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.
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.
Electromagnetic Flowmeter
MagneW™ PLUS+ Series
Model MGG___/MGS___

Features
The MagneW PLUS+ electromagnetic flowmeter offers high performance, and high reliability based on the abitl 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, E, F, and G or non-hazardous locations only. General model is suitable for use in non-hazardous locations.

Standard specifications
- Diameter: 25, 50, 100, 200, 300, 400, 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: IP68, submersible (IEC IP68)
- Installation type: Remote
- Case material: Detector: PVC, Converter: aluminum alloy
- Lining material: PVC
- Fluid temperature: -40 to +60°C
- Ambient temperature: 0 to +40°C
- Output: 4 to 20 mAdc
- Pulse and contact outputs: open collector
- Electrical conductivity of fluid: 3000 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

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), Submarine (IEC IP68)
- Installation type: Remote
- Explosion proof structures: EN A I
- Case material: Detector: PVC, Converter: aluminum alloy
- Lining material: PVC
- Fluid temperature: 0 to +60°C
- Ambient temperature: 0 to +40°C
- Output: Pulse and contact outputs: open collector
- Electrical conductivity of fluid: 3000 μS/m (3 μS/cm) or more
- Applicable fluids: Water, sewage, chemical, highly viscosity liquid
- Accuracy: ±1 % (Detector only), ±2 % (Combination with dummy)
- EMC conformity: N/A
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 mm
- **Setting range**: 0 to 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
- **Explosion-proof structure**
  - TIIS, 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

Electromagnetic Flowmeter for Water Applications
Model MCB_ _ _

**Features**
The MCB 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
- **Installation type**: Integral
- **Explosion-proof structure**
- **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.
Differential Pressure Transmitters
Advanced Transmitter
Model GTX

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)
- Explosion-proof structure: TIIS/ FM/ ATEX/ IEC Ex/ INMETRO/ 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 mA: 4 to 20 mA, Contact output: open collector
- Accuracy: ±0.04 % of rate with orifice plate
- EMC conformity: EN 61326

Multivariable Air Flowmeter
Model MVC10

Features
Model MVC10 conducts air, CO₂, or N₂ 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, Case: aluminum alloy, polycarbonate
- Fluid temperature: -15 to +70°C
- Ambient temperature: -15 to +50°C
- Output: 4 to 20 mA: Pulse output: open collector
- Applicable fluids: Compressed air, N₂ gas, CO₂ gas
- Accuracy: ±3 % of reading
- EMC conformity: N.A.
Electromagnetic Flowmeter
Differential Pressure Flowmeter
Thermal Flowmeter

Flowmeters Selection Guide
Flowmeters Selection Guide

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 Vac |
  | Enclosure | IEC IP67 |
  | Installation type | Integral / remote |
  | Explosion-proof structure | TIS explosion-proof |
  | Fluid temperature | -15 to +80°C |
  | Ambient temperature | -15 to +80°C |
  | Flow type | Pulse output, open collector |
  | Applicable fluids | Saturated steam |
  | Accuracy | ±3 % of reading |
  | EMC conformity | N.A. |

\[ Q_{m} = CK \sqrt{\Delta P \cdot \rho} \]

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), 95 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 |

\[ Q = K \cdot f \]
Micro Flow Vortex Gas Flowmeter  
μF Series  
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

High-Flow Mass Flowmeter  
μF Series  
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**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diameter</td>
<td>50, 80, 100, 150 mm</td>
</tr>
<tr>
<td>Setting range</td>
<td>0 to 160 m³/h (minimum) 1600 m³/h (maximum)</td>
</tr>
<tr>
<td>Power supply</td>
<td>85 to 264 Vac</td>
</tr>
<tr>
<td>Fluid temperature</td>
<td>-15 to +60°C</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-15 to +60°C</td>
</tr>
<tr>
<td>Accuracy</td>
<td>2 % of reading</td>
</tr>
</tbody>
</table>

