installation of flowmeter, please use the tools on the map under way or it will cause serious damage to the flowmeter



2.1.4 Connection should be toward-locked tightly.

1/2"~1" diameter tube adopts NPT (F) connection. Connection should be toward-locked tightly; it will totally match to have high accuracy.

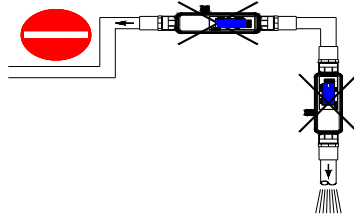
2.1.5 Anti-leakage spacer should be wider than diameter of tube

1-1/2"~2"adopts Flange typed connection to avoid the shift of anti-leakage spacer. Anti-leakage spacer should be wider than the diameter of tube. And notify to avoid any mismatch between axis of tube and anti-leakage spacer.

2.1.6 Direction for installation

To make sure the fluid fully developed, please install F series flow meter in the fluid direction. We suggest installing the flow meter in vertical or horizontal direction. And if you would like to install flow meter in vertical direction, please make it is bottom-up.

Flow direction should be avoided as shown in the diagram below water down stream or directly from the water, or it will affect the flow meter measurement accuracy.



#### 2.1.8 Metering in full-tube

F series flow meter is working in full-tube to have high accuracy. Please avoid any bubble or impurities in fluid.

2.1.9 Any vibration of pipe may cause inaccuracy. There should be some fixed points for long pipe. Please fix it, if any vibration happens at the position of flow meter.

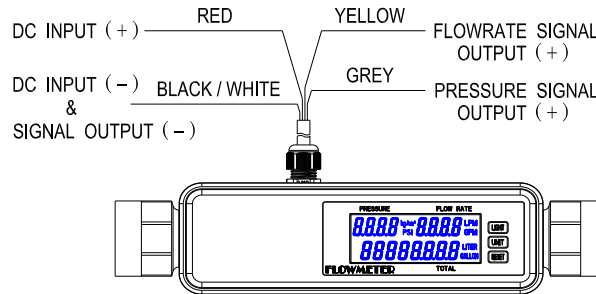
## 2.2 Input Power and Signal Output wires

### 2.2.1 Input power

The input power for F300 should be DC 10~32V. Please make sure the input power while installation

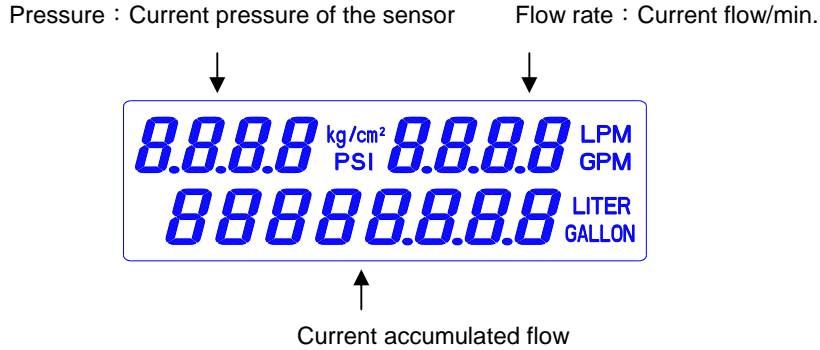
### 2.2.2 Signal output wires

No.	Color	name	Signal item
1	RED	Vs (+)	Power (+)
2	BLACK/WHITE	Vs (-)	Power (-) 、 signal output (-)
3	YELLOW	Signal output	Flowrate signal output (+)
4	GREY	Signal output	Pressure signal output (+)

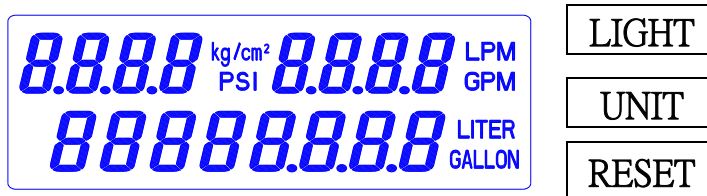


### 3. LCD Display and Keypad

#### 3.1 LCD display



#### 3.2 Keypad



3.2.1 Push "LIGHT" button to start backlight. It will be switched off while setup timing is up.

3.2.2 UNIT : Unit transfer

There are 2 modes for unit transfer function. It will be unit transferred for each button push.

Mode 1: kg/cm<sup>2</sup> 、 LPM 、 LITER

Mode 2: PSI 、 GPM 、 GALLON

3.2.3 RESET : Make the accumulated value of flow be zero.

The value of accumulated flow comes to be zero while pushing "RESET" button.

3.2.4 Pressure zero offset

Under normal circumstances, without any pressure but the display could not show zero , press the "LIGHT" and "UNIT" button altogether for five seconds, and the value will be zero offset.

### 3.3 Setup Timing of LCD Backlight

3.3.1 Timing setup

Press the " LIGHT" key for 5 seconds, the present setting value will show and again press "UNIT" it means adding 1 minute, and press "RESET" key means reducing 1 minute, after choosing the needed numbers press the "LIGHT" key to complete the backlight setting, the maximum time setting is 60 minutes and when the setting value is 0, the backlight will be on permanently.

3.3.2 Default setting is 5 min.

## 4. Maintenance

### 4.1 Regular Maintenance

4.1.1 Please avoid the direct sun light.

4.1.2 Please avoid any hit or strike on flow meter by accident.

4.1.3 The signal wire of F300 should be avoided to immerse in water and pull/drag. Please keep flow meter away from electromagnetic interference.

### 4.2 Troubleshooting

#### 4.2.1 Abnormal jumping value of flow rate shown

- A. Check if the way of connection fit in with the way shown in section 2.1 or not.
- B. Check if the output pressure is stable or not.
- C. Check if it is a full tube or not.
- D. Return to factory for calibration.

#### 4.2.2 Abnormal reduction in value of accumulated flow or stopping accumulating

- A. Check if the installation direction of flow meter correct or not.
- B. Check if there is any damage on flow meter or impurities inside.
- C. Return to factory for calibration.