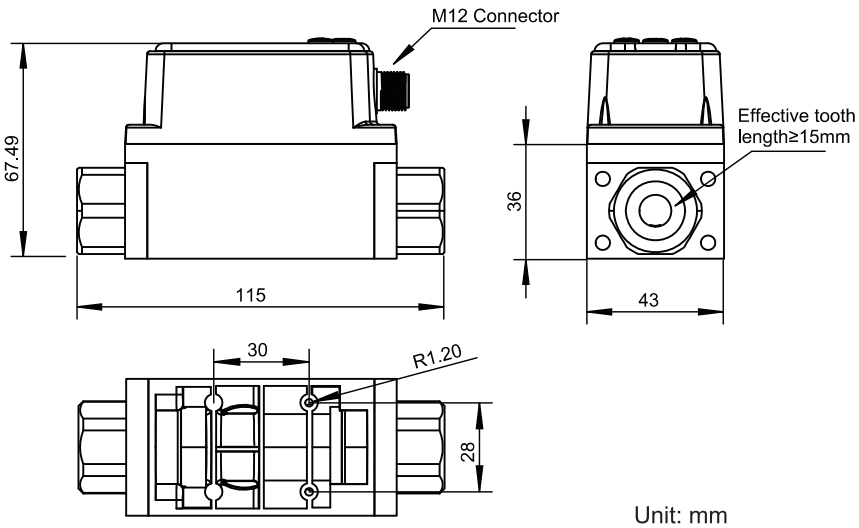
Vortex Flow Sensor

FMVH-016-2AO-G12 Dual 4-20mA outputs(Flow,temperature)

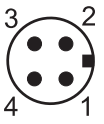


Unit: mm

- Based on the von Karman vortex-street principle
- Dual outputs and dual-display for flow and temperature
- TFT colour display
- M12 A-coded, 4-pin connector
- IO-Link Class A interface
- Totalised flow recording function
- Selectable units, simple operation via push-button menu
- Four freely-adjustable viewing directions
- Compact dimensions, low space requirement

Model	FMVH-016-2AO-G12
Operating / Load voltage	24VDC ± 10%
Operating current	<100mA
Flow Parameters	
Measured medium	Water
Measuring range	1 - 16L/min (0.06 - 0.96 m^3/h)
Flow accuracy	< 3.0%F.S
Totalised flow range	99999L 或 99999m^3 Note: Reset on power-cycle, for reference only
Wetted Materials	ETFE / PA6T / SUS 304 Stainless Steel
Process connection	G1/2 Internal Thread
Pressure rating	12 bar, max.18 bar
Instantaneous flow unit	L/min or m^3/h, selectable via button
Temperature Parameters	
Measuring range	0-100 °C
Temperature accuracy	1 °C
Display unit	°C or °F, selectable via button
Analogue Output	
Number of outputs	2
Interface type	M12, 4-pin
Output mode	4-20 mA output
Output data assignment	Selectable via button (OUT1:Flow OUT2: Temperature) (OUT1:Temperature OUT2: Flow)
Ambient temperature	-10...+65°C
Protection	IP65

M12 interface

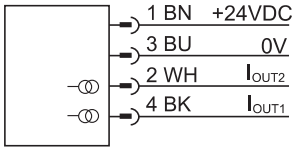


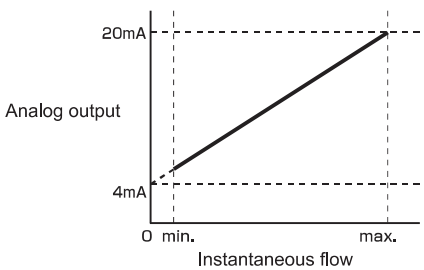
1 = +24VDC
2 = OUT2
3 = 0V
4 = OUT1

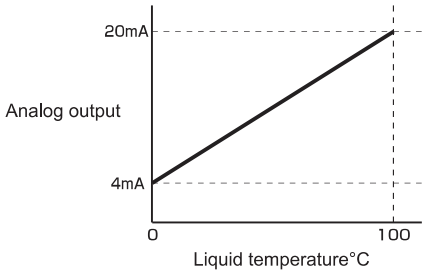
OUT1: Flow data or Temperature data
OUT2: Temperature data or Flow data

