



MEASURING • MONITORING • ANALYSING

FLOW INSTRUMENTATION

PRODUCT SELECTION GUIDE





FLOW METER SELECTION

What you need to know

Choosing the most suitable flow meter for your application from the many on offer can be very overwhelming. However, to avoid malfunctions, damage, failures and incorrect readings, it pays to be thorough. The first step is to ask the right questions:

The Basic Process

- Who will be using it?
What for?
Where will it be placed?
- Does the process require totalizing or batching capabilities?
- Is a visual rate indication needed?
Local or remote?
Switch or transmitter?

The Place of Installation

- What are pipe's size and material?
- Is the environment stable, variable or harsh?
Is there danger of explosion?
- How much straight run of pipe is before and after the instrument?
- Will there be other types of instrumentation, valves, or pipe bends close by either upstream or downstream?
- Are there space or angle limitations at the installation point?

The Media Characteristics

- Is it liquid, gas, vapor, steam, slurry, or multi-phase media?
- Is it clean or dirty?
- Is it corrosive?
- What is its density, viscosity, temperature, pressure?
Do these remain constant?
- Is it conductive and if so, to what extent?
- Is it Newtonian or Non-newtonian in nature?
- Is there any suspended particulate matter?
If so, how large are the particles?
- Are there any coating or crystallizing properties?
- Any ferrous material in the media?

Certifications

- Are there regulatory compliances?
- Are there hygienic requirements?
- Could the media be explosive?

The Flow Profile

- May air bubbles occur?
- Is there a chance of pulsating flow?
- Will the flow rate be relatively constant or with large fluctuations?
- Will the flow be largely laminar or turbulent?
- Will the pipe be totally full at all time?
- What sort of turndown is needed for max range of flow?
- What are the min and max flow rates?
- Will the flow be in one direction or bi-directional?
- Will pressure loss be an important consideration?

Accuracy/Repeatability/Resolution

- Accuracy: How exact does the measurement need to be?
- Repeatability: How important are "grouped" results?
- Resolution: How incremental do the measuring units need to be?

Flow Meter Selection Summary Chart

Element to Consider	Essential Question to Answer
Price	What will the total cost of the meter be during its lifetime and how long will it last?
The Basic Requirements	What are the essential features? Measurements, outputs, batching etc.?
Installation Considerations	Will it fit and function properly where it has to be installed?
The Process Media	Will the meter work with all the characteristics of the media?
Flow Profile	Is there something about how the media will move through the meter that will cause problems?
Precision	How precise does the meter need to be in relation to the cost of the meter?
Certifications	Does my application require any specific certifications for my instrumentation?
Communications	Where does the data produced by the meter need to go and how will it get there?

Does it still sound intimidating and a bit too much to tackle on your own? Don't worry. We have knowledgeable sales engineers with decades of experience who know how to guide you through this process. We would love to partner with you to find the best solution for your application.

