Calibration Facility for water

The flow calibration rig in Kyoto has the only two-stage elevated water tank system in Japan. At a height of 35m, the tanks are also the highest in Japan. It can run eight systems simultaneously, and its weighing system with maximum flow of 5,000m³/h makes this calibration rig the largest of its kind in Japan.

Maximum 50D upstream straight pipe for accurate calibration

Calibration facility for JCSS MRA

Elevated water tank for calibration

Please read “Terms and Conditions” from the following URL before ordering and use.

http://www.azbil.com/products/factory/order.html

Azbil Corporation
Advanced Automation Company

Yamatake Corporation changed its name to Azbil Corporation on April 1, 2012.

1-12-2 Kawana, Fujisawa
Kanagawa 251-8522 Japan

URL: http://www.azbil.com

Jul. 2017 (rev.10)-ED

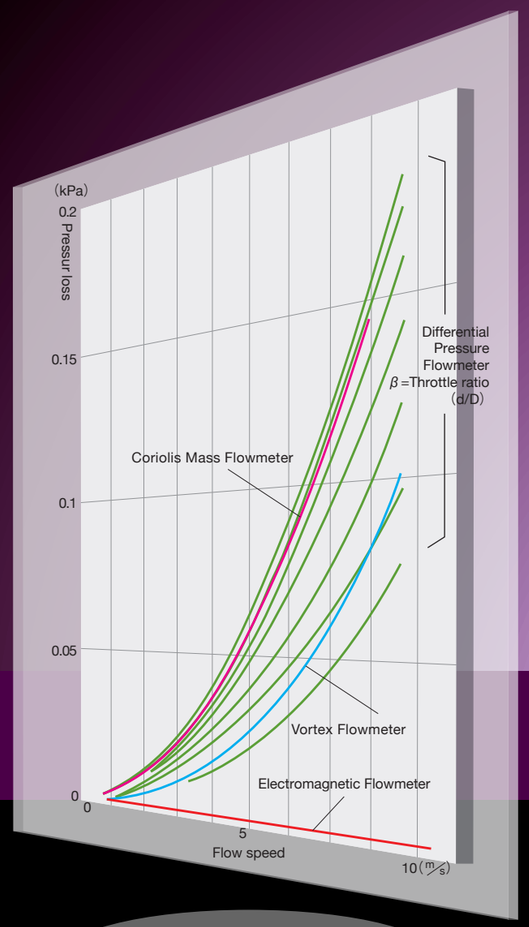
azbil

Flowmeters

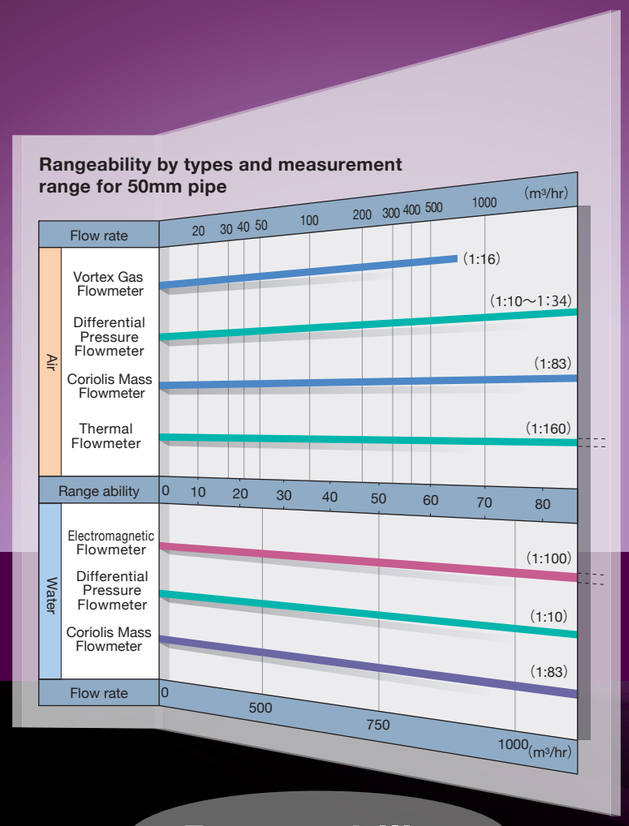
Selection Guide

We offer a wide variety of flowmeters to meet your specific needs.

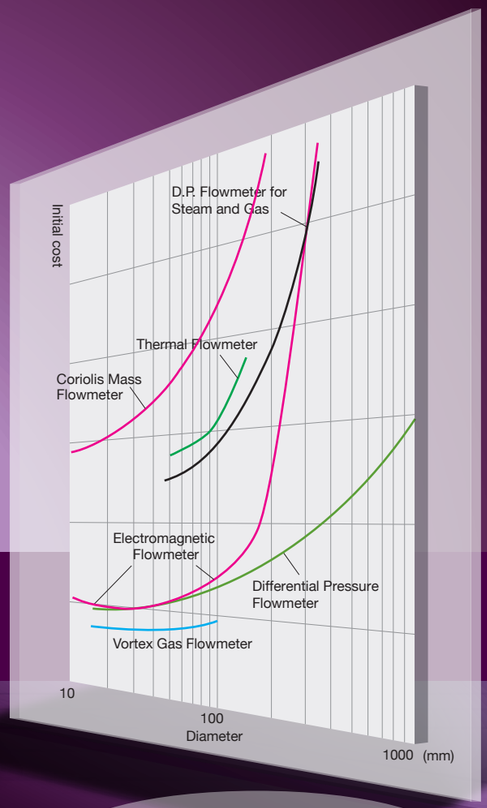
The flow rate is the most basic measurement in a process. A variety of methods of measuring the flow rate have been developed to cover a broad spectrum of fluid characteristics and measuring environments. We have released the following five types of flowmeters to provide longer operating life, good maintainability, and saving energy as customers require: electromagnetic, differential pressure, coriolis mass, vortex, and thermal. From these, you can select the best for your specific needs.



