

#### GENERAL

The inexpensive and user-friendly **MAGMAX®** EGM1050C is the compact type electromagnetic flowmeter with a converter EGC050 mounted integrally on a primary head EGS1000 lined with PFA. The flowmeter is equipped with empty flow detection and status monitoring functions of primary head using the enhanced self-diagnosis unit.

Lined with high-quality PFA and equipped with Hastelloy C® for electrodes, the **MAGMAX®** EGM1050C has 8 sizes from 10 mm to 150 mm. In addition to water services such as city water and waste water treatment, it is widely used for various chemical processes.

#### FEATURE

- ❑ The high-quality and clear PFA reinforced by the punched plates assures the anti-corrosion, anti-erosion and anti-permeation.
- ❑ High accuracy of  $\pm 0.5\%$  of reading.
- ❑ High speed data processing for quick response. Suitable for batch process and pulsating flow.
- ❑ The extendable excitation system allows applications to much fluid noise such as slurries.
- ❑ The LCD with backlight provides 1 to 3 lines of versatile indication.
- ❑ Equipped with a quick setup function to readily respond to changed flow range, pulse rate, etc.  
The push buttons allow you to alter the settings without removing the cover of conversion section.
- ❑ 10kHz high-speed pulse output. Capable of responding to short batch processes.



#### STANDARD SPECIFICATIONS

##### General Specifications

- Excitation : Square wave
- Nominal size : 10, 15, 25, 40, 50, 80, 100, 150 mm
- Measuring range : Flow velocity : Min. 0 to 0.3 m/s  
: Max. 0 to 12 m/s  
Flow rate : Min. 0 to 0.085 m<sup>3</sup>/h  
: equivalent to minimum flow rate of size 10 mm  
: Max. 0 to 763 m<sup>3</sup>/h  
: equivalent to maximum flow rate of size 150 mm
- Protection class : IP66 / 67 (IEC 60529)
- Materials of body
  - Measuring tube : Stainless steel SS304
  - Primary head housing : Sizes 10 to 40mm Cast iron \*1  
: Sizes 50 to 150 mm Carbon steel \*1
  - Converter housing : Aluminum alloy \*1
  - Converter cover : Aluminum alloy \*1  
\*1 Finished with anti-corrosion painting
- Materials of wet parts
  - Liner : PFA
  - Electrode : Hastelloy C® 22
  - Earth ring : Stainless steel SS316 [Standard]
  - Earth ring seal : FPM/FKM—Applied only for nominal size 10 and 15 mm \*2  
\*2 The earth rings of flowmeters 25 mm to 150 mm have no special sealing materials. The gasket face of lining materials works as sealing.
- Painting : Siloxane coating
- Color : Grey (Primary head housing/converter housing), Jade green (Converter cover)

- Cable entry : 2 × G1/2 female thread or 2 × 1/2 NPT female thread or 2 × M20 with watertight glands (Option : Watertight glands for G1/2)
- Supply voltage : 100 to 230 VAC (85 to 253 VAC) 24 VDC (17 to 31 V)
- Supply frequency : 48 to 63 Hz (AC)
- Power consumption : Approx. 15 VA AC, Approx. 6 W DC
- Ambient temp. : -40 to + 65°C for operation when fluid temperature ≤ 120°C  
-40 to + 70°C for storage
- Grounding : Grounding resistance must be less than 100Ω.
- Process connection : Wafer type, sandwiched between following flanges
- Flanges : JIS10K, 20K, ASME class 150, 300 equivalent, DIN PN16, 40

Note : The flowmeters can be mounted physically on JIS20K or ASME class 300 flanges. However, the maximum allowable pressure of the flowmeters is 1.6 MPa.

**Fluid Specifications**

- Temperature : -25 to +120°C\*
- Pressure : 0 Pa abs to 1.6 MPa
- Conductivity : 10 μS/cm or more. For water 20 μS/cm or more.

