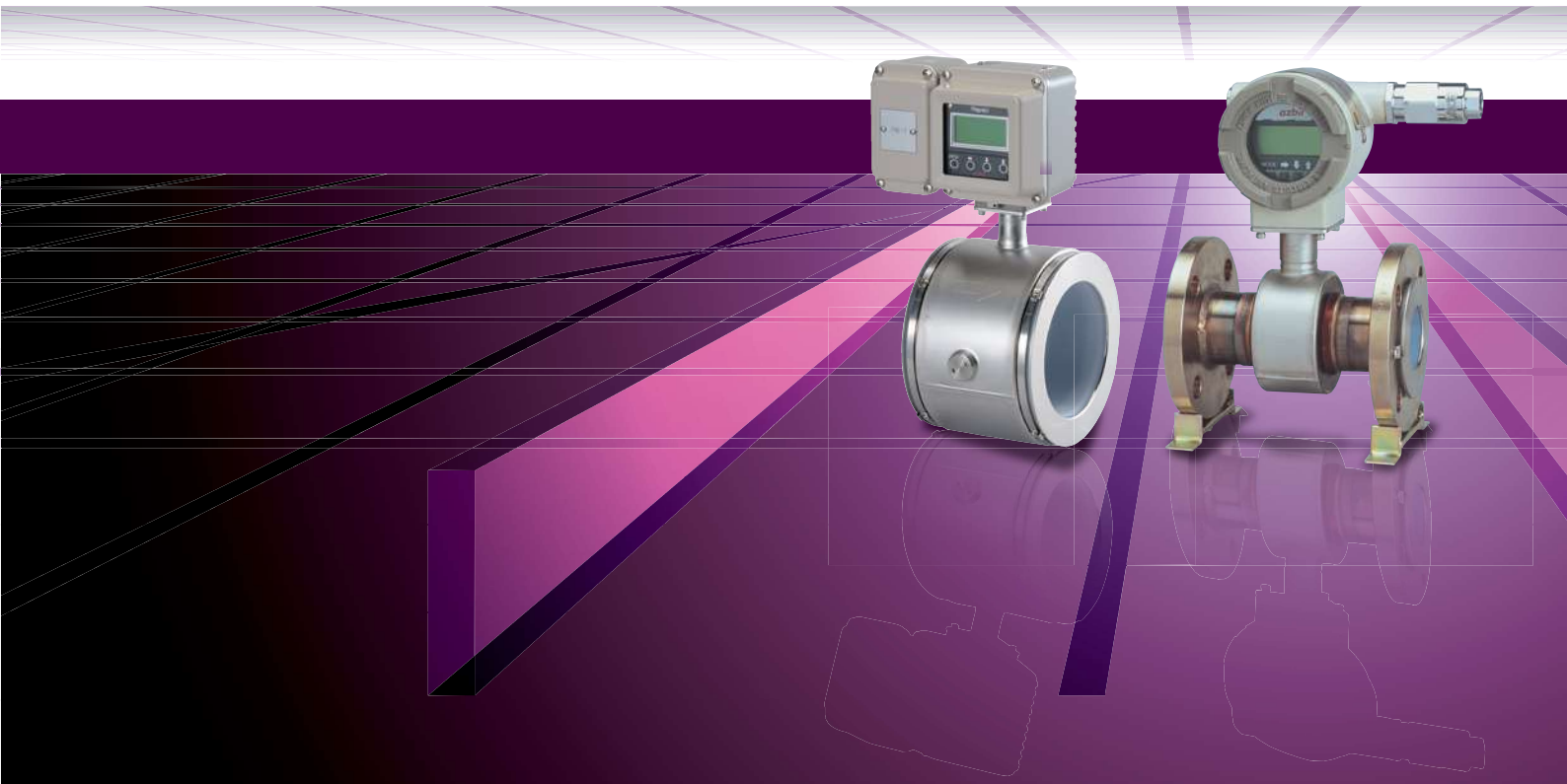
CA2-5100

azbil

Flowmeters

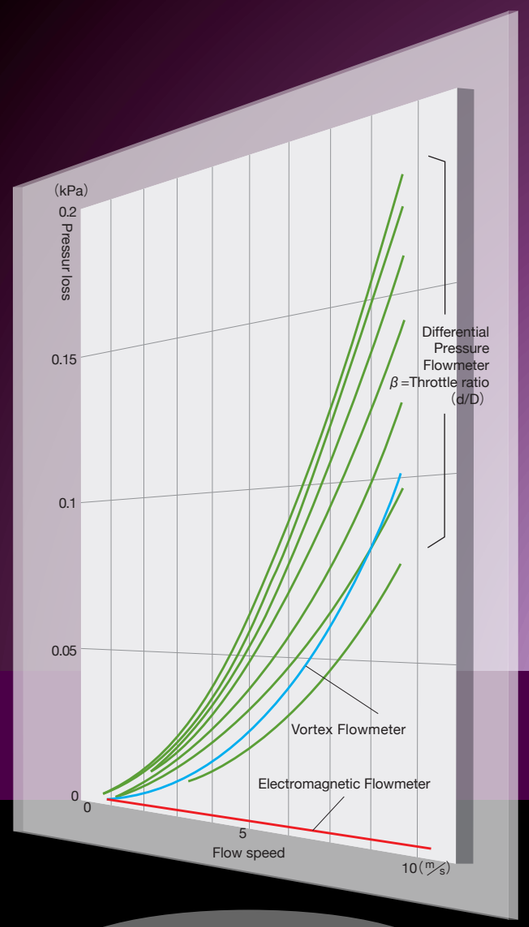
Selection Guide



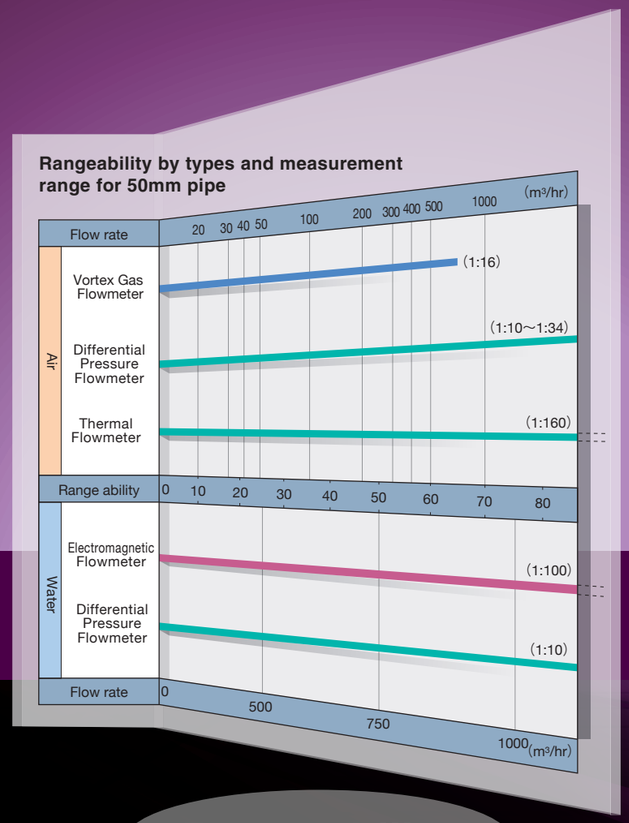
Azbil Corporation

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

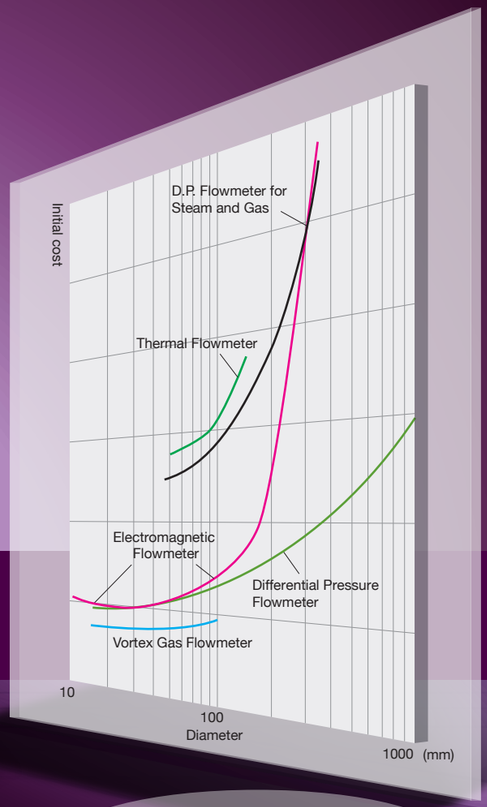
The flow rate is the most basic measurement in a process. A variety of methods of measuring the flow rate have been developed to cover a broad spectrum of fluid characteristics and measuring environments. We have released the