Flowmeters Selection Guide
Air Flowmeter
μF Series
Model MCF_ _ _

Features
The MCF is a mass flowmeter specifically designed for use with compressed air or nitrogen use. It incorporates abil 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, 16, 25, 40, 50 mm
- Setting range: 0 to 2000 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
- Fluid temperature: -10 to +60°C
- Ambient temperature: -10 to +60°C
- Output: 4 to 20 mA (Current loop), Pulse output (open collector)
- Accuracy: ±3 % FS
- EMC conformity: EN61326

Gas Mass Flowmeter
μF Series
Model CMS_ _ _

Features
The CMS is a highly reliable gas mass flowmeter that uses the abil 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
- Fluid temperature: -10 to +60°C
- Ambient temperature: -10 to +60°C
- Output: 4 to 20 mA, 0 to 5 Vdc, 1 to 5 Vdc (Current loop), Pulse output (open collector)
- Accuracy: ±3 % of reading, ±5 % of reading
- EMC conformity: EN61326-1, EN61326-2-3
Gas Flow Monitor
μF Series
Model CMG_ _ _

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 (analogue output), totalizer pulse (NPN open collector) and event, for management of combustion air/fuel ratio.

Qm = K • ∆T

- Qm: Mass flow
- K: Constant
- ∆T: Temperature difference

Standard specifications
- Diameter: 15, 25, 40, 50 mm
- Setting range: 0 to 1.5 m³/h (minimum), 0 to 150 m³/h (maximum)
- Power supply: 100/200 Vac (85 to 110 %), 24 Vdc ± 10 %
- Enclosure: IP54
- Case material: Detector: aluminum alloy or SUS313
- Converter: PBT + GF 30 %
- Fluid temperature: -10 to +60°C
- Ambient temperature: -10 to +60°C
- Power supply: 4 to 20 mA, 1 to 5 Vdc
- Outputs: Pulse output (open collector), alarm (electromagnetic relay)
- Applicable fluids: Air, N₂
- Accuracy: 4 % of reading, 6 % of reading
- EMC conformity: EN 61326, EN 61010

Digital Mass Flow Controller
μF Series
Model MQV_ _ _

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.

Qm = K • ∆T

- Qm: Mass flow
- K: Constant
- ∆T: Temperature difference

Standard specifications
- Diameter: 1/4”, 1/2”
- Setting range: 0 to 5 mL/min (minimum), 0 to 500 L/min (maximum)
- Power supply: 21.6 to 26.4 Vdc
- Case material: Body material: SUS316
- Fluid temperature: -10 to +60°C
- Ambient temperature: -10 to +60°C
- Power supply: 0 to 20 mA, 4 to 20 mA, 0 to 5 Vdc, 1 to 5 Vdc
- Pulse output (open collector)
- Applicable fluids: Air, Ar, O₂, CO₂, natural gas, methane, propane, butane, H₂, He
- Accuracy: 1 % FS, 2 % FS
- EMC conformity: EN 61326
Compact Digital Mass Flow Controller
μF Series
Model F4H_ _ _ _

Features
The F4H is a next-generation standard mass flow controller. The F4H is a digital mass flow controller equipped with the Micro Flow sensor, the 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: ½"
- Setting range: 0 to 50 μl/min (minimum), 0 to 20 L/min (maximum)
- Flow rate: 0.01 to 25 L/min
- Flow rate range: 0.01 to 25 L/min
- Case material: Body material: SUS316
- Fluid temperature: -10 to +50°C (F4H0020 -10 to 40°C)
- Ambient temperature: -10 to +50°C (F4H0020 -10 to 40°C)
- Output: 0 to 5 Vdc, 1 to 5 Vdc, 4 to 20 mA
- Applicable fluids: Air, N₂, Ar, O₂, CO₂, H₂, He
- Accuracy: 1%SP, 2%SP
- EMC conformity: EN61326-1, EN61326-2-3

Micro Flow Sensor
- Straight flow path

Panel Mount Mass Flow Controller
μF Series
Model MPC_ _ _ _

Features
The MPC is a highly reliable gas mass flow controller that uses the abil 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: ⅛"
- 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, N₂, Ar, CO₂
- Accuracy: 2%FS
- EMC conformity: EN61326-1, EN61326-2-3