

# Battery-powered electromagnetic water meter

## Model MGB12A

### Summary

The battery-powered electromagnetic water meter is the culmination of Azbil Kimmon's water meter technology and Azbil's electromagnetic flow meter technology.

This water meter is to be used for transaction and certification of drinking water, agricultural water, and industrial water as defined by the Measurement Law, and is based on JIS B8570-2 "Water meters and hot water meters Part 2: For transaction or certification" under the 2005 ministerial ordinance revising the specified measuring instrument inspection regulations.

### Main Features

- Battery-powered, no wiring required

Since this unit is battery-powered, there is no need for wiring work. The submersible type can be used in places where it is submerged in water.

The battery can run for 9 years, which is longer than the 8-year validity period stipulated by the Measurement Law.

- Wide metering range

The metering range is  $R=200$  ( $R=Q3/Q1$ , rated maximum flow rate:  $Q3$  and rated minimum flow rate:  $Q1$ ). The wide flow range enables measurement up to the large flow range, allowing the impeller type water meter currently in use to be reduced in diameter by one step.

- High Durability and Low Pressure Loss

Based on the structure and principle of an electromagnetic flowmeter, this water meter has no mechanical rotating parts and is highly durable without wear and clogging caused by foreign matter. Since there are no obstructions to flow inside the measuring pipe, there is almost no pressure loss.

- Easy-to-read LCD display

The LCD display with backlight provides excellent visibility.

The backlight turns off automatically in about 30 seconds, so battery life is not reduced by leaving the backlight on.

- Inverted display

The internal display reverses to match the top cover of the main unit, making it easy for the meter reader.

- Extensive history management functions

The history management function records non-full water conditions, occurrence of backflow, number of times the backlight is turned on, etc., inside the device.

- This product is manufactured by Azbil Kyoto Corporation, a designated manufacturer of water meters (Category 1 and Category 2).

- Telegram output (compliant with Tokyo Metropolitan Bureau of Waterworks communication specification V2.6A/2.7).



### Application

- waterworks
- industrial water
- agricultural water supply

### Electromagnetic water meter requirements

- The internal structure, setting data, etc. cannot be easily tampered.
  - Sealed structure.
  - Zero point adjustment and data modification are not allowed.
  - The certification is valid for eight years.
- After 8 years, the water meter must be renewed.
- Integrated flow rate display.
  - Type approval numbers L101, L102, L1123

# Main unit specifications

- Caliber: 50A, 65A, 75A, 100A, 125A, 150A, 200A
- Connection: Wafer type
- Material properties:
  - Outer box body: stainless steel
  - measuring tube: stainless steel
  - lining: epoxy
  - Resin electrode: Stainless Steel Electrode
  - sealant: fluoroelastomer
  - display part: hard glass
  - Meter top cover: Polycarbonate resin
  - Body sealant: ethylene-propylene rubber
  - Special Packing: ethylene-propylene rubber
  - Battery: lithium battery

Structure/Protection class: Waterproof structure IP68 (JIS C 0920)

Note: No guarantee if constant submersion for 8 years.

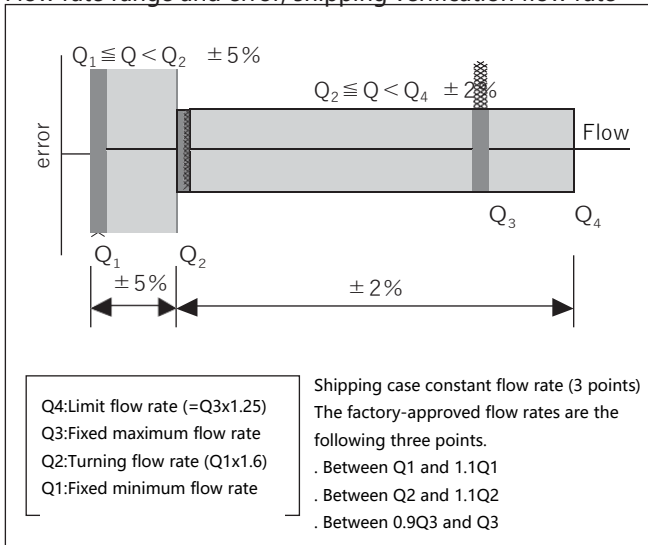
- Dimensions and weight: Described in outline drawing
- Ambient temperature: 5 ~ 55 [°C]
- Ambient humidity: 0 ~ 100 [%RH] (At an ambient temperature of 40°C)
- Fluid Conductivity: 50 ~ 1000 [ $\mu$ S/cm]
- Fluid temperature: 0.1 ~ 30 [°C]
- Fluid pressure: 0.03 ~ 1.0 [MPa]
- Max. working pressure: 1.0 [MPa]
- Pressure loss: 0.063 [MPa] or less (at Q3 flow rate)
- Flow Rate Range: [m<sup>3</sup>/h]