following four types of flowmeters to provide longer operating life, good maintainability,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



Pressure loss



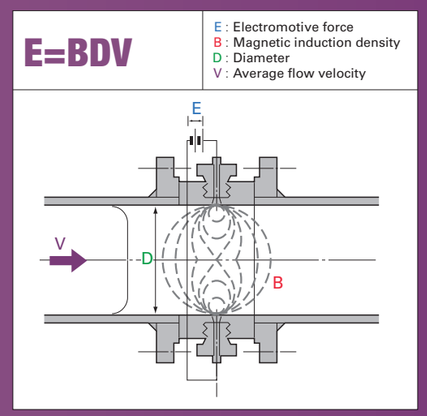
Range ability



Cost performance

INDEX

MGG/MGS



Electromagnetic Flowmeter

MagneW™ PLUS+ Series

Model MGG_ _ _/MGS_ _ _

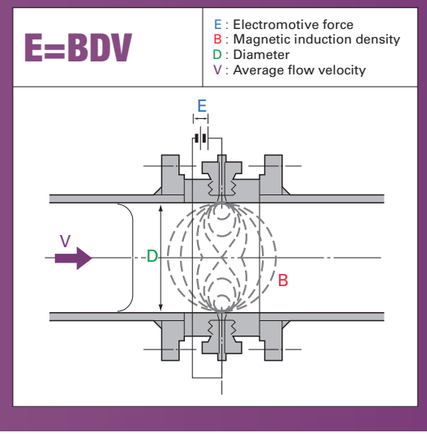
Features

The MagneW 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 MagneW PLUS+ detectors. FM 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
Enclosure	Detector: watertight (IEC IP67), submersible (IEC IP68) Converter: waterproof (NEMA 4X, IEC IP66)
Installation type	Integral/ remote
Explosion-proof structure	TIIS/ FM explosion-proof, FM nonincendive
Case material	Detector: SUS304, aluminum alloy, carbon steel
	Converter: aluminum alloy
Lining material	PFA, polyurethane rubber, chloroprene rubber, ETFE
Fluid temperature	-40 to +160°C (lined with PFA)
	-40 to +120°C (lined with ETFE)
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