Pressure loss

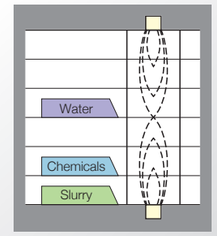


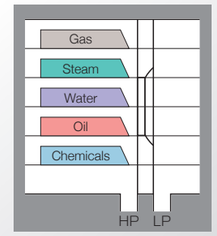
Range ability

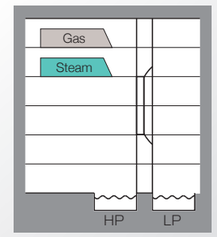


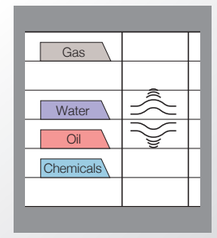
Cost performance

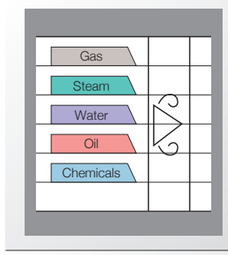
INDEX

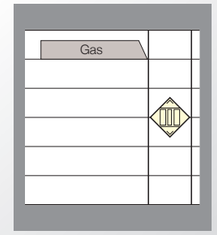


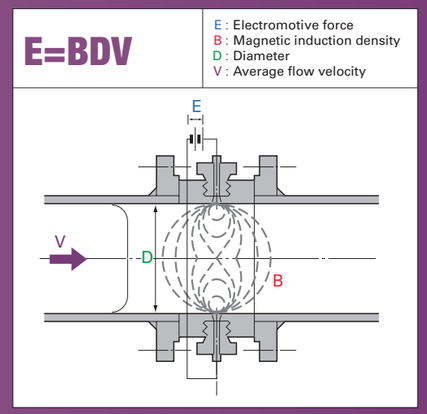












MGG/MGS

MagneW3000 PLUS+ Series

Smart Electromagnetic Flowmeter

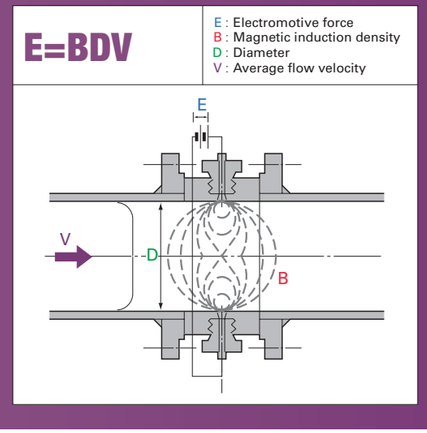
Model MGG/MGS

Features

The MagneW3000 PLUS+ electromagnetic flowmeter offers high performance, and high reliability based on the azbil Group's field-proven technologies. The model MGG14C converter provides expanded flow rate and process measurement capabilities when used with the new selection of MagneW3000 PLUS+ detectors. FM/ CSA nonincendive model is suitable for use in Class I / II / III, Division 2, Groups A, B, C, D, F, and G or non-hazardous locations only. General model is suitable for use in non - hazardous locations.

Standard specifications

Diameter	2.5, 5, 10, 15, 25, 40, 50, 65, 80, 100, 125, 150, 200, 250, 300, 350, 400, 450, 500, 600, 700, 800, 900, 1000, 1100 mm
Setting range	0 to 0.1 m/s (minimum), 0 to 10 m/s (maximum)
Power supply	90 to 130 Vac, 190 to 250 Vac, 47 to 63 Hz, 110 Adc ±10%, 24 Vdc ±10%
Enclosure	Detector: watertight (IEC IP67), submersible (IEC IP68) Converter: waterproof (NEMA 4X, IEC IP66)
Installation type	Integral/ remote
Explosion-proof structure	TIIS/ FM/ CSA explosion-proof, FM/ CSA nonincendive
Case material	Detector: SUS304, aluminum alloy, carbon steel
	Converter: aluminum alloy
Lining material	PFA, polyurethane rubber, chloroprene rubber, ceramic, ETFE
Fluid temperature	-40 to +160°C (lined with PFA)
	-40 to +120°C (lined with ETFE)
	-40 to +180°C (lined with ceramic)
Ambient temperature	-25 to +60°C
Output	4 to 20 mAdc
	Pulse output : open collector, contact output : open collector
Electrical conductivity of fluid	300 µS/m (3 µS/cm) or more
Applicable fluids	Water, sewage, chemicals, slurry, food, highly viscosity liquid
Accuracy	±0.5 % of reading (flow rate of more than 20 % of setting range), ±0.35 % of reading (flow rate of more than 20 % of setting range)
EMC conformity	EN61326



NNK

MagneW3000 PLUS+ Series

Smart Electromagnetic Flowmeter for Open Channel Flowmeter Detector

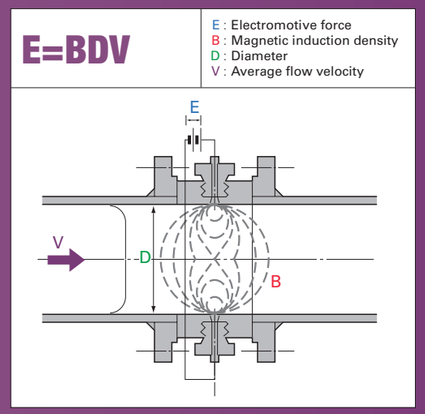
Model NNK

Features

The MagneW3000 PLUS+ Open Channel Flowmeter is designed for both open channel and closed channel flow measurement. In open channel measurements, the MagneW provides accurate flow measurement even at minimal flow rates and is not affected by tidal levels or hydrostatic pressure changes. The detector is obstruction-less and has no moving parts, resulting in trouble-free operation and reduced maintenance costs. Unlike other open channel flowmeter designs, the MagneW provides an output that is linear with the flow rate.

Standard specifications

Diameter	50, 100, 200, 400, 600 mm
Setting range	0 to 0.3 m/s (minimum), 0 to 10 m/s (maximum)
Power supply	90 to 130 Vac, 47 to 63 Hz, 110 Adc ±10%, 24 Vdc ±10%
Enclosure	Detector: submersible (IEC IP68) Converter: waterproof (NEMA 4X, IEC IP66)
Installation type	Remote
Explosion-proof structure	(N.A.)
Case material	Detector: PVC Converter: aluminum alloy
Lining material	PVC
Fluid temperature	0 to +40°C
Ambient temperature	0 to +40°C
Output	4 to 20 mAdc
	Pulse and contact outputs: open collector
Electrical conductivity of fluid	300 µS/m (3 µS/cm) or more
Applicable fluids	Water, sewage
Accuracy	±1 % (Detector only), ±2 % (Combined with dummy)
EMC conformity	N.A.