Caliber(A)	50	65	75	100
Error	0.315 or more	0.5 or more	0.5 or more	0.8 or more
±5% range	0.504 or less	0.8 or less	0.8 or less	1.28 or less
Error	0.504 or more	0.8 or more	0.8 or more	1.28 or more
±2% range	78.75 or less	125 or less	125 or less	200 or less
Flow Rate measure start	0.1575	0.25	0.25	0.4

[m<sup>3</sup>/h]

Caliber(A)	125	150	200
Error	1.25 or more	2 or more	3.15 or more
±5% Range	2 or less	3.2 or less	5.04 or less
Error	2 or more	3.2 or more	5.04 or more
±2% Range	312.5 or less	500 or less	787.5 or less
Flow Rate measure start	0.625	1	1.575

## Flow rate range and error, shipping verification flow rate



## Display:

Digital display with rotating backlight  
 The backlight illuminates for about 30 seconds when the top cover is opened.  
 When the top cover is closed again, the light comes on again. (for a cumulative total of 1 minute/day).  
 To improve visibility, the display can be reversed to a direction that is easier to read.  
 (The number of displayed digits varies depending on the caliber.)

## Indications:

		Positive direction indicates	Reverse direction representation
display items	upper	Accumulated flow	Instantaneous flow rate
	lower	Instantaneous flow rate	Accumulated flow

Caliber (A)	Accumulated flow	Instantaneous flow rate (Not tested)
50	Integer part 6 digits (m3) +3 digits (L)	Integer part 3 digits +1 decimal place (m3/h)
65		
75		
100		
125	Integer part 7 digits (m3) +2 digits (L)	Integer part 4 digits (m3/h)
150		
200		
character height	12 mm(6 mm)	6 mm
Display color	Black	Black

## Alerts indicate;

- Air detection alarm
- Reverse flow alarm
- Excessive Traffic Alert
- Water Leak Alarm
- Low battery voltage alarm

## Input:

Pulse output (open drain) and telegram output (compliant with Tokyo Metropolitan Bureau of Waterworks communication specifications V2.6/2.7)

Allowable pulse output voltage: 2 V DC to 24 V DC or less  
 Allowable pulse output current; 10 mA max.

Internal resistance; approx. 100  $\Omega$

Output pulse rate; Pulse rate is selected from the following table.

The pulse rate is selected from the following table.

Caliber (A)	100L/P	1m <sup>3</sup> /P
50	○	○
65	○	○
75	○	○
100	○	○
125	○	○
150	—	○
200	—	○

Output pulse width; For 100L/P specification: 200 msec min.

500 msec or more for 1m<sup>3</sup>/P specification

Output communication cable; Vinyl Captive Tire Round Cord VCTF (Number of threads; 4)

## Record management function:

Our service personnel will communicate with this instrument to check the following items.

- Empty detection alarm occurrence record
- Reverse flow alarm occurrence record
- Low battery voltage alarm occurrence record
- Number of times backlight is turned on
- Date and time of equipment failure
- Readout of totalized values in case of equipment failure

Note: Communication may not be possible due to equipment failure conditions.