Electromagnetic Flowmeter for Open Channel Flowmeter Detector

MagneW™ PLUS+ Series

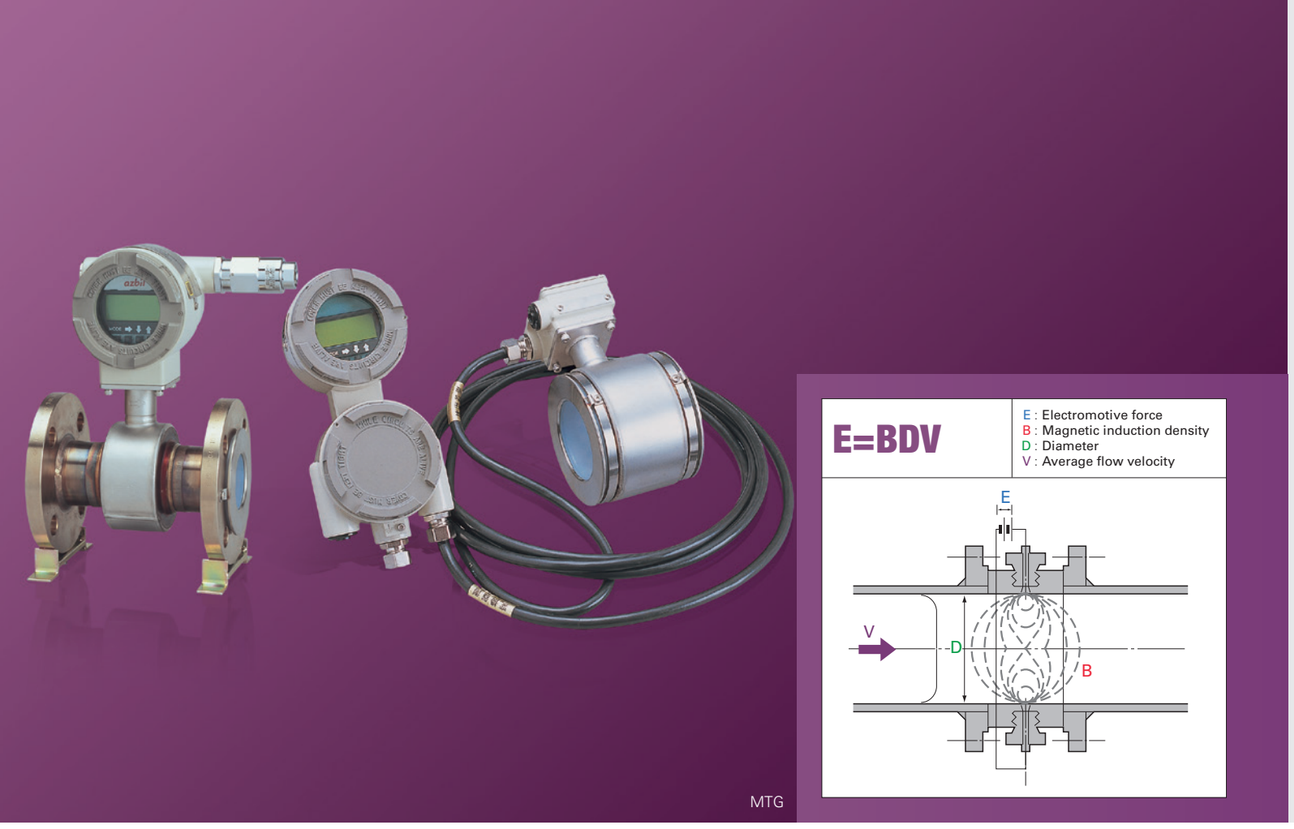
Model NNK140/941

Features

The MagneW 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

Two-wire Electromagnetic Flowmeter

MagneW™ Two-wire PLUS+ Series

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/CSAExplosion-proof FM/CSA/ATEX Nonincendive NEPSI Increased safety and Dust ignition proof
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

Smart Calibrator

Model F1X1000

Overview

The F1X1000 Smart Calibrator is used for adjusting and checking the condition of electromagnetic flowmeters.
The F1X1000 checks/adjusts the following:
- Zero and span
- Linearity, using 25%-step output of the set span
- Converter accuracy at any of flow rate or flow velocity
- Gain calibration

Features

(1) The F1X1000 calibrator calibrates/adjusts any type of electromagnetic flowmeter manufactured by Azbil Corporation.

MGG Calibration(FLEX)FLEX+	MGG10,MGG14,MGF,MGP
KIX Calibration	KIX18,KIX19,KIX20
KIC Calibration	KIC18,KIC20
MTG Calibration	MTG11,MTG15,MTG18,MTG14

(2) The F1X1000 is a compact and lightweight hand-held calibrator, and thus is easy to carry. It enables calibration in a minimal amount of space.
(3) Battery powered, so no power supply is needed.
(4) The F1X1000 calibrator is driven by the excitation circuit of an AC powered electromagnetic flowmeter, model MG_, or KI_ converter, so no AC adaptor is necessary.