MTG

MagneW Two-wire PLUS+ Series

Smart Two-wire Electromagnetic Flowmeter

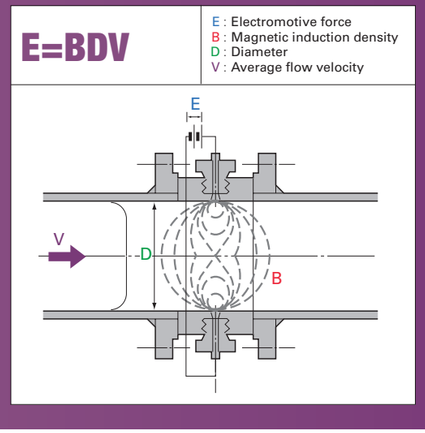
Model MTG

Features

In the past, users had to make big sacrifices in functionality and performance to take advantage of two-wire simplicity, but this is no longer the case. The innovative design of the MTG18A delivers performance equal to current four-wire magnetic flowmeters.
Azbil group released the world's first two-wire loop powered magnetic flowmeter in 1992. Now we've taken the experience gained with the SMT3000 and developed the most innovative two-wire magnetic flowmeter on the market. Introducing the MagneW Two-wire PLUS+, delivering four-wire functionality with two-wire simplicity.
The major advantage of two-wire magnetic flowmeter technology is that it provides the end-user with a lower cost of ownership due to lower cost of flowmeter installation. Not only is the electrical installation more economical, but it can be simpler and easier to back up in the event of a power outage. In addition, replacement of existing two-wire and four-wire flowmeters can be implemented with little electrical work.

Standard specifications

Diameter	2.5, 5, 10, 15, 25, 40, 50, 65, 80, 100, 150, 200 mm
Setting range	0 to 0.3 m/s (minimum), 0 to 10 m/s (maximum)
Power supply	24 Vdc ±10%
Enclosure	Detector: watertight (IEC IP67) Converter: watertight (NEMA 4X, IEC IP67)
Installation type	Integral/ remote
Explosion-proof structure	TIIS/ FM/ CSA explosion-proof, FM/ CSA/ NEPSI/ ATEX nonincendive
Case material	Detector: SUS304, aluminum alloy Converter: aluminum alloy
Lining material	PFA
Fluid temperature	-20 to +130°C (lined with PFA)
Ambient temperature	-20 to +60°C
Output	4 to 20 mAdc Pulse and contact outputs: open collector
Electrical conductivity of fluid	1000 µS/m (10 µS/cm) or more
Applicable fluids	Water, chemicals, high viscosity liquids
Accuracy	±0.5 % of reading (flow rate of more than 30 % or 40 % of setting range)
EMC conformity	EN61326



MCB

Magcube Series

Electromagnetic Flowmeter for Water Applications

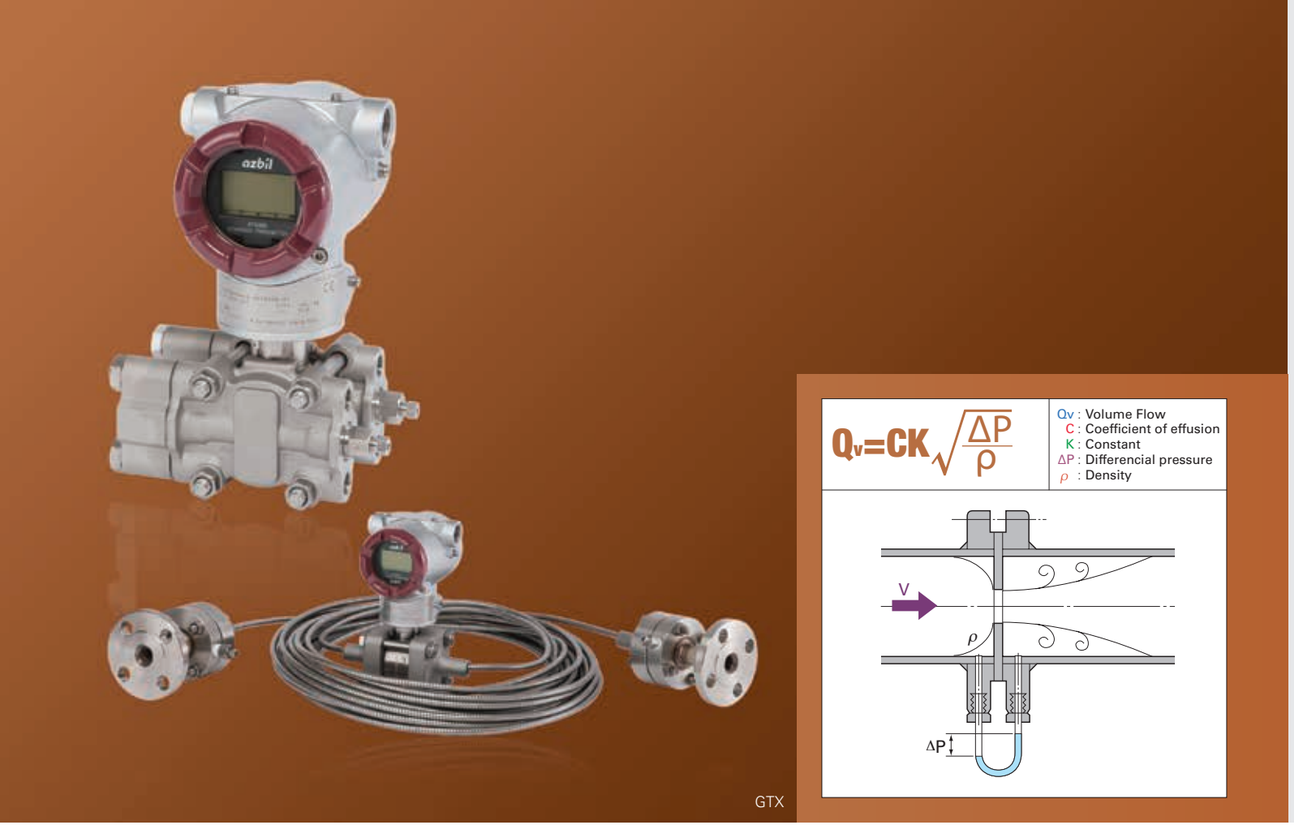
Model MCB

Features

The Magcube is an electromagnetic flowmeter designed specifically for water applications. Based on field-proven technologies, the Magcube provides cost-effective flow measurement with the features required for water applications.

Standard specifications

Diameter	15, 25, 40, 50, 65, 80, 100 mm
Setting range	0 to 0.5 m/s (minimum), 0 to 5 m/s (maximum)
Power supply	24 Vdc ±10%, 90 to 110 Vac
Enclosure	Detector: waterproof(IEC IP65) Converter: waterproof (IEC IP65)
Installation type	Integral
Explosion-proof structure	N.A.
Case material	Detector: SUS304 Converter: polycarbonate
Lining material	PFA (15mm), polypropylene (25 to 100 mm)
Fluid temperature	-20 to +90°C
Ambient temperature	0 to +50°C
Output	4 to 20 mAdc Pulse and contact outputs: open collector
Electrical conductivity of fluid	5000 µS/m (50 µS/cm) to 5 000 000 µS/m (50 000 µS/cm)
Applicable fluids	Water, sewage
Accuracy	±1 % of reading (velocity of 0.5 to 5 m/s)
EMC conformity	N.A.