# Precautions for use

## General precautions

For general precautions, refer to JIS B 8570-1 "Water meters and hot water meters. For precautions regarding electromagnetic flow meters, refer to JIS B 7554 "Electromagnetic flowmeters" for precautions regarding electromagnetic flowmeters.

## Effects of external magnetic fields

Avoid installation near high current cables, motors, or transformers due to electromagnetic induction interference.

## Installation in piping subject to vibration

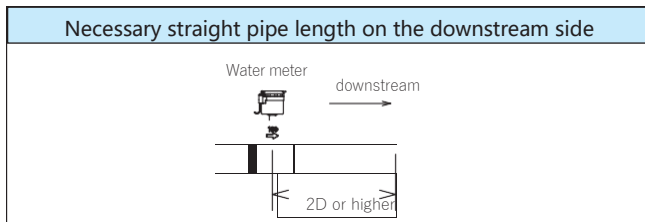
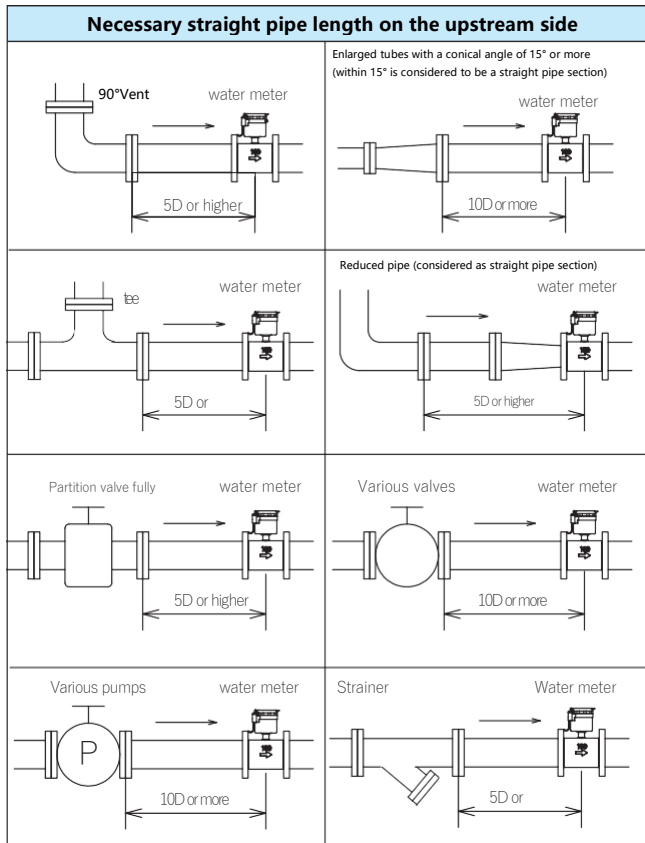
Do not install in areas subject to high vibration.

## Checking the flow direction

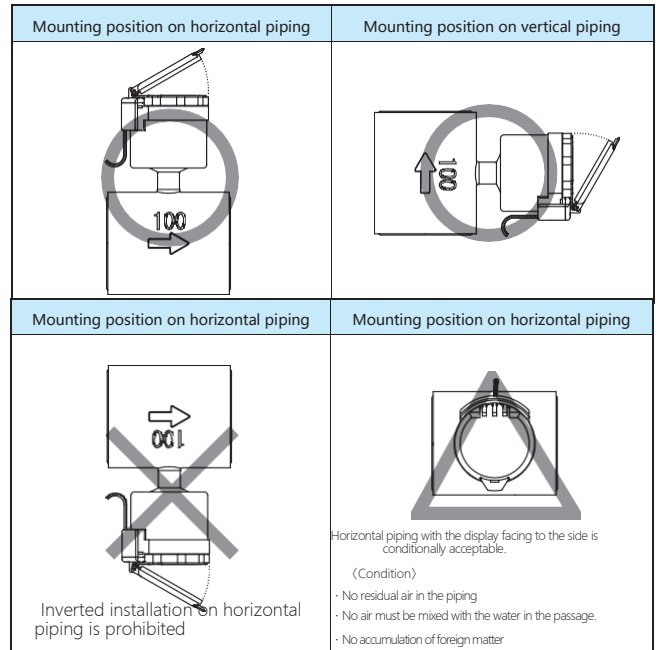
The flow direction is specified for this unit. Please install the unit so that the flow direction is as indicated by the arrow on the side of the unit.