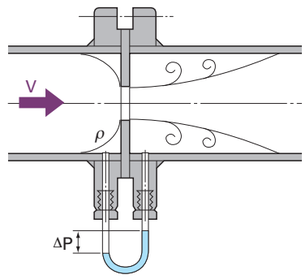
Standard specifications

Power supply	Two AA batteries or power from the excitation circuit of the calibrated converter
Input	Excitation current from the connected converter
Output	Simulated signal voltage
Ambient temperature	10 to 40 °C
Ambient humidity	10 to 90 % RH
Accessories	Signal cable and excitation cable
Housing	ABS resin
Battery life	10 hours continuous operation by alkaline batteries
Weight	Approx. 300 g (without batteries)
Accuracy	±0.1 % (adjusts a converter to within ±0.1 %)
Flow velocity	00.00 to 12.50 m/s (settable in 0.01 increments)
Flow rate	-99999 to +99999 (floating point 5 digits)

GTX

$$Q_v = CK\sqrt{\frac{\Delta P}{\rho}}$$

Qv : Volume Flow
C : Coefficient of effusion
K : Constant
ΔP : Differential pressure
ρ : Density



Differential Pressure Transmitters

Advanced Transmitter

Model GTX_ _ _ / Model JTD_ _ _

Features

The 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.

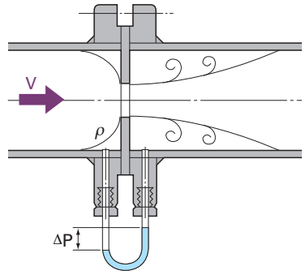
Standard specifications

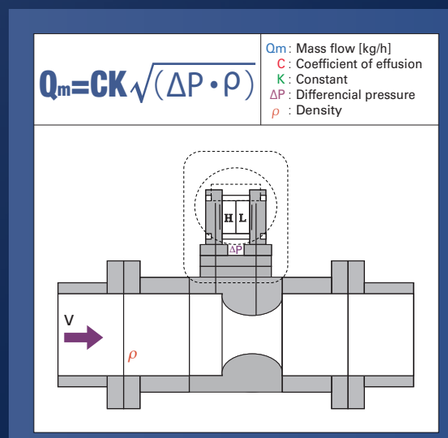
Diameter	15 to 3000 mm
Primary elements	Orifice plate, venturi, flow nozzle
Setting range	0.1 kPa to 14 MPa for differential pressure flowmeter
Power supply	16 to 42 Vdc
Enclosure	Watertight (IEC IP67)
Installation type	Impulse line connection or direct mount
Explosion-proof structure	TIIS/ FM/ ATEX/ IEC Ex/ NEPSI/ KCs intrinsic safety and explosion-proof, nonincendive
Case material	Meter body: SUS316, SUS316L Case: aluminum alloy
Fluid temperature	-40 to +110°C
Ambient temperature	-25 to +60°C
Output	4 to 20 mAdc Contact output: open collector
Applicable fluids	Gas, steam, liquid
Accuracy	±0.04 % of rate with orifice plate
EMC comformity	EN 61326

JTD

$$Q_v = CK\sqrt{\frac{\Delta P}{\rho}}$$

Qv : Volume Flow
C : Coefficient of effusion
K : Constant
ΔP : Differential pressure
ρ : Density





MVC

Multivariable Air Flowmeter

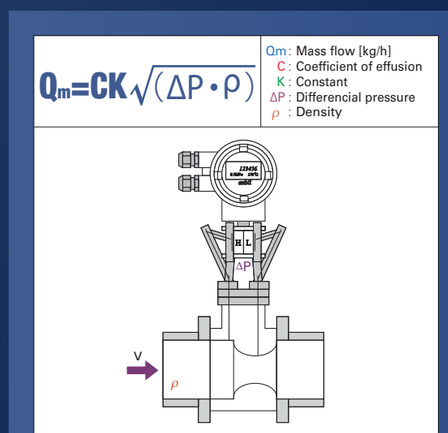
Model MVC10_

Features

Model MVC10_ 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.