Variable Area

Specific Technology Type	Model	Product Description	Media*												Flow Range
			Liquid								Gas			Steam	
			Clean	Dirty	Aggressive	Viscous	Abrasive	Oil-Based	Ultra-Pure H ₂ O	Slurries	Clean	Dirty	Aggressive		
Low volume variable area	BGK	All-Metal, Low Volume Variable Area Flow Meter	✓	◆	◆	◆	✗	◆	◆	✗	✓	◆	◆	✗	0.1 - 1 ... 20 - 200 l/h (3.0 - 30 ... 600 - 6000 NI/h)
	KDF-2/ KDG-2	Micro-Flow Meter and Flow Switch	✓	✗	◆	✗	✗	✗	✓	✗	✓	✗	◆	✗	0.25 - 2.5 ... 16 - 160 l/h (0.5 - 5 ... 500 - 5000 NI/h)
	KDF-9/ KDG-9	Micro-Flow Meter and Flow Switch	✓	✗	◆	✗	✗	✗	✓	✗	✓	✗	◆	✗	0.02 - 0.25 ... 10 - 100 l/h (2.0 - 20 ... 300 - 3000 NI/h)
	KDS	All Metal, Low Volume Variable Area Flow Meter	✓	◆	◆	◆	✗	◆	◆	✗	✓	◆	◆	✗	0.1 - 1 l/h ... 20 - 200 l/h (3.0 - 30 ... 600 - 6000 NI/h)
	KFR	Acrylic Flow Meter	✓	✗	◆	✗	✗	✗	◆	✗	✓	✗	◆	✗	4 - 50 cm³/min ... 1 - 10 l/min (0.04 - 0.5 ... 100 - 700 l/min)
	KSK	All-Plastic Low-Flow Flow Meter and Switch	✓	◆	✓	✗	✗	✗	◆	✗	✓	✗	◆	✗	1.5 - 11 ... 100 - 1000 l/h (0.15 - 0.45 ... 20 - 105 Nm³/h)
	KSR/ SVN	Low Volume Flow Switch	✓	✗	◆	✗	✗	✗	◆	✗	✓	✗	◆	✗	2 - 250 cm³/min (50 - 6000 Nm³/min)
	KSV	Economical Micro Flow Meter	✓	✗	◆	✗	✗	✗	◆	✗	✓	✗	◆	✗	0.25 - 1.5 ... 10 - 80 l/h (20 - 80 NI/h ... 0.5 - 2.4 Nm³/h)
	SWK	Compact Flow Meter and Switch	✓	✗	◆	✗	✗	✗	◆	✗	✗	✗	✗	✗	0.05 - 0.1 ... 13 - 24 l/min
	UTS	Variable Area Flow Meter for Gas Burners	✗	✗	✗	✗	✗	✗	✗	✗	✓	✗	◆	✗	10 - 100 NI/h ... 0.3 - 3 Nm³/h
Variable area	BGF	All-Metal Armored Flow Meter	✓	◆	◆	◆	✗	◆	◆	✗	✓	◆	◆	◆	10 - 100 ... 6000 - 60 000 l/h (0.3 - 3.0 ... 110 - 1100 Nm³/h)
	BGN	All-Metal Armored Flow Meter	✓	◆	◆	◆	✗	◆	◆	✗	✓	◆	◆	◆	0.5 - 5 ... 13 000 - 130 000 l/h (0.015 - 0.15 ... 240 - 2400 Nm³/h)
	KSM	All-Plastic Flow Meter and Switch	✓	◆	◆	✗	✗	✗	◆	✗	✓	✗	◆	✗	15 - 150 ... 8000 - 60 000 l/h (0.8 - 5 ... 300 - 2500 m³/h)
	DSS	All-Metal Flow Switch	✓	✗	◆	✗	✗	✗	◆	✗	✗	✗	✗	✗	0.05 - 1.0 ... 10 - 110 l/min
	SMN	Flow Switch	✓	✗	◆	✗	✗	✗	◆	✗	✗	✗	✗	✗	1 - 100 l/min
	DSV	Float-Type Flow Meter and Switch	✓	✗	◆	✗	✗	✗	◆	✗	✗	✗	✗	✗	0.25 - 1.25 ... 10 - 130 l/min
	URK	Glass Variable Area Flow Meter	✓	✗	◆	✗	✗	✗	◆	✗	✓	✗	◆	✗	1 - 10 ... 15 000 - 50 000 l/h (0.02 - 0.2 ... 50 - 500 Nm³/h)
	URM	Glass Variable Area Flow Meter	✓	✗	◆	✗	✗	✗	◆	✗	✓	✗	◆	✗	0.25 - 2.5 ... 2500 - 25 000 l/h (3.2 - 32 NI/h ... 32 - 320 Nm³/h)
	USR	Manifold Valve	✓	✗	✗	✗	✗	✗	✓	✗	✗	✗	✗	✗	0.04 - 0.4 ... 1 - 10 l/min
	UVR/ UTR	Glass Tube Variable Area Flow Meter and Needle Valve	✓	✗	◆	✗	✗	✗	◆	✗	✓	✗	◆	✗	10 - 100 ... 200 - 2000 l/h (0.1 - 1 ... 5 - 50 Nm³/h)
	VKG	Viscosity-Compensating Flow Meter and Switch	✓	✗	◆	✓	✗	✓	✗	✗	✗	✗	✗	✗	0.1 - 0.45 ... 5 - 80 l/min
	VKM	All-Metal Viscosity- Compensating Flow Meter and Switch	✓	✗	◆	✓	✗	✓	✗	✗	✗	✗	✗	✗	0.01 - 0.07 ... 8 - 80 l/min
	VKP	Plastic Flow Meter and Switch	✓	✗	◆	✓	✗	✓	✗	✗	✗	✗	✗	✗	2 - 20 ... 20 - 100 l/min

✓ = Normally ◆ = Possibly (Consult Factory) ✗ = Not Suitable/Applicable

Target, Paddle, Flap & Positive Displacement (Spindle, Oval Gear)

