

Flow Meter Selection Guide

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LIQUIDS

	Clean Liquid	Dirty Liquid	Abrasive / Slurry	Corrosive	High Pressure	Density, Concentration	Cryogenic	High Temp	Mass Flow	Low Flow Rates <0.1m ³ /hr (0.44gpm)	Low Conductivity
Coriolis Flow Meter	■	■	○	○	■	■	■	■	■	■	■
Magnetic Flow Meter (4-wire)	■	■	■	■	○			○	○	○	
Magnetic Flow Meter (2-wire)	■	○	■	○	○			○	○		
Capacitance Magnetic Flow Meter	■	■	■	■	○			○	○		■
Vortex Flow Meter	■	○		○	■		■	■	■		■
Variable Area Flow Meter	■	○		■	○		■	■	○	■	■
Differential Pressure (DP) Flow Meter	■	○	○	○	■		○	○	■	■	■

■ Designed for this service ○ Applicable for this service under certain conditions - consult manufacturer

GAS & STEAM

	Clean Gas	Dirty Gas	Corrosive	Low Pressure	Saturated Steam	Superheated Steam	Cryogenic	High Temp	Mass Flow	Low Flow Rates
Coriolis Flow Meter	■	■	○	○		■	■	■	■	■
Vortex Flow Meter	■	○	○	■	■	■	■	■	■	■
Variable Area Flow Meter	■	○	○	■	■	■	■	■	○	■
Differential Pressure (DP) Flow Meter	■	○	○	■	■	■	○	○	○	■

■ Designed for this service ○ Applicable for this service under certain conditions - consult manufacturer

	Coriolis Mass Flow Meter	Magnetic Flow Meter (4-Wire)	Magnetic Flow Meter (2-Wire)	Capacitance Magnetic	Vortex Flow Meter	Variable Area Flow Meter	Differential Pressure (DP) Flow Meter
Yokogawa Family	ROTAMASS	ADMAG	ADMAG	ADMAG	YEWFLOW	ROTAMETER	DPharp
							