MVC

Multivariable Steam Flowmeter

Model MVC3_A

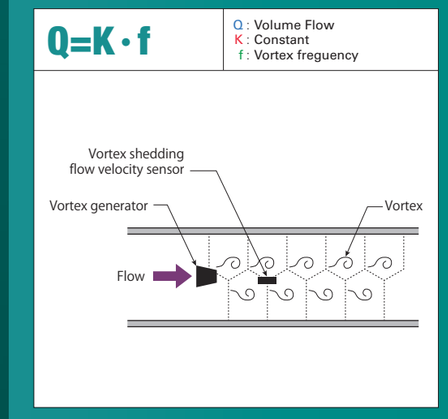
Features

Model MVC3_A 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.

AX2000



Multivariable Vortex Flowmeters

Model AX2_ _ _

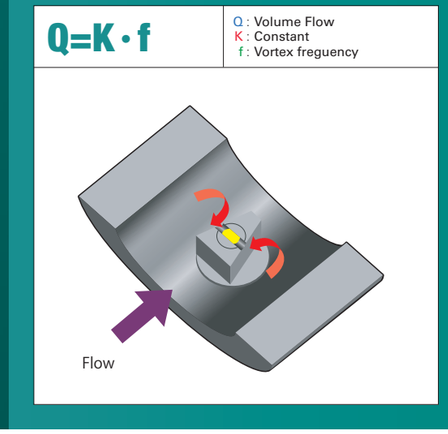
Features

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	Integral, Remote
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	FM/ FMC/ ATEX/ IEC Ex

MVF



Vortex Gas Flowmeter

Model MVF_ _ _ _

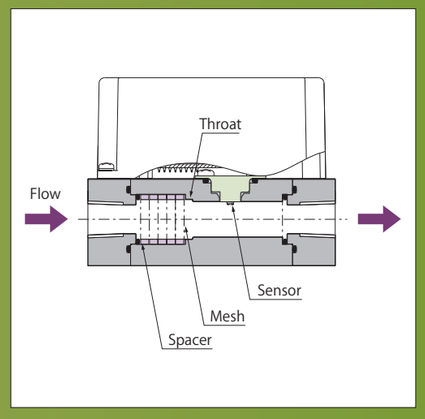
Features

By using the high-sensitivity and high-speed response Micro thermal 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



CMS

Gas Mass Flowmeter

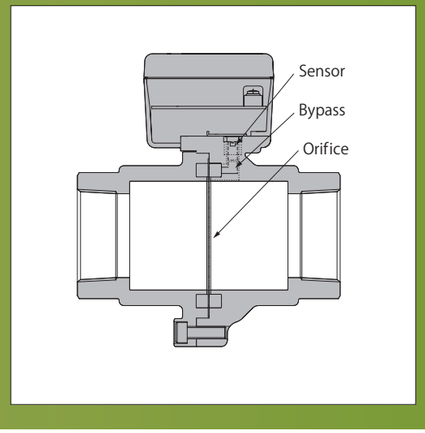
Model CMS_ _ _ _

Features

The CMS is a highly reliable gas mass flowmeter that uses the micro thermal flow sensor as its sensing element. The micro thermal flow sensor is a MEMS sensor capable of measuring ultralow flow rates. The integration of the Micro thermal flow 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, city gas, methane, propane, butane, H_2, He
Accuracy	3 % of reading , 5 % of reading
EMC conformity	EN61326-1,EN61326-2-3