Specific Technology Type	Model	Product Description	Media*												Flow Range
			Liquid								Gas			Steam	
			Clean	Dirty	Aggressive	Viscous	Abrasive	Oil-Based	Ultra-Pure H ₂ O	Slurries	Clean	Dirty	Aggressive		
Target-Type	DPT	Target Type Flow Meter	✓	◆	◆	✗	✗	✗	◆	✗	✗	✗	✗	✗	5 - 30 ... 850 - 1900 l/min
Paddle-Type	FPS	Insertion Paddle Flow Switch	✓	◆	◆	◆	✗	◆	◆	✗	✗	✗	✗	✗	0.17- 0.85 ... 72.6 - 165.7 m³/h
	LPS	Flow Switch for Air Cooling and Conditioning	✗	✗	✗	✗	✗	✗	✗	✗	✓	✗	✗	✗	1 ... 9.2 m/s
	PPS	Plastic Paddle Flow Switch	✓	✗	✗	✗	✗	✗	◆	✗	✗	✗	✗	✗	18 ... 108 l/min
	PSR/ PSE	Paddle Flow Switch	✓	◆	◆	✗	✗	◆	◆	✗	✗	✗	✗	✗	2.5 - 4.8 ... 383 - 533 l/min
Flap-Type	TSK	Flap-Style Flow Meter	✓	◆	◆	✗	✗	◆	◆	✗	✗	✗	✗	✗	0.5 - 3.5 ... 200 - 1500 m³/h
	DKB	Flow Indicator with Ball	✓	✗	◆	✗	✗	✗	◆	✗	✓	✗	✗	✗	0.05 - 15 ... 0.14 - 105 l/min
	DAZ	Referencing Flap Flow Indicator	✓	◆	◆	◆	✗	◆	◆	✗	✗	✗	✗	✗	2.1 - 17 ... 2.1 - 24 l/min
	DAA/ DAH	Sight Flow Indicators	✓	◆	◆	◆	◆	◆	◆	✗	✗	✗	✗	✗	0.4 - 4 ... 8 - 100 l/min
Screw Spindle	OME	Helical Gear Flowmeter	✓	✗	◆	✓	✗	✓	✗	✗	✗	✗	✗	✗	0.1 - 10 ... 3.5 - 350 l/min
	OMG/ OMH/ OMS	Helical Gear Flow Meter	✓	✗	◆	✓	✗	✓	✗	✗	✗	✗	✗	✗	0.1 - 10 ... 50 - 5000 l/min
Oval Gear	DOE	Positive Displacement Oval Gear Flow Meter	✓	✗	◆	✓	✗	✓	✗	✗	✗	✗	✗	✗	0.5 - 36 l/h ... 1 - 40 l/min
	DON	Positive Displacement Flow Meter	✓	✗	◆	✓	✗	✓	✗	✗	✗	✗	✗	✗	0.5 - 36 l/h ... 150 - 2500 l/min
	OVZ	Oval-Gear Flow Meter	✓	✗	◆	✓	✗	✓	✗	✗	✗	✗	✗	✗	0.1 - 2 ... 1.6 - 40 l/min

✓ = Normally ◆ = Possibly (Consult Factory) ✗ = Not Suitable/Applicable

Rotating Vane

(Paddle- and Pelton Wheel, Turbine, Rotary Piston)