GTX

AT9000 Series

Differential Pressure Transmitters

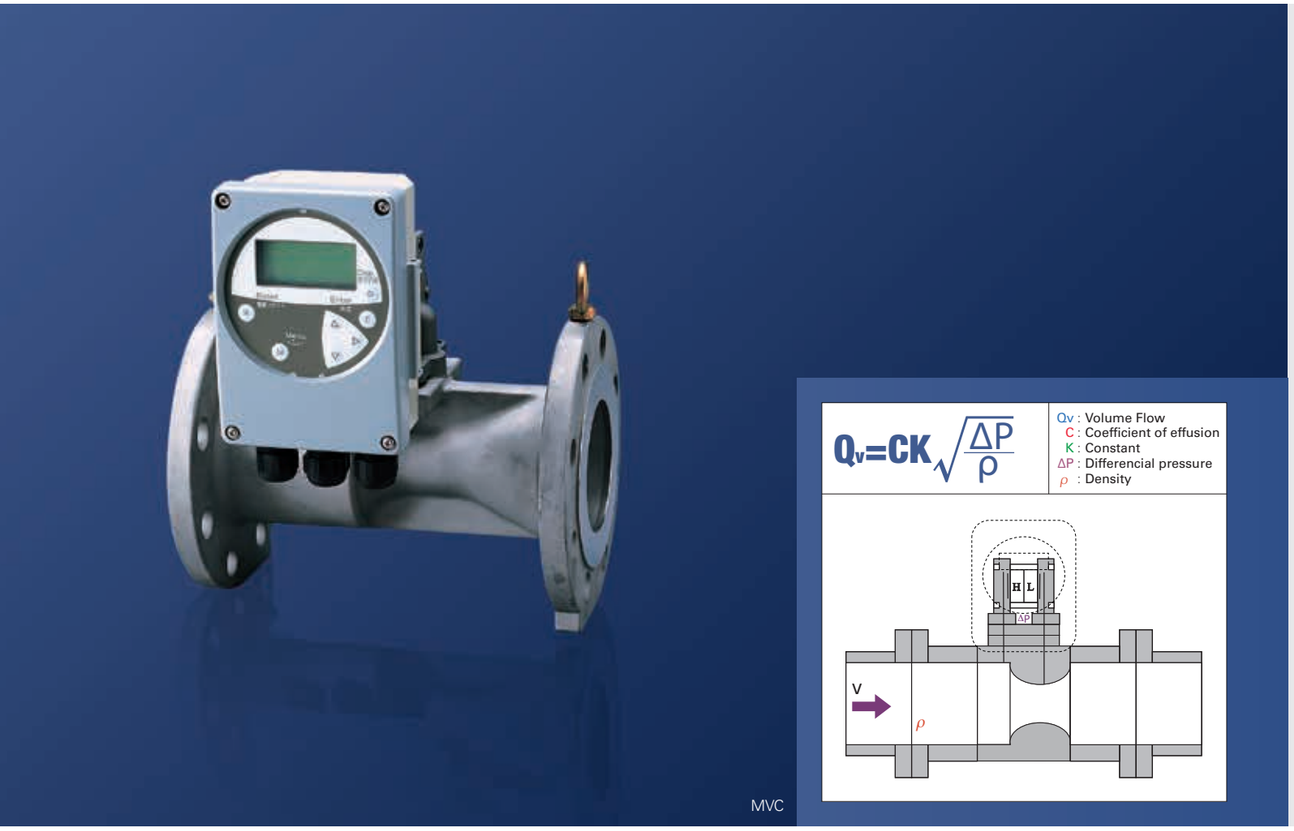
Model GTX

Features

The AT9000 Advanced Transmitter is a microprocessor-based smart transmitter that features high performance and excellent stability. Capable of measuring gas, liquid, vapor, and liquid levels, it transmits 4 to 20 mA DC analog and digital signals.

Standard specifications

Diameter	15 to 3000 mm
Primary elements	Orifice plate, venturi, flow nozzle
Setting range	0.1 kPa to 14 MPa for differential pressure flowmeter
Power supply	16 to 42 Vdc
Enclosure	Watertight (IEC IP67)
Installation type	Impulse line connection or direct mount
Explosion-proof structure	TIIS/ FM/ ATEX/ IEC Ex/ INMETRO/ NEPSI/ KOSHA intrinsic safety and explosion-proof, nonincendive
Case material	Meter body: SUS316, SUS316L Case: aluminum alloy
Fluid temperature	-40 to +650°C
Ambient temperature	-25 to +60°C
Output	4 to 20 mAdc Contact output: open collector
Applicable fluids	Gas, steam, liquid
Accuracy	±2 % of rate with orifice plate
EMC comformity	EN 61326