**Indication and Output Specifications**

- Indicator : Dot matrix LCD (With backlight) 128 x 64 pixels (59 x 31mm)
- Indication function : 1 st page : displayed in two lines  
Upper line: Flow rate  
Lower line: Flow rate by bar graph in %  
2nd page : displayed in three lines  
Upper line: Flow rate  
Middle line: Totalized flow in forward direction  
Lower line: Totalized flow in reverse direction
- Current output : 4 to 20 mADC (Max. 22 mA at burn out error mode)  
Internal power supply : Max. 750Ω (Load resistance)  
External power supply: Max. 32 VDC (External voltage)
- Pulse output set as standard  
Open collector output  
Rating : Max. 32 VDC, 20 mA (≤ 10 kHz)  
Max. 100 mA (≤ 100 Hz)  
Residual voltage at ON : Max. 0.2 V when circuit current is 10 mA  
Leak current at OFF : Max. 0.05 mA when external circuit voltage 32 V  
Pulse rate : 2 to 36,000,000 pulse/h (0.00056 Hz to 10 kHz)  
Pulse width : One of the following selectable

1. Automatic : Pulse width by which duty factor becomes 50% at full scale
2. Duty factor : Always 1 : 1 fixed
3. Free setting : 0.05 to 500 ms

- Status output  
Open collector output : The pulse output can be switched to the status output by setting.  
Rating : Max. 32 VDC, 100 mA  
Residual voltage at ON : Max. 0.2 V when circuit current is 10 mA  
Leak current at OFF : Max. 0.05 mA when external circuit voltage 32 V  
Contents of output : One of the following selectable:  
1. Identification of flow direction  
2. Over range  
3. Error  
4. Flow alarm  
5. Empty pipe detection

• Description of input and output terminal

Terminal	Standard setup	Switchover by reprogramming
A (A, A + / A -)	Current output	—
D (D, D -)	Pulse output	Status output

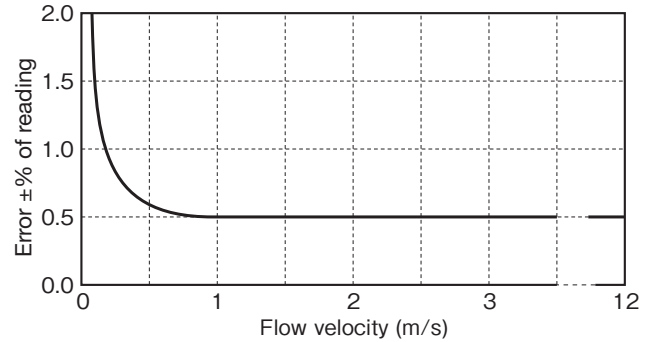
- Low flow cutoff  
Current output, Pulse output, Indicator (Separate setting is possible)  
Setting value : 0.0 to 20.0%FS  
Standard settings :  
Current output, Pulse output : ON 1% and OFF 2% of FS  
Indicator : Without low flow cutoff
- Damping time constant  
Current output, Pulse output, Indicator (Separate setting is possible)  
Setting value : 0.01 to 100.0 s  
Standard settings :  
Current output, Indicator ; 4 s  
Pulse output ; 0 s
- Isolation of input and output  
Each circuit of power supply, electrode input, excitation output, terminal A and terminal D is isolated between them.

**Standard Functions**

- Customer's free measuring unit setting function  
: Volume (or mass) and time unit in 7 characters can be created.
- Automatic zero adjustment function  
: Zero adjustment is automatically conducted at the ZERO ADJUST MODE (Subject to zero flow).
- Bi-directional flow measurement function  
: A flow-direction distinction signal is outputted in state output and current.
- Excitation current frequency switching function  
Standard mode : 1/6 of frequency of power supply (Standard)  
Special frequency mode : 1/50 to 1/2 of frequency of power supply \*3
- Self-diagnosis function  
The following conditions are indicated by error message;  
Functional diagnosis : Coil disconnection, CPU, Memory, Software, Output module, and Output connection  
Status diagnosis : Empty pipe detection, Over range, Counter over flow, and Power fail detection
- Memory save function for power fail  
Operation parameters and totalization figures are stored for more than 10 years by EEPROM (Non volatile memory)
- Testing function  
Simulating output function for current, pulse output and status output are integrated.  
Current output test : Arbitrary output between 0.0 and 22.0 mA  
Pulse output test : Arbitrary output between 1 Hz and 10 kHz  
Status output test : On / Off
- Setting function by magnetic switch:  
Built-in magnetic switch enables parameters setting without opening cover.
- HART communication  
Consult us  
\*3 It can be changed for every application such as slurries or pulsation flow.

