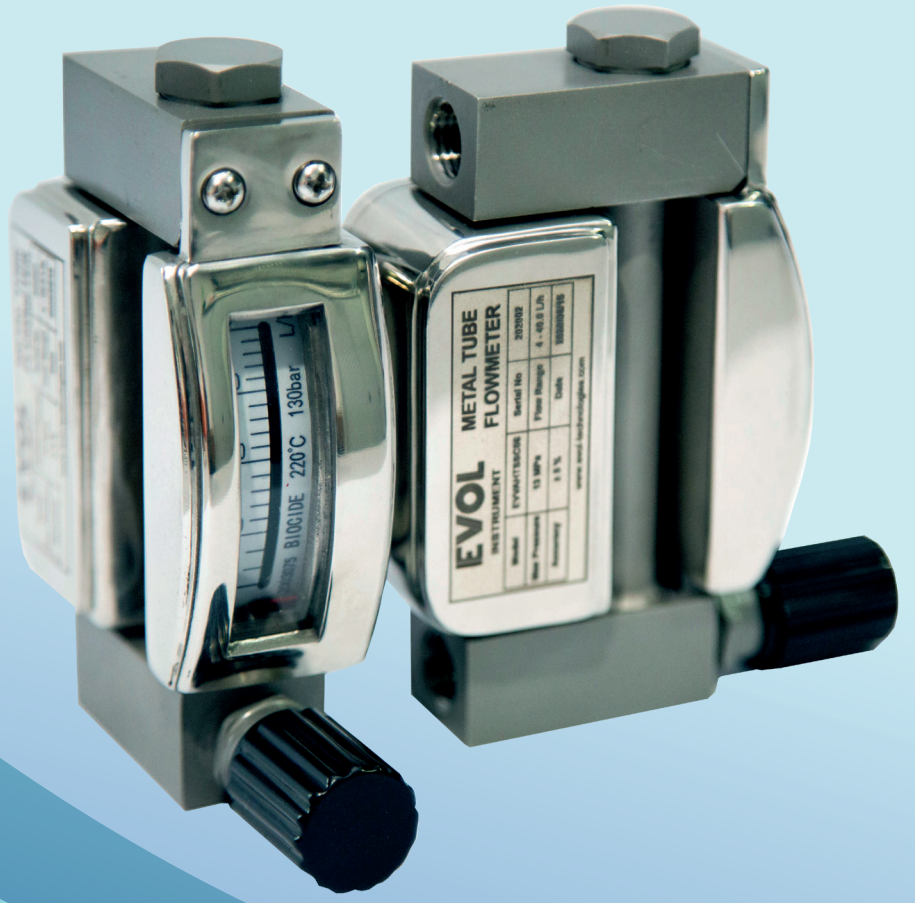
VARIABLE AREA FLOWMETER



EVOL

INSTRUMENT

EVOL VARIABLE AREA FLOWMETER

Metallic Tube Variable Area Flowmeter

To meet customers' process requirements, **EVOL Technologies** has developed the most recent VA series metallic tube variable area flowmeter. With the most cost effect solution, VA series is ideal in various applications involving the measurement of industrial process liquids, gases or steams. VA series is designed to be reliable, flexible and economical. They meet application requirements by featuring an excellent mechanical back-up meters because no external power supply is required. The flowmeters are widely used in fields of petroleum industry, chemical plant, power station, etc.

In EVOL Technologies, there are five types of flowmeter available:

(i) Vertical connection
(ii) Horizontal connection
(iii) Horizontal connection with alarm
(iv) High flowrate of flowmeter with horizontal connection
(v) High flowrate of flowmeter with vertical connection

EVVAVTSS

Features & Highlights:

- Made with SS316
- Flowrate ranges up to 100 L/h
- Vertical connection
- Needle valve and limit switch (optional)
- Easy for installation, maintenance and no external power supply is required.
- Long life expectancy
- Low initial cost
- Low installation cost

EVVAHTSS

Features & Highlights:

- Made with SS316
- Flowrate ranges up to 100 L/h
- Horizontal connection
- Needle valve and limit switch (optional)
- Easy for installation, maintenance and no external power supply is required.
- Long life expectancy
- Low initial cost
- Low installation cost

EVVAHTSS-A/B/C

Features & Highlights:

- Made with SS316
- Flowrate ranges up to 100 L/h
- Horizontal connection
- Availability of alarm
- Needle valve and limit switch (optional)
- Easy for installation, maintenance and no external power supply is required.
- Long life expectancy
- Low initial cost
- Low installation cost

EVVAHFSS

Features & Highlights:

