

VARIABLE AREA FLOWMETER

Model: AFM-160



AFM-160 Variable Area Flowmeter is a mechanical device used to measure the flow rate of liquids or gases. It works by allowing the fluid to pass through a tapered tube with a floating element (float) inside. As flow increases, the float rises to a point where the upward force of the fluid equals the weight of the float, indicating the flow rate on a calibrated scale. It's simple, reliable, and does not require power, commonly used in industries for low to medium flow applications.

Brent Adler®
INNOVATIVE CONTROL

Datasheet

Variable Area Flowmeter

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A **Variable Area Flowmeter**, commonly known as a **rotameter**, is a simple yet highly reliable device used to measure the flow rate of liquids and gases in a wide range of industrial applications. It operates on the principle of a float moving freely within a tapered, vertical measuring tube. As the fluid flows upward, it lifts the float until the area between the float & the tube is sufficient to balance the upward force of the flow and the downward weight of the float. The position of the float corresponds to a calibrated scale, providing a direct reading of the flow rate.

Variable area flowmeters are **mechanically robust, cost-effective, and easy to install**, making them suitable for industries such as chemical processing, water treatment, oil and gas, pharmaceuticals, and laboratory testing. They offer **clear visual indication of flow**, require minimal maintenance, and can be configured with alarms or transmitters for remote monitoring. While they are typically used for low- to medium-pressure systems, advanced models can handle a wide range of operating pressures and temperatures, providing versatility in various process conditions.

The simplicity of their design, combined with their accuracy and reliability, makes variable area flowmeters an essential tool for efficient process monitoring and control in industrial and commercial systems.

Features

- Suitable for small diameter and low velocity medium flow measurement
- With data recovery, data backup and power failure protection
- Wide range ratio 10:1
- Cumulative/instantaneous flow display
- Two-wire with upper and lower limit relay alarm function
- Optional DC, AC or battery power supply
- All metal structure, suitable for high temperature, high pressure and strong corrosive media

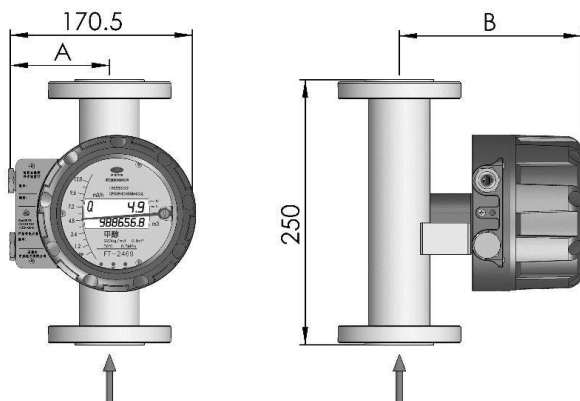


Variable Area Flowmeter

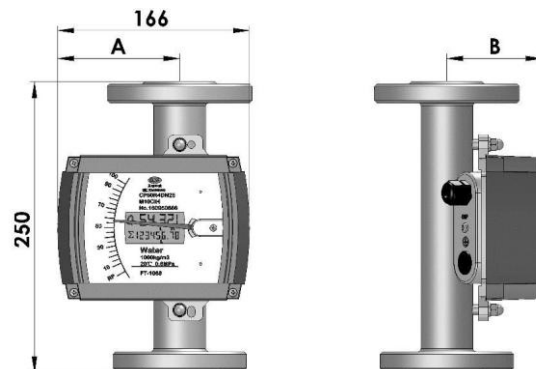
Parameter

Comprehensive parameters	
Range	Water (20℃) (01~150000) L/h Air (20℃.1013MPa) (0.05~3000) m³/h
Range ratio	Standard 10:1 Optional 20:1
Accuracy	Standard: 1.5% Optional:1%
Pressure	Standard: DN15, DN25, DN50: 4.0 MPa (maximum 20 MPa) DN80, DN100, DN150: 1.6 MPa (Maximum: DN80: 10 MPa; DN100: 6.4 MPa; DN150: 4.0 MPa) Optional: DN15~DN50≤32MPa DN80~DN200≤16MPa
Connection	Flange, Clamp, Thread, Sanity thread
Medium temp	Standard: -30℃~120℃ PTFE ≤80℃ High temp: 120℃~350℃ low temp: -80℃~-20℃
Environment temp	Local type: -40℃~120℃ Remote type: -30℃~60℃
Power supply	Standard type: 24VDC two-wire system (4-20) mA (12VDC~32VDC) Alarm type: 24VDC multi-wire system (4-20) mA (12VDC~32VDC) AC type: (100~240) VAC 50Hz~60Hz Battery type: 3.6V@9AH lithium battery
Load resistance	RL max: 600Ω
Alarm Output	Upper and lower limit instantaneous flow alarm Local alarm type: upper limit, lower limit or upper and lower limit instantaneous flow alarm (Contact capacity 1A@30VDC) Upper limit and lower limit alarm hold range is a maximum of 60% of range, and the minimum interval between upper and lower limit alarms is 10% of range
Pulse output	Internal 24VDC power supply, maximum current 8mA)
Ingress protection	IP65