**Accuracy \*4**

- Indication and pulse output  
For flow velocity  $\geq 1$  m/s :  $\pm 0.5\%$  of reading  
For flow velocity  $< 1$  m/s :  $\pm 0.4\%$  of reading  
+ velocity error  $\pm 0.001$  m/s



- Current output  
Additional error of  $\pm 0.01$  mA is added to the accuracy of indication or pulse output.  
\*4 Reference condition  
Fluid : Water  
Fluid temperature : 10 to 30°C  
Conductivity : 150  $\mu$ S/cm or more  
Supply voltage : Rated voltage  $\pm 2\%$   
Ambient temperature: 18 to 28°C  
Upstream / Downstream straight pipe length : 10D / 2D (D: Diameter)  
Warm-up time : About 10 minutes  
Measuring time : 100 s

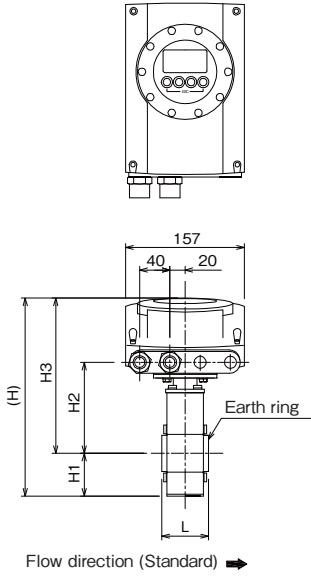
**FLOW RANGE**

Nominal size mm	Possible setting range m <sup>3</sup> /h	
	Minimum flow rate at flow velocity 0 to 0.3 m/s	Maximum flow rate at flow velocity 0 to 12 m/s
10	0 to 0.0849	0 to 3.39
15	0 to 0.191	0 to 7.63
25	0 to 0.531	0 to 21.2
40	0 to 1.36	0 to 54.2
50	0 to 2.13	0 to 84.8
80	0 to 5.43	0 to 217
100	0 to 8.49	0 to 339
150	0 to 19.1	0 to 763

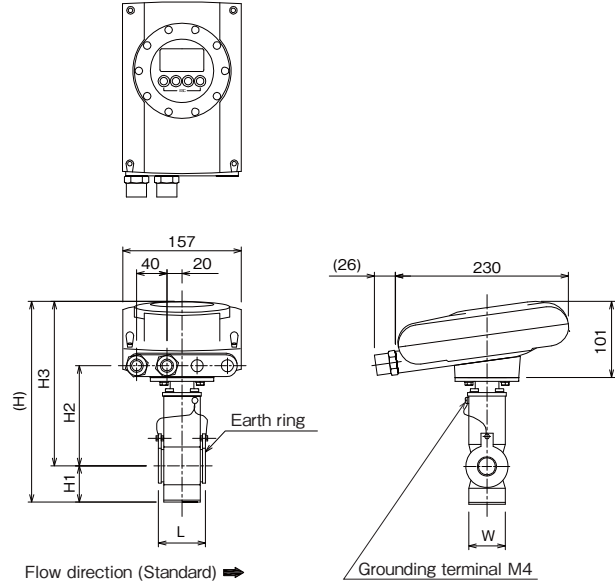
DIMENSIONS

Version A type (standard):