Note:The data assignment for the pin can be selected via the button

Wiring Diagram

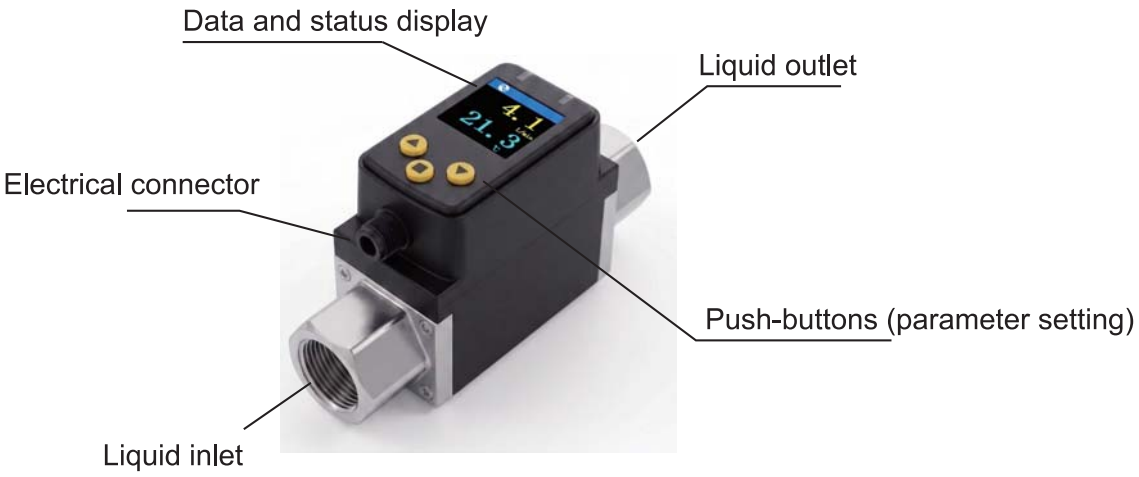






User Manual

Product Structure



Model designation

FMVH-100-2AO-G34

Series

Vortex flow sensors with display

Measuring range

016 : 1 - 16 L/min
040 : 2 - 40 L/min
070 : 3.5 - 70 L/min
100 : 5 - 100 L/min
150 : 9 - 150 L/min

Output signal

2AO : 2-channel 4-20 mA analogue outputs
IOL : 2-channel switching outputs,IO-Link

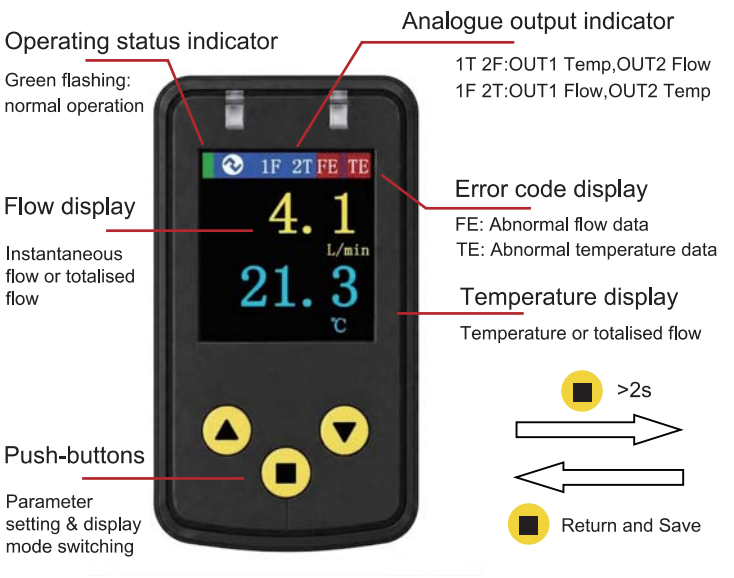
Port Thread Specifications

Model Code	Thread Specifications	Measuring Range
G12	G1/2	016
G12	G1/2	040
G12	G1/2	070
G34	G3/4	100
G1	G1	150

User Manual

Display and Parameter Setting

Main Screen Display



Primary Menu / Secondary Menu

Parameter setting options		
Display Display	Rotate 90° PressEnter	Press ▼ rotate display Press ■ confirm and return
OutPin Select analogue output pin	Out1F out2T Out1T out2F	Press ▼ switch item Press ■ confirm and return
Temp unit Temp unit	Centigrade Fahrenheit	Press ▼ switch item Press ■ confirm and return
Flow unit Flow unit	L/min m3/h	Press ▼ switch item Press ■ confirm and return
AFlow unit Totalised-flow unit	L m3	Press ▼ switch item Press ■ confirm and return
ExitNotSave Exit without saving	Return to main screen without saving	

Main Operation

※ Press ■ >2s to enter the primary menu

※ Press ▲ >8s to toggle between instantaneous flow and totalised flow on the flow display field

※ Press ▼ >8s to toggle between temperature and totalised flow on the temperature display field

※ When totalised-flow is shown
Press ▲ + ▼ >8s to reset totalised flow value

Primary Operation

※ Press ▼ switch setting items

※ Press ▲ select item and enter secondary menu

※ Press ■ return to main screen and save parameters

Secondary Operation

※ Press ▼ switch setting items

※ Press ■ return to primary screen and confirm selected item

Notes:

1.Totalised flow resets upon power-cycle.It may contain errors and is for reference only.
2.When both flow and temperature fields show totalised-flow, the two displays automatically switch to different units.
3.If no operation is performed after entering menu, the unit auto-returns to main screen after 3 minutes without saving changes.
4.When flow exceeds measuring range, flow reading turns red and flashes at approx. 1 Hz.
5.If error code FE or TE appears, sensor data is abnormal. Please contact the manufacturer.
6.On main screen: flashing green frame in status area indicates normal operation.
If not flashing, sensor malfunction occurs.Please power-cycle the unit.