MVC

AIRcube Series

Multivariable Air Flowmeter

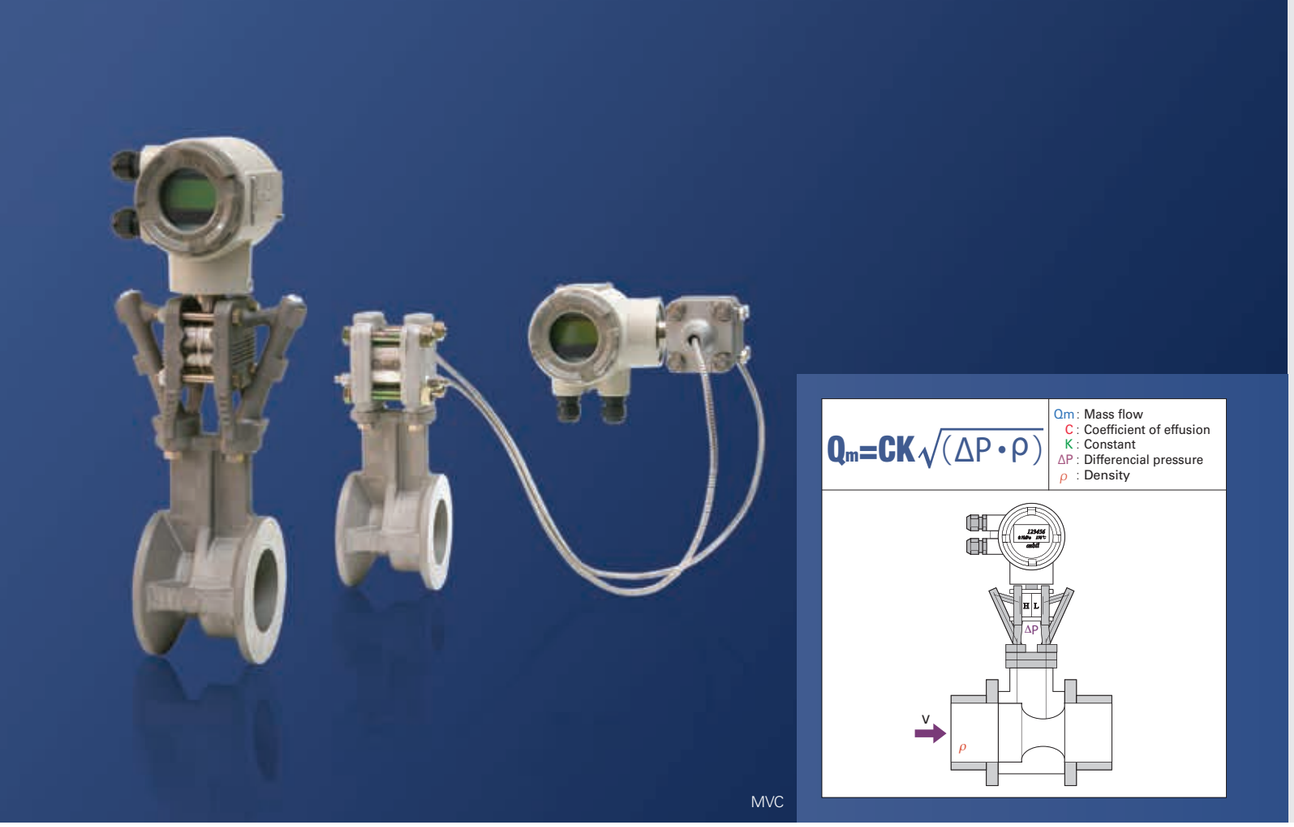
Model MVC

Features

AIRcube conducts air, CO_2, or N_2 gas compensation without any external instruments. This all-in-one transmitter achieves reduced engineering cost while guaranteeing complete accuracy as a flow measurement system.

Standard specifications

Diameter	50, 65, 80, 100, 150 mm
Power supply	90 to 250 Vac
Enclosure	Detector: IEC IP54 Converter: IEC IP54
Installation type	Integral
Explosion-proof structure	N.A.
Case material	Detector: SCS13, SUS316 Converter: aluminum alloy, polycarbonate
Fluid temperature	-15 to +70°C
Ambient temperature	-15 to +50°C
Output	4 to 20 mAdc Pulse output : open collector
Applicable fluids	Compressed air, N_2 gas, CO_2 gas
Accuracy	±3 % of reading
EMC conformity	N.A.



$$Q_m = CK\sqrt{(\Delta P \cdot \rho)}$$

Qm : Mass flow
C : Coefficient of effusion
K : Constant
ΔP : Differencial pressure
ρ : Density

STEAMcube

Multivariable Steam Flowmeter

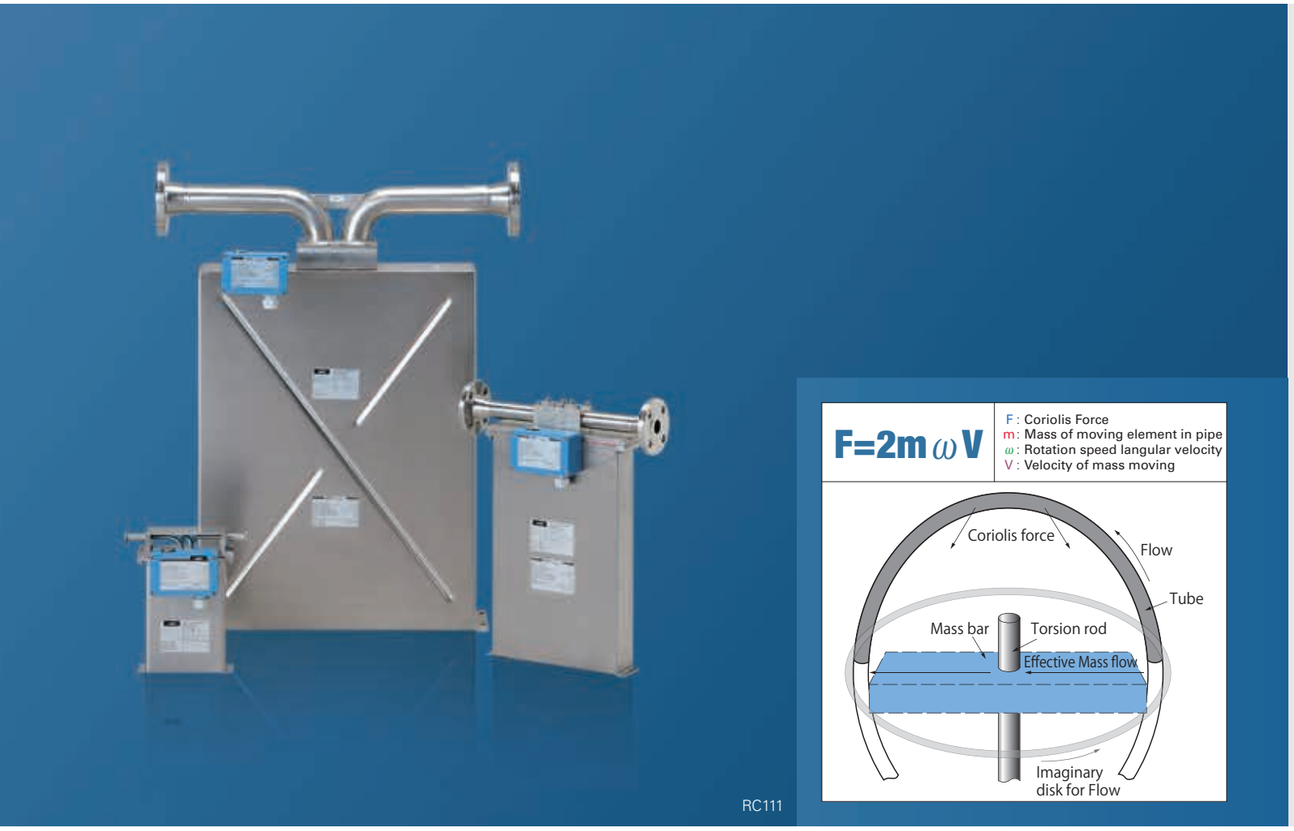
Model MVC

Features

STEAMcube conducts saturated steam density compensation without any external instruments. This all-in-one transmitter achieves reduced engineering cost while guaranteeing complete accuracy as a flow measurement system.