Recommended Model	ROTAMASS TI	ADMAG AXG / AXW	ADMAG AXR	ADMAG CA	digital YEWFLOW	RAMC, RAKD, RAGN	DPharp EJA / DPharp EIX
Typical Applications	<ul style="list-style-type: none"> Liquid Gases Superheated steam Concentration measurements 	<ul style="list-style-type: none"> Conductive fluids (above 1μS/cm) Slurries Corrosive fluids Water/Wastewater 	<ul style="list-style-type: none"> Conductive fluids (above 10μS/cm) Light slurries Corrosive fluids Water/Wastewater 	<ul style="list-style-type: none"> Ultra-low (0.01μS/cm) conductive fluids Wetted electrodes Corrosive fluids Coating fluids 	<ul style="list-style-type: none"> Liquid Gases Saturated steam Superheated steam 	<ul style="list-style-type: none"> Liquid Gas Steam 	<ul style="list-style-type: none"> Liquid Gas Steam
Line Sizes	6mm - 200mm (1/4" to 8")	2.5mm - 1800mm (0.1"-72")	25mm - 200mm (1"-8")	25mm - 200mm (1"-8")	15mm - 400mm (0.5"-16")	6mm - 150mm (1/4" to 6")	15mm-3000mm (1/2" to 120")
Max Pressure	Up to 28.5 Mpa (4133 psi)	Up to 9.92 Mpa (1440 PSIG)	Up to 4 Mpa (580 PSIG)	Up to 4 Mpa (580 PSIG)	Up to 43 MPa (6250 psi) (ANSI Class 1500)	Up to 16 Mpa (2320 psi)	Up to 32 Mpa (4500 psi)
Temperature Limits	-200 to 350°C (-328 to 662°F)	-40C to 180°C (-40 F to 356°F)	-40C to 130°C (-40F to 266°F)	-10C to 120°C (14F to 248°F)	-196 to 450°C (-320 to 842°F)	-196 to 370°C (- 320 to 698°F)	Transmitter: -40 to 120°C (40 to 248°F) Primary Element: -196 to 870°C (-320 to 1600°F)
Flow Range	Up to 600 t/h (1,322,773 lb/hr)	Up to 91,608 m ³ /h (403,341 gpm)	Up to 1,131 m ³ /h (4,979 gpm)	Up to 1,131 m ³ /h (4,979 gpm)	Up to 10 m/s (33 ft/s) liquid Up to 80 m/s (262 ft/s) gas	0.0001 m ³ /h - 130 m ³ /h (0.0003gpm to 572gpm)	Dependent on Primary Element
Accuracy	Liquids - Up to ±0.1% of rate Gases - Up to ±0.5% of rate	±0.15% of rate high accuracy ±0.30% of rate standard	±0.5% of rate	±0.5% of rate	Liquids - Up to ±0.75% of rate Gases - UP to ±1% of rate	Up to ±1.6% of rate	Up to ±1% of rate
Rangeability	Up to 170:1	100:1	33:1	20:1	Up to 33:1	10:1	Up to 15:1 with single DP transmitter
Process Connections	Threaded, Flanged, Sanitary	Threaded, Flanged, Wafer, Sanitary	Flanged, Wafer	Wafer	Flanged, Wafer	Threaded, Flanged, Wafer, Sanitary	Flanged, Threaded, Sanitary, Wafer, Orifice
Communication	Analog, Pulse, Status output, HART, FOUNDATION™ Fieldbus, MODBUS RTU, PROFIBUS PA	Analog, Pulse, HART, FOUNDATION™ Fieldbus, EtherNet/IP	Analog, Pulse, HART	Analog, Pulse	Analog, Pulse, HART, BRAIN, FOUNDATION™ Fieldbus	Visual display, Analog, Pulse, HART, PROFIBUS PA, FOUNDATION™ Fieldbus	Analog, HART, FOUNDATION™ Fieldbus, PROFIBUS PA, MODBUS RTU, Pulse
Approvals	FM, CSA, ATEX, IECEx Others, consult manufacturer	FM, CSA, ATEX, IECEx Others, consult manufacturer	FM, ATEX, IECEx, TIIS	FM, CSA, TIIS	FM, CSA, ATEX, IECEx, Others, consult manufacturer	FM, CSA, ATEX, IECEx, Others, consult manufacturer	FM, CSA, ATEX, IECEx Others, consult manufacturer
Total Insight (TI) Concept - Advance Diagnostics	Available	Available	Not Available	Not Available	Available	Not Available	Available
Advantages of the Technology	Direct mass, multi-variable, and density measurements; unaffected by process condition changes; handles entrained gases; no straight run requirements; not affected by misaligned pipe/transient vibrations	Full bore; no pressure loss; no moving parts; bi-directional; linear accuracy; flow not affected by changes in: pressure, viscosity, density, high noise conditions, temperature; large variety of materials for chemical compatibility	Full bore; no pressure loss; no moving parts; bi-directional; linear accuracy; flow not affected by changes in: pressure, viscosity, density, temperature; 2-wire device; low power consumption; large variety of materials for chemical compatibility	Full bore; no pressure loss; no moving parts; bi-directional; linear accuracy; no wetted electrodes; ultra-low (0.01 μS/cm) conductivity	No moving parts; minimal pressure drop; suitable for a large variety of fluids; high pressure ratings; built-in PT1000 (fMV); for multi-variable and gas compensation; noise reduction with SSP (Spectral Signal Processing);	No power supply needed; low pressure loss; all stainless steel design; reasonable price; robust, dependable, and universal; low-cost monitoring; RAGK, RAGL, and other glass Rotameters available	Can be paired with many different primary elements to meet requirements of application; experienced and reliable flow measuring method; universally accepted; generally lower cost; compensated/mass flow with multi-variable transmitter
Restrictions and Cautions	Pressure loss	Conductive fluids only; not recommended for entrained gas; susceptible to coating	Conductive fluids only; not recommended for entrained gas; susceptible to coating; integral mount only	Application suitability dependent on conductivity; viscosity and flow rate	Limited by Reynolds number with increased viscosity; no solid suspension; no entrained gas	Vertical installation (from bottom to top); not for high viscous fluids	Primary element largely dictates performance and price; limited rangeability; complex installation/integration

*This information is to be used for reference only. For detailed specifications and application suitability please reference the general specifications and/or contact manufacturer.