Specific Technology Type	Model	Product Description	Media*											Flow Range	
			Liquid							Gas			Steam		
			Clean	Dirty	Aggressive	Viscous	Abrasive	Oil-Based	Ultra-Pure H ₂ O	Slurries	Clean	Dirty			Aggressive
Paddle Wheel	DF	Paddle-Wheel Flow Meters and Flow Sensors	✓	✗	◆	✗	✗	✗	◆	✗	✗	✗	✗	✗	0.08 - 0.5 ... 40 - 160 l/min
	DFT	Paddle-Wheel Flow Sensor	✓	✗	✓	✗	✗	✗	✓	✗	✗	✗	✗	✗	0.2 - 2.0 ... 3 - 60 l/min
	DAF	Paddle-Wheel Flow Indicator	✓	✗	◆	✗	✗	✗	◆	✗	✗	✗	✗	✗	0.03 - 0.1 ... 5 - 150 l/min
	DPE	Paddle-Wheel Flow Meter	✓	◆	◆	✗	✗	✗	◆	✗	✗	✗	✗	✗	5 - 30 ... 50 - 750 l/min
	DPL	All-Plastic, Low Flow Sensor	✓	✗	✓	✗	✗	✗	◆	✗	✗	✗	✗	✗	0.025 - 0.5 ... 1 - 25 l/min
	DRB	Paddle-Wheel Flow Meter	✓	◆	◆	✗	✗	✗	◆	✗	✗	✗	✗	✗	5 - 30 ... 50 - 750 l/min
	DRG	Paddle-Wheel Flow Sensor	✓	✗	◆	✗	✗	✗	◆	✗	✗	✗	✗	✗	0.5 - 12 ... 10 - 140 l/min
	DRH	Paddle-Wheel Flow Sensor	✓	✗	◆	✗	✗	✗	◆	✗	✗	✗	✗	✗	0.2 - 8 ... 2.5 - 50 l/min
Pelton Wheel	DPM	Pelton-Wheel Flow Sensor	✓	✗	◆	✗	✗	✗	◆	✗	✗	✗	✗	✗	0.015 - 0.3 ... 0.05 - 5 l/min
	DKF	Paddle-Wheel Flow Indicator	✓	✗	✗	✗	✗	✗	◆	✗	✗	✗	✗	✗	0.14 - 2 ... 1.8 - 83 l/min
	DTK	Pelton-Wheel Flow Sensor	✓	✗	◆	✗	✗	✗	◆	✗	✗	✗	✗	✗	0.05 - 0.6 ... 1.0 - 12 l/min
	KFF/ KFG	Low Volume Rotating Vane Flow Meter	✓	✗	◆	✗	✗	✗	✓	✗	◆	✗	✓	✗	15 - 100 ml/min ... 1 - 10 l/min (25 - 100 NmI/min ... 100 - 500 NI/min)
Turbine	DOT	Turbine Flow Meter/Monitor	✓	✗	◆	✗	✗	◆	◆	✗	✗	✗	✗	✗	0.11 - 1.1 ... 270 - 2700 m³/h
	DRS	OEM Turbine Flow Sensor	✓	✗	◆	✗	✗	✗	◆	✗	✗	✗	✗	✗	2.0 - 40 l/min
	SFL	Turbine Flow Sensor	✓	✗	◆	✗	✗	✗	◆	✗	✗	✗	✗	✗	0.5 - 20 l/min
	TUR	All-Plastic Turbine Flowmeter	✓	◆	✓	✗	✗	◆	◆	✗	✗	✗	✗	✗	0.2 - 5 l/min ... 2.5 - 100 m³/h
	DIG	Rotating Vane Flow Indicator	✓	✗	◆	✗	✗	✗	◆	✗	✗	✗	✗	✗	5 - 12 ... 3 - 80 l/min
	DIH	Rotating Vane Flow Indicator	✓	✗	◆	✗	✗	✗	◆	✗	✗	✗	✗	✗	0.2 - 0.5 ... 1 - 50 l/min

✓ = Normally ◆ = Possibly (Consult Factory) ✗ = Not Suitable/Applicable

Without Moving Parts

(Magnetic-Inductive, Coriolis, Oscillation, Thermal, Ultrasonic, Vortex)