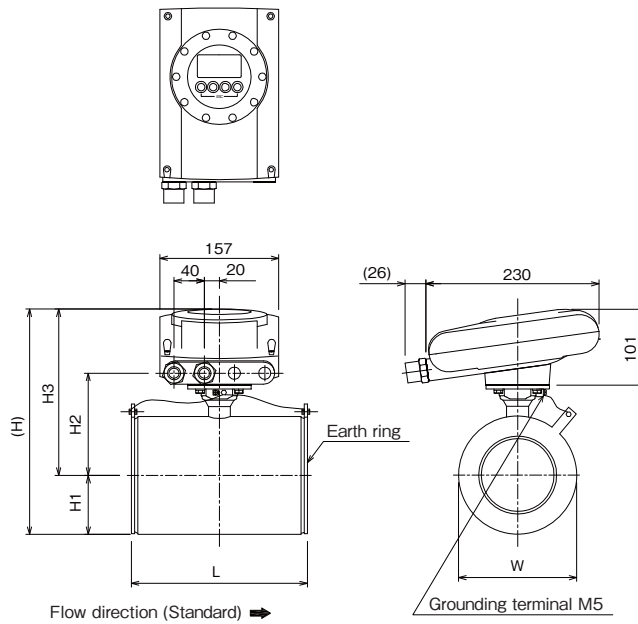
Nominal size 10 mm, 15 mm



Nominal size 25 mm, 40 mm



Nominal size 50 mm, 150 mm

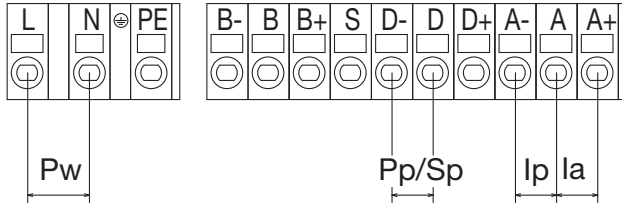


Nominal size mm	Dimensions mm						Approx. Mass kg
	L	(H)	H1	(H2)	H3	W	
10	68	262	69	102	193	47	4
15	68	262	69	102	193	47	4
25	60	271	64	116	207	66	4
40	84	283	70	122	213	82	5
50	106	252	51	110	201	101	6
80	156	287	65	131	222	130	8
100	206	314	78	145	236	156	12
150	206	377	110	176	267	220	17

Note 1 The face to face dimensions L of flowmeters 10 and 15 mm include the thickness of earth rings. The earth rings are fixed to the primary head.

Note 2 The face to face dimensions L of flowmeters from 25 to 150 mm also include the thickness of earth rings. Insert the earth rings between the primary head and mating flanges when mounting flowmeter as the earth rings are not fixed to the primary head. The face to face dimensions L of the primary head itself is "L-6" mm without earth rings where total thickness of 2 pieces of earth rings is "3 x 2 = 6" mm.

**ELECTRICAL CONNECTION**



Mark	Terminal	Polarity	Description
Ip	A	+	Current output when power is supplied externally
	A-	-	
Ia	A	-	Current output when power is supplied internally
	A+	+	
Pp/Sp	D	+	Pulse output or status output by open collector
	D-	-	
Pw	L (L+)	(+)	AC or DC power supply + or - in parenthesis shows polarity of DC power.
	N (L-)	(-)	
	PE (FE)		Grounding for power supply. "FE" in parenthesis shows the case of DC power.
	D+/S/B+/B-/B-		Not used

- Terminal type : Spring clamp terminal
- Applicable core size : 0.5 to 2.5 mm<sup>2</sup>