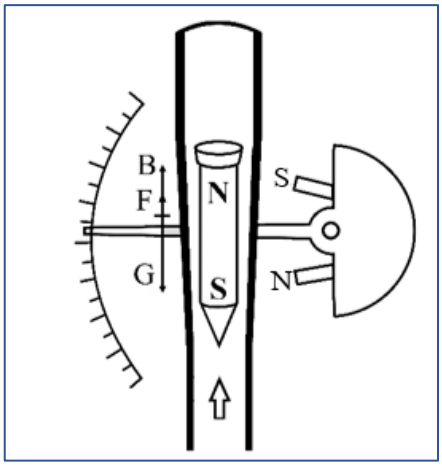
- Made with SS316
- Flowrate ranges up to 200000 L/h
- Horizontal connection
- Availability of alarm
- Suitable for highly flammable and explosion field
- With data recovery, data backup and power failure protection functions
- Clear LCD display
- Long life expectancy
- Low maintenance & installation cost

EVVAVFSS

Features & Highlights:

- Made with SS316
- Flowrate ranges up to 200000 L/h
- Vertical connection
- Availability of alarm
- Suitable for highly flammable and explosion field
- With data recovery, data backup and power failure protection functions
- Clear LCD display
- Long life expectancy
- Low maintenance & installation cost

WORKING PRINCIPLE



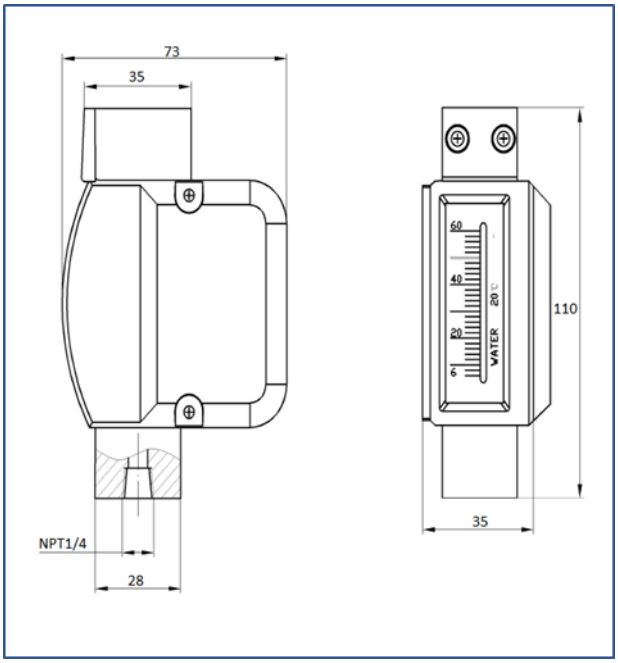
The flowmeter operates in accordance with the float measuring principle. Within the measuring unit, it consists of a metal cone in which a float can move freely up and down and allows the medium flows through the flowmeter from bottom to top.

There three forces acting on the float, which are buoyancy force (B) and flow force (F) act in upward direction while the gravitational force (G) operates in downward direction. When the fluid or gas flows in the tube, the float adjusts itself so that the forces are in equilibrium: G = B + F.

The indicator is built magnetic for the flow-dependent height of the float in the measuring unit. The linear movement of the float is converted into the rotary movement of the indicator, which displays the flow on scale.

VERTICAL CONNECTION

Specifications

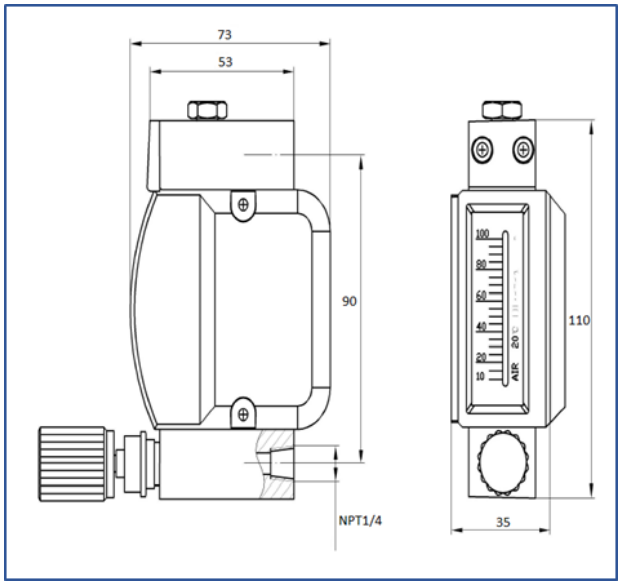


Model	EVVAVSS
Inlet / outlet direction	Vertical
Fluid temperature range	-80°C to 300°C
Measuring range	0.3 to 100L/h ❖ Water at 20 °C ❖ Air at 20 °C, 1.01 MPa
Range ability	10:1
Accuracy	± 5%
Connection	1/4" NPT Female
Ambient temperature range	-20°C to 65°C
Maximum pressure	13MPa
Protection category	IP65
Connection type	Thread / Flanges / Tri-Clamp
Limit switch (optional)	1 or 2 switches
Power supply	24 (1 ± 10%) V DC
Current	4 to 20 mA
Resistance	≤ 500 Ω