Specific Technology Type	Model	Product Description	Media*													Flow Range
			Liquid								Gas				Steam	
			Clean	Dirty	Aggressive	Viscous	Abrasive	Oil-Based	Ultra-Pure H ₂ O	Slurries	Clean	Dirty	Wet	Aggressive		
Coriolis	HPC	Mini Coriolis Mass Flow Meter	✓	◆	✓	◆	◆	◆	◆	◆	✓	✗	✗	◆	✗	2 - 20 kg/h
	TMU	Mass Flow Meter/ Monitor Coriolis	✓	◆	✓	◆	◆	◆	◆	◆	✓	✗	✗	◆	✗	60-600 ... 150000-1500000 kg/h
Differential Pressure	ANU	Pitot Tube	✓	◆	✓	✗	◆	✓	◆	✗	✓	✓	✓	✓	✓	10...1600 mbar
	KPL	Orifice Plate	✓	◆	✓	◆	◆	✓	◆	◆	✓	✓	✓	✓	✓	2...44.6 – 43...1088 mbar
	RCD	Ultra-Rugged DP Flow Meter	✓	✗	◆	✗	✗	✗	◆	✗	✓	✗	✗	✗	✗	0.5 - 3.3 ... 300 - 2350 l/min (0.5 - 5.35 ... 300 - 2750 Nm³/h)
Magnetic	EPS	Magnetic Flow Meter	✓	✓	✓	✓	✓	✗	✗	✗	✗	✗	✗	✗	✗	1 - 10 m/s
	MIK	Magnetic Flow Meter	✓	✓	✓	◆	✗	✗	✗	✗	✗	✗	✗	✗	✗	0.01 - 0.5 ... 35 - 700 l/min
	MIM	All-Metal Magnetic Flow Meter	✓	✓	✓	◆	✗	✗	✗	✗	✗	✗	✗	✗	✗	0.01 - 1 ... 1.5 - 650 l/min
	MIS	All-Metal Magnetic Flow Meter	✓	✓	✓	◆	✗	✗	✗	✗	✗	✗	✗	✗	✗	0.2 - 45 ... 4 - 1000 m³/h
	PIT	Insertion Magnetic Flow Meter	✓	✓	✓	✓	✓	✗	✗	◆	✗	✗	✗	✗	✗	0.5-5 ... 1-10 m/s
	PITe	Magnetic Flow Meter	✓	✓	✓	✓	✓	✗	✗	◆	✗	✗	✗	✗	✗	1 - 10 m/s
Oscillation	DOG	Oscillation Flow Meter	✗	✗	✗	✗	✗	✗	✗	✗	✓	◆	✓	◆	✗	0.12 - 12 ... 60 - 6000 m³/h
Thermal	KAL	Temperature-Compensating Thermal Flow Switch	✓	✓	✓	✗	✓	✗	◆	✗	✗	✗	✗	✗	✗	0.04 ... 2 m/s
	KAL-L	Thermal Air Flow Switch	✗	✗	✗	✗	✗	✗	✗	✗	✓	✗	✗	✗	✗	1 - 20 m/s
	KME	Compact Inline Flow Meter	✗	✗	✗	✗	✗	✗	✗	✗	✓	✗	✗	◆	✗	0.2 - 76.3 ... 2.2 - 848.2 Nm³/h
	KMT	Thermal Mass Flow Meter	✗	✗	✗	✗	✗	✗	✗	✗	✓	✗	✗	◆	✗	0.32 - 63 ... 263.4 - 263350 Nm³/h
	KEC/ KEP	Inline and Insertion Mass Flow Meter	✗	✗	✗	✗	✗	✗	✗	✗	✓	✗	✗	◆	✗	0.1 - 50 ... 0.1 - 224 Nm/s
	KET	Thermal Flow Sensor	✗	✗	✗	✗	✗	✗	✗	✗	✓	✗	✗	◆	✗	0.1 - 50 ... 0.1 - 224 Nm/s
	MAS	Mass Flow Meter	✗	✗	✗	✗	✗	✗	✗	✗	✓	✗	✗	◆	✗	0 - 0.01 ... 0 - 500 NI/min
	MAK	Mass Flow Meter	✗	✗	✗	✗	✗	✗	✗	✗	✓	✗	✗	◆	✗	0 - 0.01 ... 0 - 500 NI/min
	DMS	Mass Flow Meter and Controller	✗	✗	✗	✗	✗	✗	✗	✗	✓	✗	✗	◆	✗	0.1 - 3.7 Nml/min ... 0 - 185 NI/min
Ultrasonic - Clamp-on	DUC	Clamp-on Ultrasonic Flow Meter	✓	◆	✓	✓	✓	✓	✓	◆	✗	✗	✗	✗	✗	0 ... ±30 m/s
Ultrasonic - Inline	DUK	Compact Ultrasonic Flow Meter	✓	✗	◆	✓	✗	✓	✓	✗	✗	✗	✗	✗	✗	0.08 - 20 ... 2.5 - 630 l/min
Vortex - Multivariable	DVE	Multi-Variable Insertion Design Flow Meter	✓	◆	◆	◆	✗	◆	◆	✗	✓	✗	✗	◆	✓	0.3 ... 9 m/s (max. 90 m/s)
	DVH	Multivariable Flow Meter	✓	◆	◆	◆	✗	◆	◆	✗	✓	✗	✗	◆	✓	0.3 ... 9 m/s (max. 90 m/s)
Vortex	DVZ	Vortex Flow Meter and Switch	✓	✗	◆	✗	✗	✗	◆	✗	✗	✗	✗	✗	✗	0.5 - 4.5 ... 10 - 100 l/min

✓ = Normally ◆ = Possibly (Consult Factory) ✗ = Not Suitable/Applicable

*This chart is a guide for a generalized overview of the flow instrumentation line. Each application is unique and all factors should be carefully considered when selecting the appropriate technology. For more in-depth assistance, contact our engineering staff. Purchaser assumes all responsibility and accompanying liability in the final product selection.