Standard specifications

Diameter	25, 40, 50, 80, 100, 150 mm
Power supply	16.7 to 45 Vdc
Enclosure	IEC IP67
Installation type	Integral/ remote
Explosion-proof structure	TIIS explosion-proof
Fluid temperature	+100 to +215°C
Ambient temperature	-15 to +65°C
Output	4 to 20 mAdc Pulse output : open collector
Applicable fluids	Saturated steam
Accuracy	±3 % of reading
EMC conformity	N.A.



$$F = 2m\omega V$$

F : Coriolis Force
m : Mass of moving element in pipe
ω : Rotation speed langular velocity
V : Velocity of mass moving

Admass

Coriolis Mass Flowmeter

Model RC111

CE

Features

This is a Coriolis mass flowmeter for measurement of liquid and gas. The Admass Coriolis Mass Flowmeter measures fluid mass directly by detecting the phase difference of fluid that passes through a detector tube that is vibrated indirectly by a unique torsion bar vibration system. Accordingly, this flowmeter,
unlike volumetric flowmeters, does not require temperature and pressure compensation, and is able to obtain the mass flow rate directly.

Standard specifications

Diameter	10, 15, 25, 32, 40, 50, 80, 100, 150, 200, 250, 300 mm
Power supply	24 Vdc ±10%
Enclosure	Detector: waterproof (IEC IP65) Converter: waterproof (IEC IP66)
Installation type	Remote
Explosion-proof structure	N.A.
Case material	Detector: SUS904L, aluminum alloy Converter: aluminum alloy
Fluid temperature	-20 to +120°C
Ambient temperature	-20 to +55°C
Output	4 to 20 mAdc Pulse output : open collector
Applicable fluids	Water, sewage, chemicals, food, high viscosity liquid, gas
Accuracy	±0.2 % of reading
EMC conformity	EN 61326

AX2000

AX2000 Series

Multivariable Vortex Flowmeters

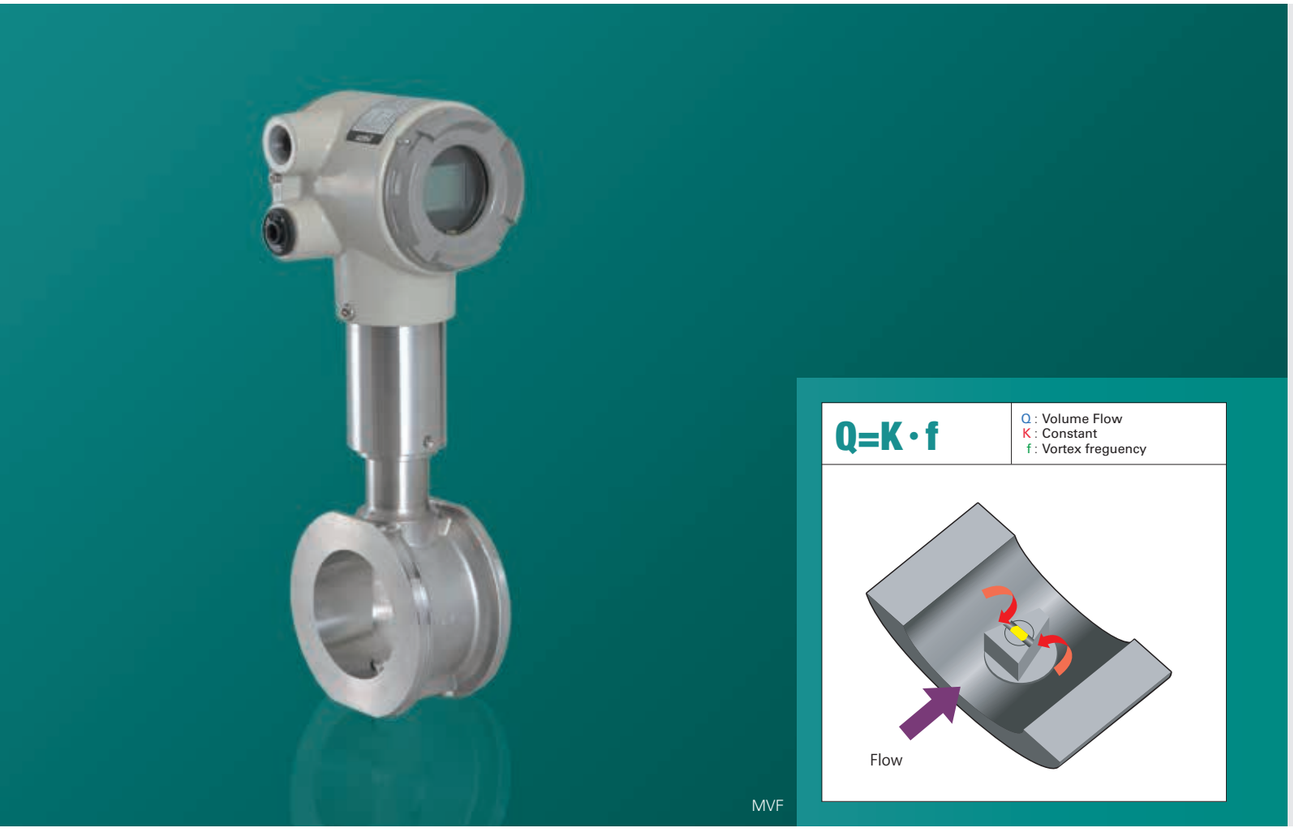
Model AX2

Features

Measurement of the volumetric flow rate and mass flow rate of liquids, gases, and steam with a single unit.
Three output signals for improved measurement efficiency and lower costs.
Highly accurate mass flow rate measurement by compensating for temperature and pressure.
Insertion models for large-diameter (125 mm or larger) pipes.