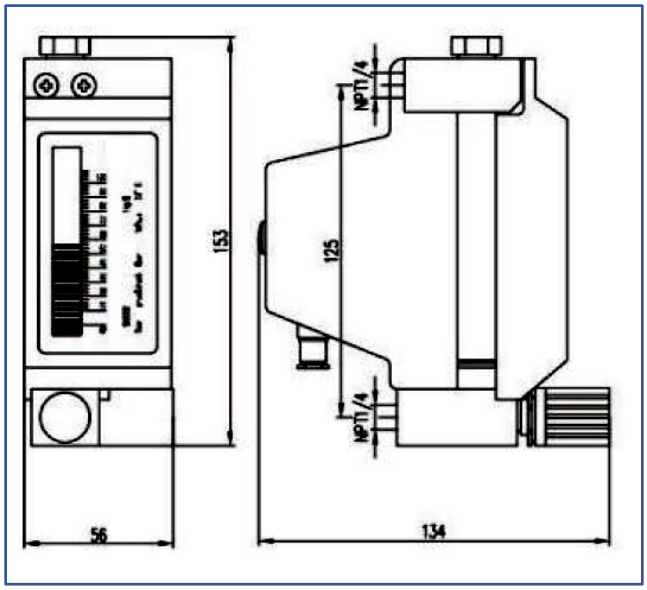
HORIZONTAL CONNECTION

Dimensions

Horizontal Connection



Horizontal Connection with Alarm



Specifications

Model	EVVAH-A/B/C
Inlet / outlet direction	Horizontal
Fluid temperature range	-80°C to 220°C
Measuring range	0.3 to 100L/h ❖ Water at 20 °C ❖ Air at 20 °C, 1.01 MPa
Range ability	10:1
Accuracy	± 5%
Temperature range	-20°C to 65°C
Maximum pressure	13MPa
Protection category	IP65
Connection type	Thread / Flanges / Tri-Clamp
Limit switch (optional)	1 or 2 switches
Power supply	24 (1 ± 10%) V DC
Current	4 to 20 mA
Resistance	≤ 500 Ω

Alarm Specifications

Quantity of Safety Control Circuit	1	2
Power Supply	220V AC	24V DC
Output Power	3.5 W	
Voltage	8V DC (13.5V)	8V DC (13.5V)
Current	8mA (31mA)	16mA (62mA)
Maximum Inductance	3mH (31mH)	1mH (7.6mH)
Maximum Capacitance	230nF (609nF)	160nF (539nF)
Type of Circuit	Single loop	Double loop
Switch Contact Load	4A/250VA/cos Ø = 0.7	

Capacity for Horizontal & Vertical Connection

Meter Size	Water (L/h)	Air (m^3n/h)	Maximum Pressure Loss (MPa)
C01	-	0.005 – 0.050	0.0031
C02	0.3 – 3.0	0.010 – 0.100	0.0036
C03	0.5 – 5.0	0.015 – 0.150	0.0029
C04	1.0 – 10.0	0.040 – 0.400	0.0037
C05	2.5 – 25.0	0.080 – 0.800	0.0055
C06	4.0 – 40.0	0.125 – 1.250	0.0065
C07	6.0 – 60.0	0.200 – 2.000	0.0085
C08	8.0 – 80.0	0.250 – 2.500	0.0130
C09	10.0 – 100.0	0.340 – 3.400	0.0170

Model Number

EV VA H T SS C01 - C

Brand: EVOL

Series: VA

Connection Direction
H: Horizontal
V: Vertical

Connection Type
T: NPT Thread
F: Flanges
C: Tri-Clamped

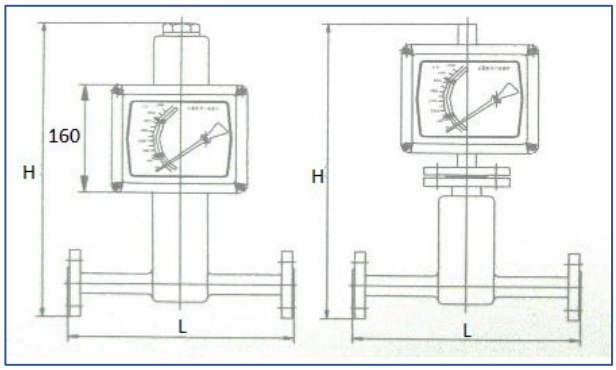
Wetted Material
SS: Stainless Steel

Meter Size
Size: 1-9

Type of Alarm
A: Max limit only
B: Min limit only
C: With min and max limit
None: No alarm