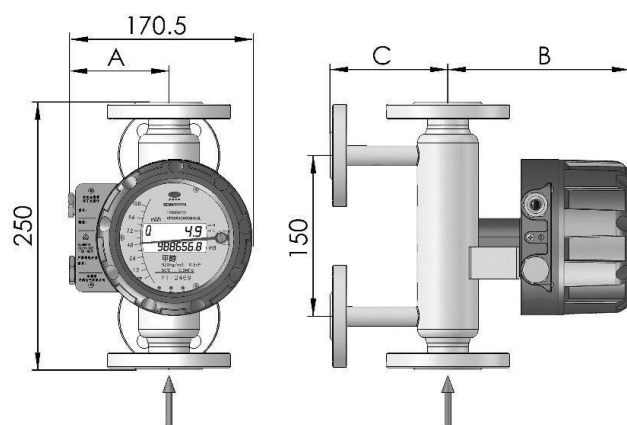
Dimensions



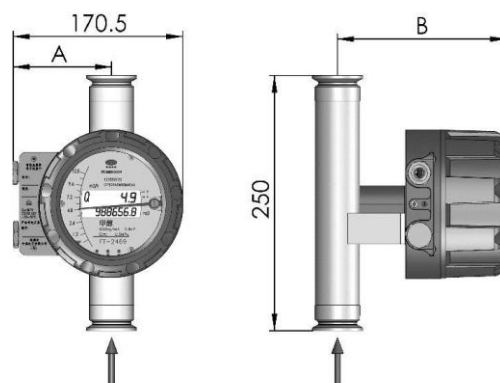
DN15 ~ DN200 (standard)



DN15 ~ DN100(standard)



DN15 ~ DN200



DN15 ~ DN100

DN/Size	Pin model M5 shell overall dimensions and weight loss									
	B		C	D	H	H1	L	WEIGHT		$\Delta P / KPa$
	Standard	High temp						51	51 jacketed	
DN15	154	194	100	120	330		250	7	8.6	20
DN25	173	194	110	120	340		250	8	10	20
DN50	173	194	120	120		560	250	15	17.5	11
DN80	173	194	140	150		575	250	25	28	19
DN100	173	194	150	150		590	250	29	32.5	26
DN150	173	194	185	180		690	300	53	57	58
DN200	173	194	210	200		780	350	61	66	80

Ordering code

AFM-160-15-B0-M1-X1-M-1-00-0-3-5									
AFM-160	-	-	-	-	-	-	-	-	-
	15								DN15(1/2")
	20								DN20(3/4")
	25								DN25(1")
	32								DN32(1.25")
	40								DN40(1.5")
Nominal	50								DN50(2")
Diameter	65								DN65(2.5")
	80								DN80(3")
	1C								DN100(4")
	1E								DN125(5")
	1G								DN150(6")
	2C								DN200(8")
Process Connection	B0								Thread (G Thread)
	H2								HG/T20592 PN40
	H1								HG/T20592 PN16
	H4								HG/T20592 PN100
	H3								HG/T20592 PN63
	I0								Clamp Connection
	XX								Other
Measuring Tube and Float Material		M1							304SS
		M3							316LSS
		N6							PTFE-Lined (Polytetrafluoroethylene Lining)
		T1							Titanium (Ti)
		MG							Hastelloy C
Measuring Tube Structure		XX							Other
			X1						Bottom Inlet, Top Outlet
			X2						Outlet
			X3						Outlet
			Y1						Right Inlet, Left Outlet
			Z1						Left Inlet, Right Outlet
			S1						Horizontal Spring Type
			S2						Top Inlet, Bottom Outlet
Accuracy					M				1.5 Class
					P				2.5 Class

	X			Other
	1			Aluminum Alloy Round
Indicator Type	3			Housing, Pointer Display
	X			Aluminum Alloy Round
				Housing, Pointer + LCD
				Display
				Other
				None
Output and Power Supply	00			2-Wire 4–20 mA
	AF			4-20mA, 24VDC
	AH			2-Wire 4-20mA+HART
	AG			4-20mA+RS485, 24VDC
	AJ			4-20mA+Pulse, 24VDC
	AL			Other
	XX			None
		0		Single SPDT Contact
Alarm		2		Double SPDT Contacts
		4		M20*1.5 Cable Gland IP67
Electrical Interface and Protection Rating			3	
			5	Standard Type
			1	Gas-Damped Type
Additional Structures				High-Temperature Type
			2	(Medium Temperature
				120°C – 450°C)
			X	Other