**MODEL AND SPECIFICATION CODE**

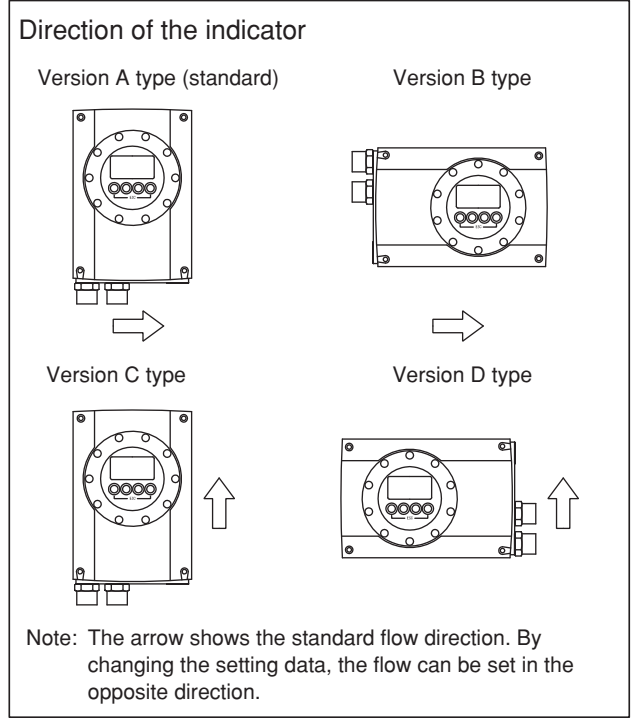
- Nominal size : 10 to 150 mm

**Model EGM1050C**

Primary head spec. code		V N 1 7		4				0	1	K	0										Description			Standard						
Primary head code		V N 1 7																				Wafer type, PFA liner, Hastelloy C22® electrodes			○					
(Fixed code)				4																		Always 4	Always 4 Connection flange size		○					
Nominal size				5																		10mm	10 or 15A	1/2"	○					
				6																				15mm	15A	1/2"	○			
				8																					25mm	25A	1"	○		
				B																					40mm	40A	1-1/2"	○		
				C																						50mm	50A	2"	○	
				E																							80mm	80A	3"	○
				F																							100mm	100A	4"	○
				H																								150mm	150A	6"
Process connection				M																			Wafer type, sandwiched 3/8" between 4" flanges			○				
				N																					Wafer type, sandwiched 6" flange			○		
(Fixed code)				0																			Always 0			○				
Type										1	K												Compact type, integrated with converter EGC050			○				
(Fixed code)				0																				Always 0			○			
Earth ring material (Seal material for earth ring)											1													Stainless steel SS316 (Fluorocarbon rubber seal)		For size 10 and 15 mm	○			
													K												Stainless steel SS316		For size 25 to 150 mm	○		
														9												Other			○	
(Fixed code)																							Always B000			○				
Calibration																								Standard calibration			○			
(Fixed code)																								Always 0200000			○			
Special feature																							(Blank)	None		○				
																									/Z	Involved ※1		○		

Converter spec. code		V N 3 4		4	4					0	6	0	0	2	1	0	0	0	0	0		Description			Standard			
Converter code		V N 3 4																					Converter Type : EGC050			○		
(Fixed code)				4																			Always 4			○		
Type																								Compact type integrated with EGC converter			○	
Power supply				1																			24 V DC (17 to 31V)					
				A																					100 to 230 V AC (85 to 253V)			○
(Fixed code)				0																			Always 0			○		
Cable entry				4																				1/2 NPT female thread				
				5																					G1/2 female thread			○
				6																					M20 with watertight gland			
(Fixed code)											6	0	0										Always 600			○		
Orientation of indicator installation																								Version A (standard)			○	
																									Version B			See "Direction of the indicator"
																									Version C			
																									Version D			
(Fixed code)																							Always 2			○		
Output type																							Standard (Current output + Pulse output or Status output)			○		
(Fixed code)																							Always 00000			○		
Special feature																								(Blank)	None		○	
																									/Z	Involved		○

※1 Add code "/Z" to a series of above mentioned codes with explanation for the other requirements not mentioned above code table. Do not hesitate to consult TOKYO KEISO Co., Ltd. before ordering for such requirements.



## STANDARD ACCESSORIES

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- Parameter sheet : 1
- Instruction manual : 1
- Magnet for parameter setting : 1

## OPTION

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- Bolts and nuts : 1 set [Symbol : BN]  
Material : Stainless steel SS 304 for JIS10K flange
- PTFE jacket gaskets for mounting on pipe  
2 pieces [Symbol : FG]  
VALQUA No. N7030 for JIS10K flange  
Note : Suitable size of bolts and gaskets matching the mating flanges will be provided. Please specify the flange rating and size other than JIS 10K if those fittings are requested.
- G1/2 watertight cable glands for cable entry [Symbol : WG]

## ORDERING INSTRUCTIONS

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Specify the following when ordering :

1. Model and specification codes

Example : model EGM1050C

Primary head spec code : VN174CM01K0KB00000200000

Converter spec. code : VN3444A05600112100000

2. Full scale flow range

3. Optional requirements will be added using above mentioned symbols if required.

4. Fluid name

\* Specification is subject to change without notice.

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