## Upstream and downstream straight pipe lengths

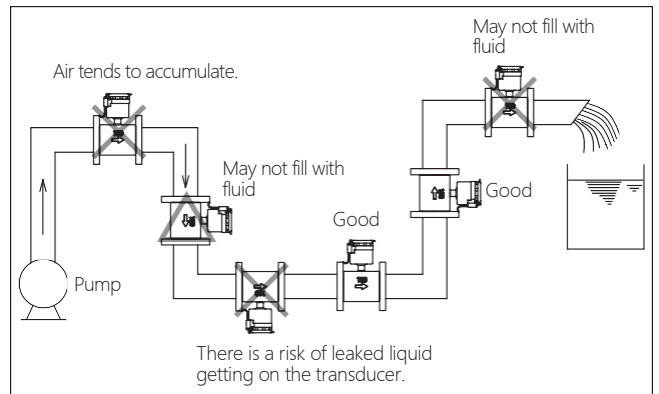
The flowmeter should be guided by a flow with uniform velocity distribution.



## Mounting posture



## Installation position



## Ensuring full water supply

This water meter uses the principle of an electromagnetic flowmeter.

Electromagnetic flowmeter cannot measure in pipes that are not full of water or in fluids containing air bubbles. Therefore, please install the meter in a location where air bubbles do not accumulate.

## Mixing of chemicals

If chlorine or other chemicals are mixed in near the primary side of the unit, the two liquids will not mix completely, resulting in electrochemical instability. For this reason, we recommend mixing on the secondary side of the unit, if possible.

## Contamination of solids

Slurry fluid with mixed solids is not recommended for use under conditions where solids are mixed, because the solids will settle at the bottom of the pipe and the flow rate will not be uniform.

## Touching of electrodes is prohibited

Do not touch the electrode directly with bare hands. The surface of the electrode may become dirty, causing the zero point to fluctuate and making empty detection impossible.

## Fluid restrictions

The following fluids cannot be used.