Piping Precautions

When piping the unit, apply wrench force only on the integrated metal section of the piping port (pipe fitting). Using a wrench on other areas may damage the flow-sensor. Safe tightening torque values are listed in the table below.

Thread (G/RC/NPT)	3/8	1/2	3/4	1
Recommended Torque Range	22 – 24 N·m	28 – 30 N·m	28 – 30 N·m	36 – 38 N·m
Maximum Safe Torque	<200N·m	<200N·m	<200N·m	<200N·m

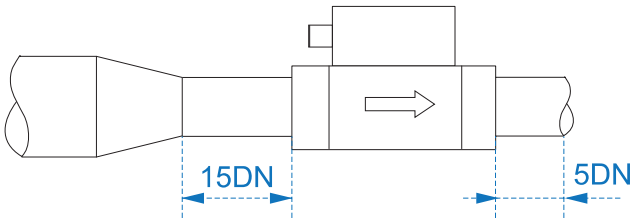
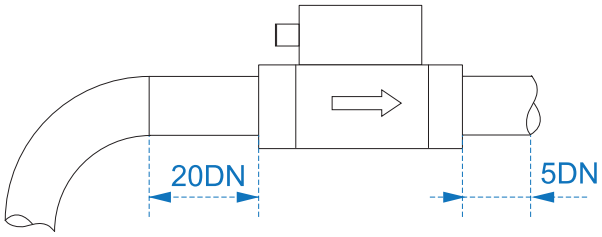
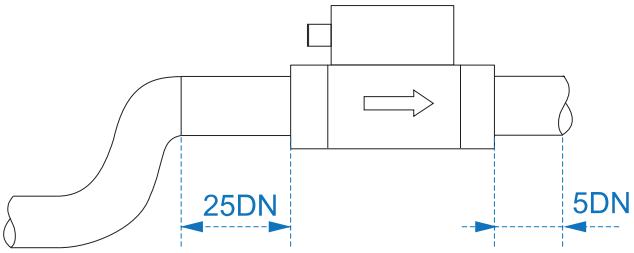
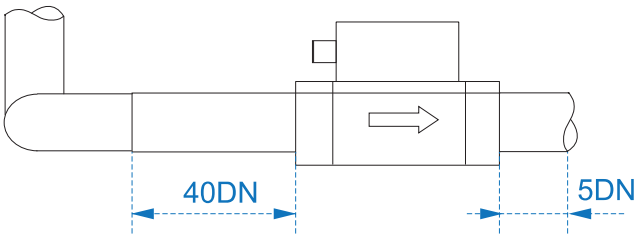
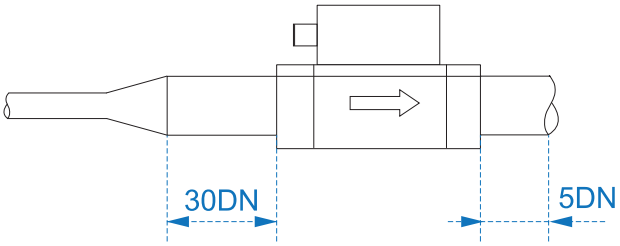
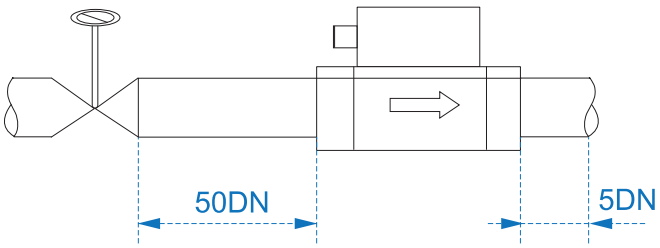
Piping Installation Precautions

To ensure proper sensor operation, the following instructions must be observed:

1.Avoid multiple out-of-plane bends close to the inlet.

2.The internal diameter of the pipe shall not be smaller than the internal diameter of the measuring pipe.

3.The table on the right lists piping installation requirements for different conditions.

Upstream Pipe Configuration	Required Upstream & Downstream
Concentric reducer with fully-open valve	
Single 90° elbow	
Two 90° elbows in the same plane	
Two 90° elbows out-of-plane	
Concentric expander	
Partially-open control valve (Not Recommended)	

Note: DN stands for nominal pipe diameter.