

Variable Area Flowmeter BROCHURE

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Measurement Products

Variable area flowmeters

Reliable, flexible, simple and cost effective

Power and productivity
for a better world™



Variable area flowmeters

Reliable, flexible, simple and cost effective

Variable area flowmeters are the most cost effective solution for almost all applications involving the measurement of industrial process liquids, gases or steam. ABB's variable area flowmeters are reliable, flexible, simple and cost effective. They meet application requirements in almost every industry by featuring a wide range of design varieties and sizes. Technology proven, they offer a long life and high reproducibility. Variable area flowmeters are excellent mechanical back-up meters because no external power supply is needed.

Why use an ABB variable area flowmeter?

Because they are reliable, flexible, simple and cost effective

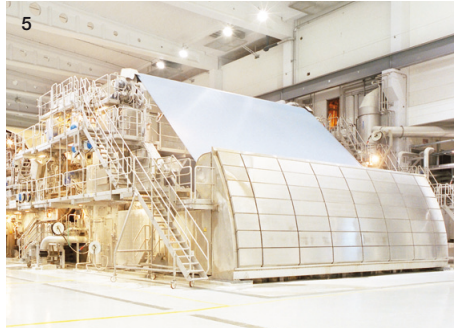
Reliable: Highest quality leads to continuous reliable operation, proven a millionfold times since 1937

Flexible: Measuring liquids, gases and steam in almost every industry for applications from basic to advanced








Simple: Easy to install and to maintain, not requiring power supply nor straight up-/downstream piping

Extremely cost effective: Long life expectancy at low initial cost and low installation cost

1 Water and waste water | 2 Power and industrial steam | 3 Chemical and petrochemical | 4 Oil and gas | 5 Pulp and paper | 6 Mechanical engineering
7 Metals | 8 Food and beverage | 9 Pharmaceuticals



Variable area flowmeter portfolio

Instrument type	Metal tube meters		Glass tube meters			Special meters	
Product image							
Product series	FAM540	FAM3200	10A61	FGM1190	10A45	10A2235	10B4500
Visual media indication			X	X	X	X	X
Local indication	X	X	X	X	X	X	X
Alarm option	X	X	X	X	X	X	X
Analog output signal							
4...20mA option	X	X					
HART option	X						
Constant flow differential pressure regulator option		X	X				
Maximum fluid pressure							
bar	100	100	17.2**	2...30*	20.7***	12*	20.7***
psi	1450	1450	250**	29...435*	300***	175*	300***
Maximum fluid temperature							
° C	400	180	120**	120/180	121****	121	121****
° F	750	360	250**	250/360	250****	250	250****
Measuring range liquids ¹							
l/h	3...120,000	0.1...3,000	0.001...140	0.002...17,600	3.5...20,400	5...11,400	4088...1,250,000
GPH	0.1...31,700	0.02...800	0.0003...38	0.0005...4,600	1...5,400	1.2...3,000	1080...330,000
Measuring range gases ²							
Nm³/h	0.1...1,600	0.008...90	0.0002...4.2	0.0003...520	0.1...244	0.08...180	117...35,882
SCFH	3.5...58,000	0.3...3,000	0.008...150	0.01...18,000	4...8,900	3...6,600	4460...1,363,000
Typical applications	Deionization Water purification Waste water treatment Gas sampling systems Nitrogen generators Power utility applications Cooling water Burner control Corrosive liquids Chemical injection Food and beverage applications		Aeration Gas sampling systems Burner control Level measurement Purging applications Nitrogen generators Corrosive liquids Food and beverage applications			Cooling water control, Bearing lubrication control, Actuation of pump motors or solenoid valves	Low-cost measurement of large liquid or gas flows in oil, gas, petrochemical, water and waste water

¹ Liquid at 1000 kg/m³ & 1.0 cps

² Air at 1.013 bar(a) & 0 °C and air at 14.7 psia & 70 °F

* Depending on tube size and medium

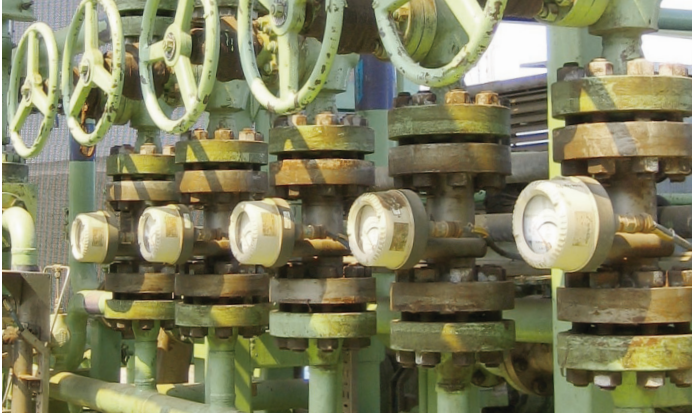
** stainless steel with stainless steel tube adaptors

*** stainless steel threaded connections only, dependent on tube diameter

**** stainless connections only

Metal tube meters

Variable area flowmeter FAM540



VA Master in high pressure methanol injection application



Variable area measurement of oxidation air in a water plant

Cost effective flow metering solutions for process applications at temperatures up to 400 °C (750 °F) and pressures up to 400 bar (5800 psig). Ideally suited for applications requiring transmitted outputs, totalization or alarms.

The challenge

Reliable, but cost effective measurement is required. The installation conditions are demanding because of high operating pressure and sometimes severe environmental conditions, such as freezing ambient temperatures or a corrosive seawater atmosphere.

The solution

VA Master FAM541 in high pressure design with flanges up to class 2,500 (400 bar), optionally with stainless steel indicator housing for offshore or onshore installations.