Standard specifications

Model	Integrated, separated converter
Diameter	15, 25, 40, 50, 80, 100, 150, 200 mm (inline model), 125 to 1800 mm (insertion model)
Process fluid temperature	Standard model: -50 to +260°C High-temperature model: -50 to +400°C Cryogenic-temperature model: -200 to +50°C
Ambient temperature	Standard operating temperature: -40 to +60°C, Transportation and storage temperature: -40 to +85°C
Process fluids	Various gases, liquids, and steam that do not corrode SUS316L
Power supply	12 to 36 Vdc (2-wire system), 12 to 36 Vdc, 300 mA max. (multiple outputs), 85 to 240 Vac, 50/60 Hz, 2 W (multiple outputs)
Output	Analog (4 to 20 mA DC), pulse (semi-conductor relay, pulse width: 50 ms), alarm (semi-conductor relay), frequency
Display	LCD, 16 characters × 2 lines
Data setting method	With 6 keys on the device, or by an included magnet, or by communication
Communication	HART communication
Explosion-proof structure	TIIS/ KOSHA/ FM/ ATEX/ IEC Ex



MVF

μF Series

Micro Flow Vortex Gas Flowmeter

Model MVF

Features

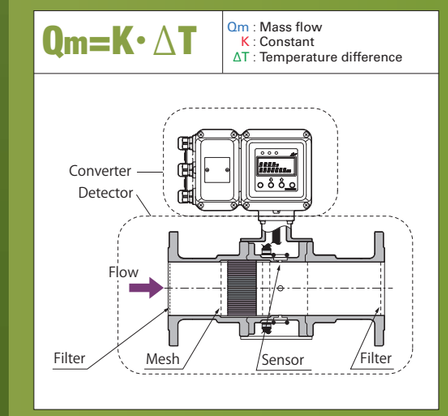
By using the high-sensitivity and high-speed response the azbil Group μF (Micro Flow) sensor for the detection of vortex frequency, the MVF is able to offer a wide rangeability of 100:1*.
Temperature and pressure compensation functions are built in, so there is no need for costly external devices.

* at 0.5 MPa

Standard specifications

Diameter	50, 80, 100, 150 mm
Power supply	24 Vdc ± 10 %
Enclosure	IEC IP67
Installation type	Integral
Case material	Detector: SUS304 Converter: aluminum alloy (ADC 12)
Fluid temperature	-15 to +60°C
Ambient temperature	-15 to +60°C
Output	4 to 20 mAdc Pulse output : open collector
Applicable fluids	Air, N_2, Ar, O_2, CO_2, natural gas, methane, propane, butane, other inert gases
Accuracy	Actual: 2 % of reading. Normal: 3.3 % of reading
EMC conformity	EN 61326

CML



μF Series

High-Flow Mass Flowmeter

Model CML

Features

The CML is a high-flow gas mass flowmeter that uses the azbil Group μF (Micro Flow) sensor as its sensing element.
The combination of an ultraminiature high-precision sensor and advanced circuit design technology has enabled high accuracy and impressive 160:1 rangeability.

Standard specifications

Diameter	50, 80, 100, 150 mm
Setting range	0 to 160 m^3/h (minimum) 1600 m^3/h (maximum)
Power supply	85 to 264 Vac
Enclosure	IEC IP65
Installation type	Integral
Case material	Detector: SUS304/SCS13A Converter: aluminum alloy (ADC12)
Fluid temperature	-25 to +60°C
Ambient temperature	-25 to +60°C
Output	4 to 20 mAdc Pulse output : open collector
Applicable fluids	Air, N_2, Ar, O_2, CO_2, natural gas, methane, propane, butane
Accuracy	2 % of reading

MCF

μF Series

Air Flowmeter

Model MCF

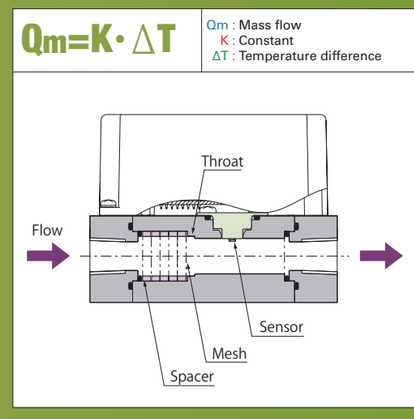
CE
Excluding some models

Features

The MCF is a mass flowmeter specifically designed for use with compressed air or nitrogen use. It incorporates azbil group Micro Flow thermal mass-flow rate sensor.
The MCF can measure mass flow with an accuracy of ±3 % FS over a 50:1 measurement range. Forward and reverse flow integration functions are provided.
Measurement is possible at up to 2 times the standard range with an accuracy of ±10 % of reading.

Standard specifications

Diameter	8, 15, 25, 40, 50 mm
Setting range	0 to 200 L/min (minimum) , 0 to 12000 L/min (maximum)
Power supply	22.8 to 25.2 Vdc
Enclosure	IEC IP65
Installation type	Integral
Case material	Detector: aluminum alloy Converter: PBT
Fluid temperature	-10 to +60°C
Ambient temperature	-10 to +60°C
Output	4 to 20 mAdc Pulse output(open collector)
Applicable fluids	air,N_2
Accuracy	3 % FS
EMC conformity	EN 61326



CMS

μF Series

Gas Mass Flowmeter

Model CMS

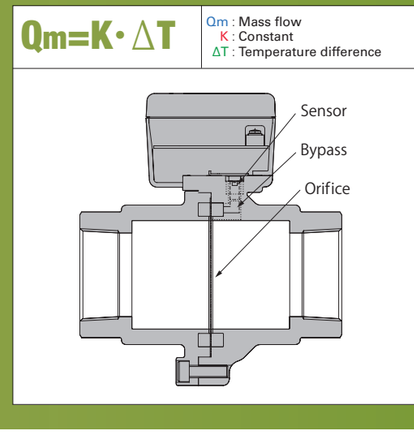
CE

Features

The CMS is a highly reliable gas mass flowmeter that uses the azbil Group μF (Micro Flow) sensor as its sensing element. The μF sensor is a MEMS thermal mass-flow sensor capable of measuring ultralow flow rates. The integration of the μF sensor and advanced channel design technology has achieved high accuracy and high rangeability at a low cost.

Standard specifications

Diameter	¼", ½"
Setting range	0 to 0.5 L/min , 0 to 2000 L/min
Power supply	11.4 to 25.2 Vdc
Installation type	Integral
Case material	Detector: SUS303 / SUS316 Converter: polycarbonate
Fluid temperature	-10 to +60°C
Ambient temperature	-10 to +60°C
Output	4 to 20 mAdc, 0 to 5 Vdc, 1 to 5 Vdc Pulse output (open collector)
Applicable fluids	Air, N_2, Ar, O_2, CO_2, natural gas, methane, propane, butane, H_2, He
Accuracy	3 % of reading , 5 % of reading
EMC conformity	EN 61326



CMG

μF Series

Gas Flow Monitor

Model CMG

CE
Excluding some models

Features

The CMG is a flowmeter designed to measure the fuel flow to a gas burner. Its sensing element is the Micro Flow sensor chip, a MEMS thermal mass flow sensor.
The monitor displays instantaneous or totalized flow. Available outputs include alarm, instantaneous flow (analog output), totalizer pulse (NPN open collector) and event, for management of combustion air/fuel ratio .