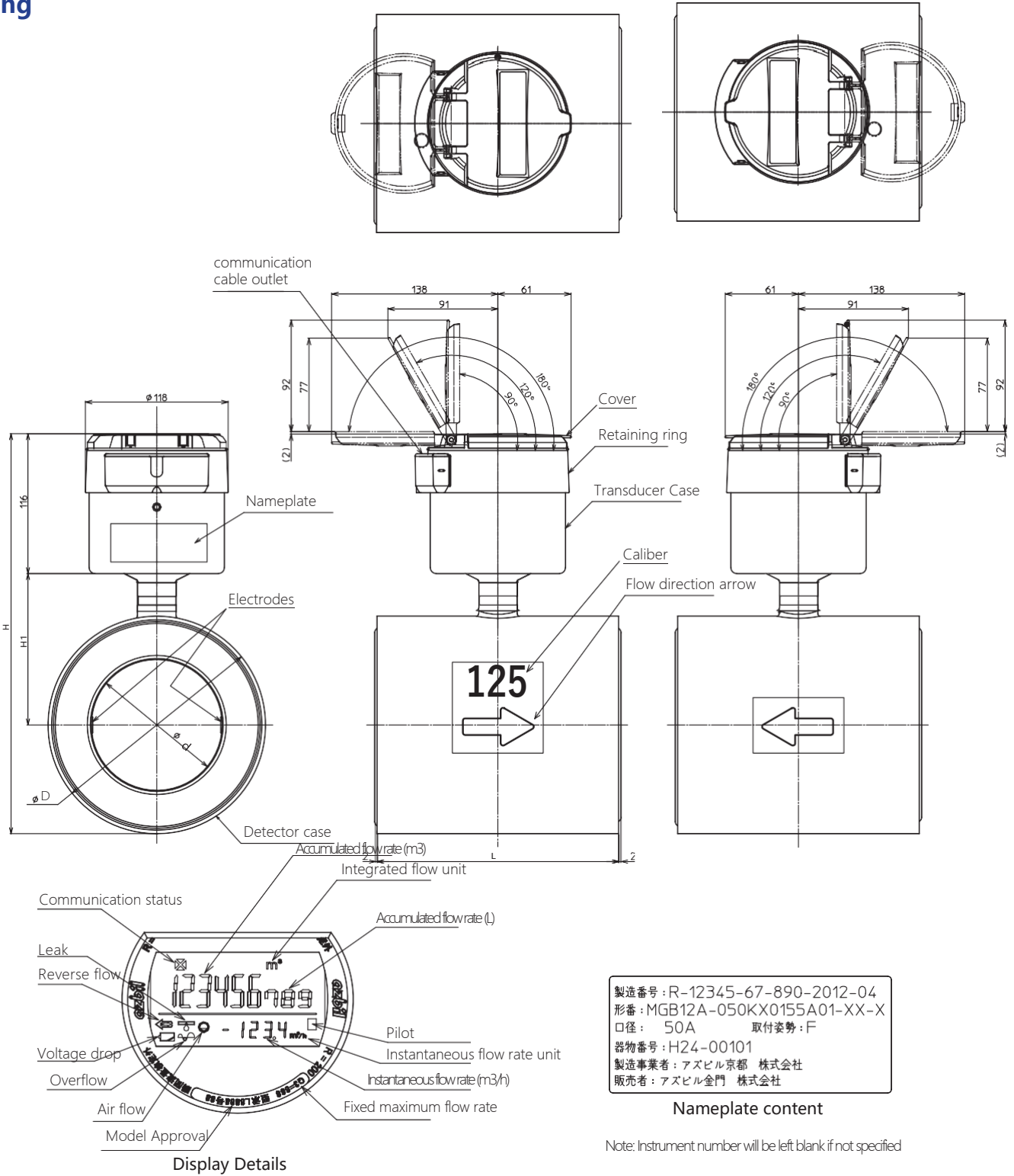
- Containing bubbles
- Containing solids
- Containing oil or other insulating adherends
- Containing magnetic materials such as iron powder
- Containing surfactants

## Type table

Selection Table	Diameter	50mm	050																		
		65mm	065																		
		75mm	075																		
		100mm	100																		
		125mm	125																		
		150mm	150																		
		200mm	200																		
	—	—	K																		
	—	—	X																		
	—	—	0																		
	Signal Output	No		00																	
		w / 5m cable		05																	
		w / 10m cable		15																	
Connection	JIS10K		1																		
	JWWA 7.5K		5																		
Pulse Rate	100L		A																		
	1000L		B																		
—	—		01																		
Accessories	Bolt / Nut	No		X																	
		Carbon Steel		1																	
		SUS304		2																	
Extension Pipe	No		X																		
	Yes		A																		
Addition	Documentation	No		X																	
		Test Report		T																	
		Traceability Certificate & Test Report		Y																	

# Outline Drawing

Unit : mm



製造番号 : R-12345-67-890-2012-04  
 形番 : MGB12A-050KX0155A01-XX-X  
 口径 : 50A 取付姿勢 : F  
 器物番号 : H24-00101  
 製造事業者 : アズビル京都 株式会社  
 販売者 : アズビル金門 株式会社

### Nameplate content

Note: Instrument number will be left blank if not specified

Caliber (A)	L (mm)	H (mm)	H1 (mm)	d (mm)	D (mm)	Weight (kg)
50	120	242	78.5	45	96	3.0
65	140	262	88	60	115	3.8
75	160	275	94.5	70	128	4.5
100	180	302	110.5	83	150	6.3
125	200	331	125.5	108	180	8.3
150	229	372	150.5	139	210	11.1
200	300	426	177	189	265	24.3