CMG

Gas Flow Monitor

Model CMG_ _ _

Features

The CMG is a flowmeter designed to measure the fuel flow to a gas burner. Its sensing element is the micro thermal 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, city gas, methane, propane, butane
Accuracy	4 % of reading , 6 % of reading
EMC conformity	EN61010-1, EN61326-1, EN61326-2

F4Q

Digital Mass Flow Controller

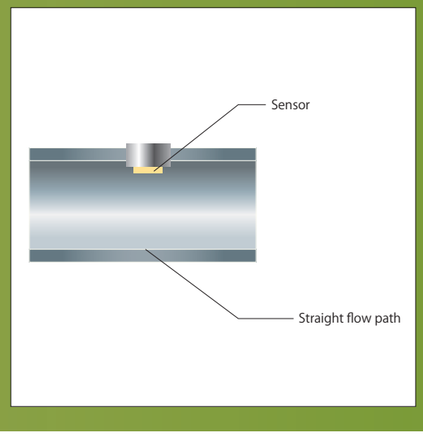
Model F4Q_ _ _ _

Features

Model F4Q is a high-performance digital mass flow controller that incorporates a micro thermal flow sensor developed by Azbil Corporation as it detection component. It is an excellent choice for controlling the atmosphere in an industrial furnace requiring a highly accurate gas flow over a wide range, or for controlling the combustion of a burner requiring high-speed control for a flammable gas flow supplied at low pressure.

Standard specifications

Diameter	¼", ½"
Setting range	0 to 200 mL/min (minimum) , 0 to 500 L/min (maximum)
Power supply	24 Vdc
Types	Integrated display model, separate display model
Material of gas-contacting parts	SUS316, fluorocarbon resin, fluororubber
Ambient temperature	-10 to +60°C
Output	0 to 5 Vdc, 1 to 5 Vdc, 4 to 20 mAdc Pulse output (open collector)
Applicable fluids	Air, N_2, Ar, O_2, CO_2, city gas, methane, propane, butane
Accuracy	1 % SP, 1.5 % SP, 2 % FS
EMC conformity	EN 61326-1, EN 61326-2-3



F4H

Compact Digital Mass Flow Controller

Model F4H_ _ _ _

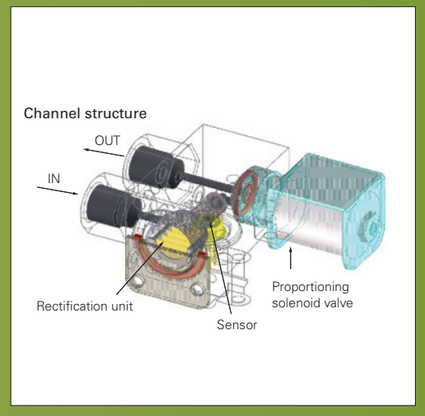
Features

The F4H is a next-generation standard massflow controller.
The F4H is a digital mass flow controller equipped with the micro thermal flow sensor that achieves 0.3 s high-speed controllability and 1% SP high accuracy.
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	22.8 to 25.2Vdc(F4H0020 23.5 to 25.2Vdc)
Case material	Body material：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%SP, 2%SP
EMC conformity	EN61326-1, EN61326-2-3

MPC



Panel Mount Mass Flow Controller

Model MPC_ _ _ _

Features

The MPC is a highly reliable gas mass flow controller that uses the micro thermal flow sensor. The integration of the micro thermal flow 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	EN61326-1, EN61326-2-3

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 5,000m^3/h makes this calibration rig the largest of its kind in Japan.