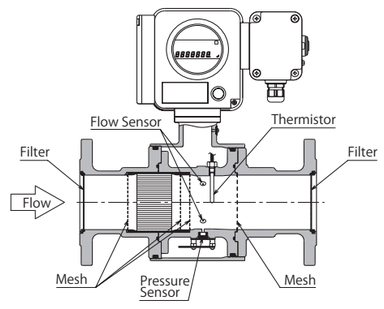
Standard specifications

Diameter	15, 25, 40, 50 mm
Setting range	0 to 2 m^3/h (minimum), 0 to 150 m^3/h (maximum)
Power supply	100/200 Vac (85 to 110 %), 24 Vdc ± 10 %
Enclosure	JIS IP54
Installation type	Integral
Case material	Detector: aluminum alloy or SCS13 Converter: PBT + GF 30 %
Fluid temperature	-10 to +60°C
Ambient temperature	-10 to +60°C
Output	4 to 20 mAdc, 1 to 5 Vdc Pulse output (open collector), alarm (electromagnetic relay)
Applicable fluids	Air, N_2
Accuracy	4 % of reading , 6 % of reading
EMC conformity	EN 61326 , EN 61010

CMP

$Q_m = K \cdot \Delta T$

Q_m : Mass flow
K : Constant
ΔT : Temperature difference



μF Series

High-Flow Mass Flowmeter

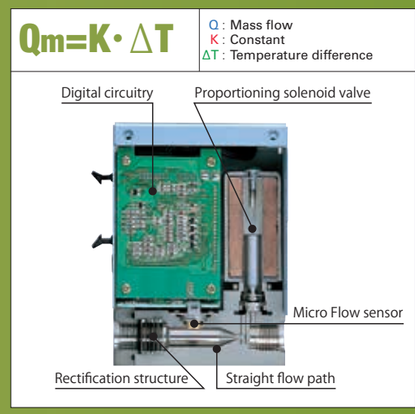
Model CMP

Features

The CMP is a high-flow natural gas mass flowmeter that uses the azbil Group μF (Micro Flow) sensor as its sensing element.
The combination of an ultraminiature precision sensor and advanced circuit design technology has enabled high accuracy and impressive 160:1 rangeability.

Standard specifications

Diameter	50, 80, 100, 150 mm
Setting range	0 to 160 m^3/h (minimum) 1600 m^3/h (maximum)
Power supply	Lithium battery
Enclosure	IEC IP65
Installation type	Integral
Case material	Detector: SUS304, SCS13A Converter: aluminum alloy (ADC 12)
Fluid temperature	-25 to +60°C
Ambient temperature	-25 to +60°C
Output	4 to 20 mAdc
	Pulse output : open collector
Applicable fluids	Natural gas
Accuracy	1 % of reading



MQV

μF Series

Digital Mass Flow Controller

Model MQV

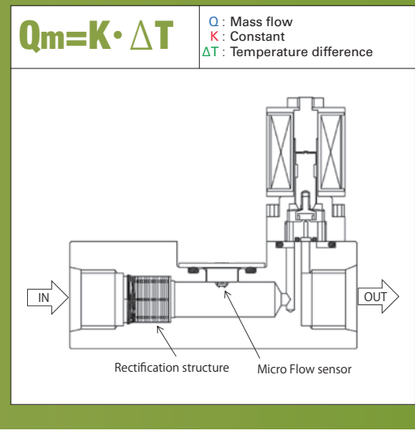
CE

Features

The MQV is a digital mass flow controller that combines the azbil Group Micro Flow rate sensor and a proportioning solenoid valve with advanced actuator technology. The result is a high-performance. Developed for general industrial use, the MQV was designed with high-speed, wide-rangeability flow control needs in mind.

Standard specifications

Diameter	¼", ½"
Setting range	0 to 5 mL/min (minimum) , 0 to 1000 L/min (maximum)
Power supply	21.6 to 26.4 Vdc
Installation type	Integral
Case material	Detector: SUS316
Fluid temperature	-10 to +60°C
Ambient temperature	-10 to +60°C
Output	0 to 20 mAdc, 4 to 20 mAdc, 0 to 5 Vdc, 1 to 5 Vdc Pulse output (open collector)
Applicable fluids	Air, N_2, Ar, O_2, CO_2, natural gas, methane, propane, butane, H_2, He
Accuracy	1 % FS, 2 % FS
EMC conformity	EN 61326



F4H

μF Series

Compact Digital Mass Flow Controller

Model F4H

CE

Excluding some models

Features

The F4H is a next-generation standard massflow controller.
The F4H is a digital mass flow controller equipped with the Micro Flow sensor, the sensor that achieves 0.3 s high-speed controllabillity.
Those are 50% smaller than our conventional models, and all models have communications functions for IoT compatibility.

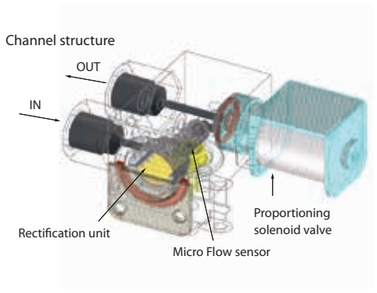
Standard specifications

Diameter	¼"
Setting range	0 to 50 mL/min (minimum), 0 to 20 L/min (maximum)
Power supply	21.6 to 26.4 Vdc (F4H0020 23.5 to 26.4 Vdc)
Case material	Detector: SUS316
Fluid temperature	-10 to +50°C (F4H0020 -10 to 40°)
Ambient temperature	-10 to +50°C (F4H0020 -10 to 40°)
Output	0 to 5 Vdc, 1 to 5 Vdc, 4 to 20 mA
Applicable fluids	Air, N_2, Ar, O_2, CO_2, H_2, He
Accuracy	1 % FS
EMC conformity	EN 61326

MPC

$Qm=K\cdot\Delta T$

Q : Mass flow
K : Constant
ΔT : Temperature difference



μF Series

Panel Mount Mass Flow Controller

Model MPC

CE

Features

The MPC is a highly reliable gas mass flow controller that uses the azbil Group Micro Flow sensor as its sensing element. The integration of the μF sensor and advanced channel design technology has achieved high accuracy and high rangeability at a low cost.

Standard specifications

Diameter	1/8"
Setting range	0 to 0.5 L/min (minimum) , 0 to 20 L/min (maximum)
Power supply	22.8 to 25.2 Vdc
Case material	Detector: brass (nickel-plated)
Fluid temperature	-10 to +50°C
Ambient temperature	-10 to +50°C
Output	0 to 5 Vdc, 1 to 5 Vdc Pulse output (open collector)
Applicable fluids	Air, N_2, Ar, CO_2
Accuracy	2 % FS
EMC conformity	EN 61326