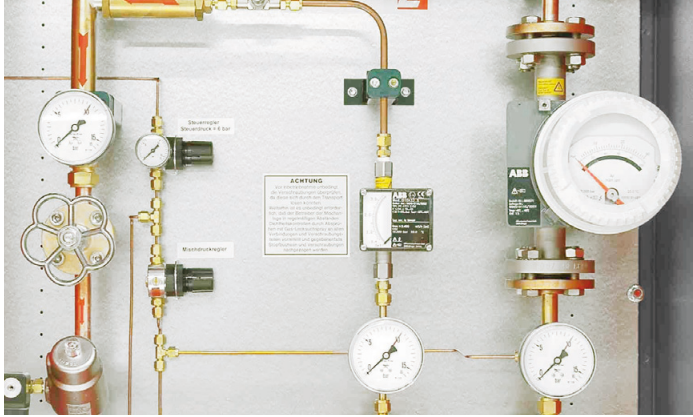
Product highlights

- Easy installation due to short and straight-through design
- Optional stainless steel indicator housing for harsh environmental conditions
- Optional PTFE lining and PTFE float for maximum corrosion resistance
- HART communications, transmitter output, integral totalizer, LCD display and alarm functions

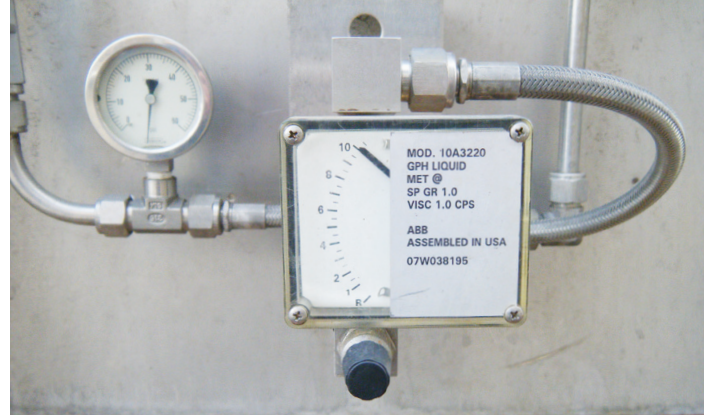


Metal tube purgemeters

Variable area flowmeter FAM3200



VA Master FAM540 and FAM3200 in gas sampling armature



Armored purgemeter FAM3200 in liquid service

Low flow rate metering in pipe sizes from 1/4" (6.35 mm) to 1" (25.4 mm) diameter, when fluid temperatures and pressures exceed those of glass tube meters.

The challenge

Reliable measurement and process control but with requirement of compact installation.

The solution

Armored purgemeter FAM3220 with integral needle valve is a robust and reliable device for control of smaller flow rates even under the harshest conditions. An optional pressure regulator helps to keep the flow stable even under changing pressure conditions.

Product highlights

- For dirty and/or corrosive gases or liquids
- Optional minimum/maximum alarms or transmitter output
- Optional integral needle valve and pressure regulator for process control



Glass tube purgemeters

Variable area flowmeter 10A6100

Variable area flowmeters 10A6100 are versatile, low cost metering solutions for very low fluid flow applications in tube sizes from 1/16" (1.59 mm) to 1/4" (6.35 mm) diameters. Typical applications are gas and liquid sampling systems or tank level measurement using the bubbler principle.

The challenge

Measurement and control of many different gases and different flow rates require flexible and universal flow instruments.

The solution

Purgemaster 10A6100 with bi-stable alarm option is an ideal solution because of its compact design and low installation demands. The tubes can be removed for cleaning or replacement without tools. The modular design provides interchangeable parts and simplifies maintenance and spare part stocking.



PurgeMaster 10A6100 is used in almost every industry

Product highlights

- Simple snap-in tube construction minimizes downtime for cleaning and replacement
- Internal backcheck to restrict backflow and draining when tube is removed
- Optional one or two bi-stable alarms for contact closure (or opening) on rising or falling flow



Glass tube and special meters

Glass tube meters 10A4500, FGM1190

Visual flow metering solutions for a wide variety of process fluids in pipe sizes from 1/4" (6.35 mm) to 2" (50.8 mm) diameters. Ideal for blending or high flow purging applications.

The challenge

Visual control of gas and liquid flows, often at low pressure conditions.

The solution

Glass tube flow meters are used for a wide variety of gases and liquids in most industrial processing facilities. They monitor natural gas flows into ovens, furnaces, measure cooling fluids to protect equipment, sampling systems in laboratories and flow rates into and out of tanks.

Product highlights

- Easy range change and cleaning: no removal from the line required
- Excellent visibility of flow rate over a 12½ to 1 range on a linear scale
- Optional one or two bi-stable alarms for contact closure (or opening) on rising or falling flow



VA Master 10A4500 in gas service with low pressure drop float

Glass tube meters 10A2235

Liquid flow applications of water or light bearing lubricants are typical. Glass tube meters are often used for shut down of electrical or heavy equipment when cooling or bearing lubricant flow becomes too low by using the optional alarm to actuate a pump or solenoid valve.

Product highlights

- Virtually maintenance free because of high resistance against mechanical and thermal stress
- Alarm actuation with optional Ratolarm extension
- Highest reliability and uptime because of "fail safe" alarm construction

By-pass flowmeters 10B4500

Low-cost measurement of large liquid or gas flows in oil, gas, petrochemical as well as water and waste water industries. The 10B4500 is a special version of the 10A4500 operating with a primary orifice plate in stainless steel design.

Product highlights

- Large flow measurement at lowest cost
- No external power required
- Easy range change and cleaning
- Suitable for hazardous areas



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