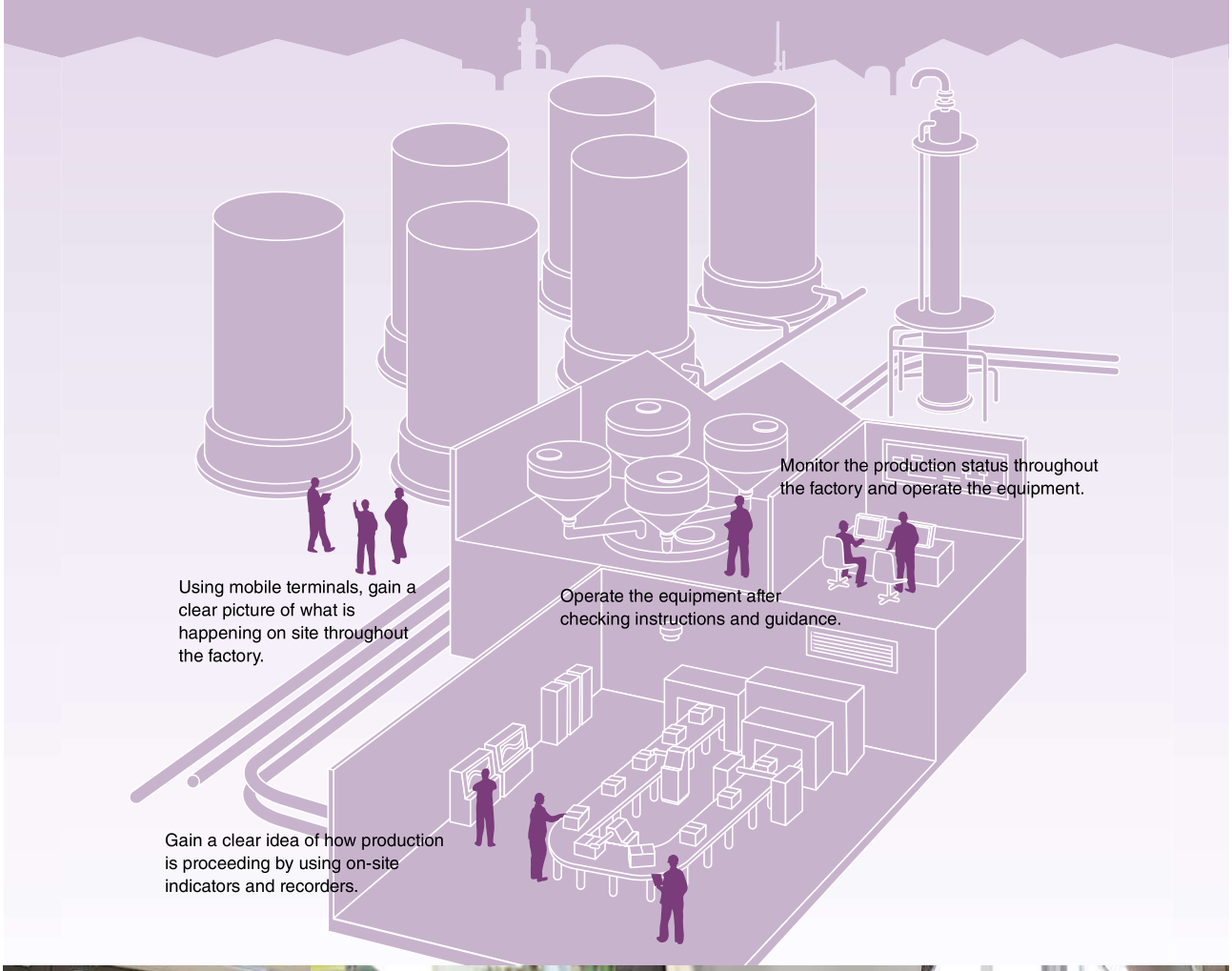
Maximum 50D upstream straight pipe for accurate calibration

Calibration facility for JCSS MRA

Elevated water tank
for calibration

We create value together with customers at their site through *human-centered automation*.

We solve issues in a wide array of industries, from oil refining, chemical, iron and steel, pulp and paper to automobiles, electrical/electronic, semiconductor, and foods and beverages, through the provision of products, solutions, instrumentation, engineering and maintenance service to support optimal operation of the customers' facilities throughout their lifecycle. Collaborating with people involved in production, we develop advanced measurement and control technologies, and strive to realize a production site where workers can develop their own skills in safety, thus creating new value for our customers.



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