HIGH FLOWRATE W/ H OR V CONNECTION

Specifications



Dimensions:

DN	H (mm)	L (mm)
15	430	250
25	450	250
50	540	300
80	540	400
100	540	400

Model	EVVAHFSS	EVVAVFSS
Inlet / outlet direction	Horizontal	Vertical
Fluid temperature range	❖ Standard model: -80 to 200 °C ❖ Corrosion resistance: 0°C to 85°C ❖ Thermal resistance: -80 to 400°C	
Nominal diameter	DN15 – DN200	
Measuring range	❖ Water at 20 °C : 1 to 200,000L/h ❖ Air at 20 °C, 0.1013 MPa: 0.03-4000m^3/h	
Range ability	10:1 or 20:1	
Accuracy*	± 1.5% or ± 1.0%	
Connection	DIN 2501 standard flanges	
Ambient temperature range	❖ LCD Type: -30°C to 85°C ❖ Pointer type: -40°C to 120°C	
Operating pressure*	❖ DN15 – DN50 : 4.0 MPa ❖ DN80 – DN200: 1.6 MPa	
Protection category	❖ IP65	
Fluid viscosity	❖ DN15: η < 5 mPa.s ❖ DN25: η < 250 mPa.s ❖ DN50 – DN150: η < 300 mPa.s	
Power supply	❖ Standard type: 24V DC two phase 4-20mA ❖ Alarm type: 24V DC three phase 4-20mA	
Output signal	4-20 mA	
Cable interface	M20 × 1.5	
Alarm output	❖ Upper limit or lower limit of instantaneous flow rate alarm ❖ Switch alarm (Max 100mA @ 30V DC) ❖ Relay output (Max 5A @ 250V AC)	
Protocol	RS485, Modbus, HART	
Display	❖ Instantaneous flowrate display value range: 0-50000 (with decimal places) ❖ Accumulated flowrate display value range: 0-99999999	
Explosion-proof mark	❖ Intrinsically safe: iaIICT6 ❖ Flameproof: dIICT6	

* Can be customized upon customer's requirement

Capacity

Model No	Corrosion resistance DN (mm) *Special Requirement	Standard DN (mm)	Water (L/h)	Air (m3/h)	Pressure loss in water (kPa)	Pressure loss in air (kPa)
K01	15	15	2.5-25	0.07-0.7	6.5	7.1
K02			4.0-40	0.11-1.1	6.5	7.2
K03			6.0-60	0.18-1.8	6.6	7.3
K04			10-100	0.28-2.8	6.6	7.5
K05			16-160	0.4-4.0	6.8	8.0
K06			25-250	0.7-7.0	7.2	10.8
K07			40-400	1.00-10	8.6	10
K08	25		60-600	1.6-16	11.1	14
K09		25	100-1000	3.00-30	7	7.7
K10			160-1600	4.5-45	8	8.8
K11			250-2500	7.00-70	10.8	12
K12	50		400-4000	11-110	15.8	19
K13		50	600-6000	18-180	8.1	8.6
K14			1000-10000	25-250	11	10.4
K15	80		1600-16000	40-400	17	15.6
K16		80	2500-25000	75-750	8.1	
K17	100		4000-40000	100-1000	9.5	
K18		100	6000-60000	150-1500	10	
K19	150	125	8000-80000			
K20			100000-1000000			
K21		150	15000-150000			

Model Number

EV VA H F SS K01 - 15 - A

Brand: EVOL

Series: VA

Connection Direction
H: Horizontal
V: Vertical

Connection Type
F: Flanges

Wetted Material
SS: Stainless Steel

Flow rate
01: 2.5-25 L/h
02: 4.0-40 L/h
03: 6.0-60 L/h
04: 10-100 L/h
05: 16-160 L/h
06: 25-250 L/h
07: 40-400 L/h
08: 60-600 L/h
09: 100-1000 L/h
10: 160-1600 L/h
11: 250-2500 L/h
12: 400-4000 L/h
13: 600-6000 L/h
14: 1000-10000 L/h
15: 1600-16000 L/h
16: 2500-25000 L/h
17: 4000-400000 L/h
18: 6000-60000 L/h
19: 8000-80000 L/h
20: 100000-1000000 L/h
21: 15000-150000 L/h

Standard Connection Size
15: DN 15
25: DN 25
50: DN 50
80: DN 80
100: DN 100
150: DN 150

- Please add on “R” for special requirement corrosion resistance

Type of Alarm
A: Max limit only
B: Min limit only
None: No alarm

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