TECHNICAL GUIDANCE

MAGMAX®
EGM1100C
Compact Electromagnetic Flowmeter

GENERAL

MAGMAX® EGM1100C is the compact type electromagnetic flowmeter with a converter EGC100 mounted integrally on a primary head EGS1000 lined with fluorocarbon resin PFA. **MAGMAX®** EGM1100C enjoys low cost and high performance thanks to the advanced converter, and the light weight and compact primary head. 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, **MAGMAX®** EGM1100C 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 and utilities.

FEATURES

- ❏ The high-quality and clear PFA reinforced by the punched plates assures the anti-corrosion, anti-erosion and anti-permeation.
- ❏ High accuracy of ±0.5% of reading.
- ❏ High speed data processing for quick response. Suitable for batch process control and pulsating flow.
- ❏ The extendable excitation system allows applications to much fluid noise such as slurry.
- ❏ 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.
- ❏ Standardized high-performance functions such as bi-directional measurement, double ranges and status outputs including flow rate alarms.

STANDARD SPECIFICATION

General Specification

- ● 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^3/h equivalent to minimum flow rate of size 10 mm
  Max. 0 to 763 m^3/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 40 mm Cast iron *1
  Sizes 50 to 150 mm Carbon steel *1
  Converter housing : Aluminum alloy *1
  Converter cover : Aluminum alloy *1
  Indicator water protection sheet : Polyester
  *1 Finished with anti-corrosion painting.
- ● Materials of wet parts :
  Liner : PFA
  Electrode : Hastelloy® C22
  Earth ring : Stainless steel SS316 [Standard]
  Earth ring seal : FPM/FKM
  Applied only for nominal size 10 and 15mm *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)

TOKYO KEISO CO., LTD.

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- 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 230V AC (85 to 253V AC)
  24V DC (11 to 31V)
- Supply frequency : 48 to 63Hz (AC)
- Power consumption : Approx. 8 VA AC
  Approx. 4 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
  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 SPECIFICATION

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

Indication and Output Specification

- Indicator : Dot matrix LCD (With backlight)
  128 × 64 pixels (59 × 31mm)
  Indication function :
  Changeover (2 screens)
  One to three lines are displayed at one screen.
  Contents of indication ; Flow rate, velocity, total flow, conductivity, and coil temperature
- Current output : 4 to 20mA DC (Max. 22mA at burn out error mode)
  Internal power supply :
  Less than 750ohms (Load resistance)
  External power supply :
  Less than 32V DC (External voltage)
- Pulse output
  Open collector output
  Rating : Less than 32V DC, 20mA (≦10kHz)
  Less than 100mA (≦100Hz)
  Residual voltage: Less than 1.5 VDC at 10 mA
  Leak current: Less than 0.5 mA at 24 VDC
  Pulse rate
  2 to 36,000,000 pulse/h (0.00056Hz to 10kHz)
  Pulse width
  One of the following selectable
  1) Automatic : Pulse width by which duty factor to be 50% at full scale
  2) Duty factor 1:1 fixed
  3) Free setting ; 0.05 to 2000ms
- Status output
  Open collector output
  Rating : Less than 32V DC, 100mA Max.
  Residual voltage: Less than 1.5 VDC at 10 mA
  Leak current: Less than 0.5 mA at 24 VDC
  Contents of output
  One of the following selectable:
  1) No status output (Standard factory setting)
  2) Identification of flow direction
  3) Over range
  4) Error
  5) Flow alarm
  6) Identification of range (For double range measurement)
  7) Empty pipe detection
- Description of input and output terminal

Terminal	Standard setup	Switchover by reprogramming
A (A, A+ / A–)	Current output	–
C (C, C–)	Status 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
  Setting value (Standard) :
  Current output, Pulse output ; ON 1%, OFF 2% FS
  Indicator ; Without low flow cutoff
- Damping time constant
  Current output, Pulse output, Indicator (Separate setting is possible.)
  Setting value : 0.0 to 100.0s
  Setting value (Standard) :
  Current output, Indicator ; 4s
  Pulse output ; Damping time constant 0
- Isolation of input and output
  Each circuit of power supply, electrode input, terminal A, terminal C, and terminal D are isolated.

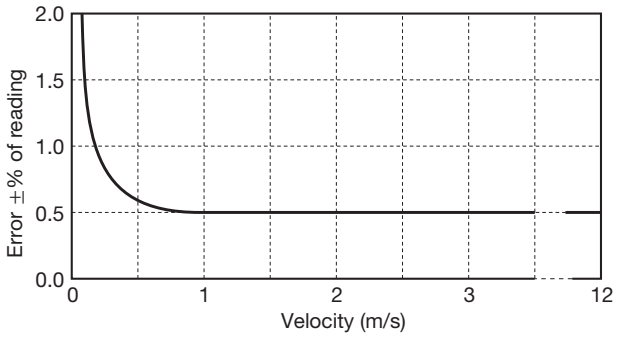
Standard Functions

- 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 "ZERO ADJUST MODE" (Subject to zero flow)
- Bi-directional flow measurement function
  A flow-direction distinction signal is outputted in state output and current.
- Double range measurement function
  Possible range setting range ratio 1 : 20 to 1 : 1.25
  (Setting range of low range : 5 to 80% of high range)
  Range selection ; Automatic
- Excitation current frequency switching function
  Standard mode :
  1/6 of supply frequency (Standard)
  Special frequency mode :
  1/50 to 1/2 times of supply frequency (*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 (0.0 to 22.0 mA)
  Pulse output test : Arbitrary output (1Hz to 10kHz)
  Status output test : On / Off
- Push button setting function
  The push buttons allow you to alter the settings without removing the cover of conversion section.
- HART communication
  Standard

(*3) It can be changed for every application, such as slurry and a pulsating flow.

Accuracy (*4)

- Indication and Pulse output
  For velocity ≥ 1m/s : ±0.5% of reading
  For velocity < 1m/s : ±0.4% of reading
  + velocity error ± 0.001m/s



- Current output :
  Additional error of ±0.01mA be added to the accuracy of indication or pulse output.

(*4) Basis condition

Fluid	: Water
Fluid temperature	: 10 to 30ºC
Conductivity	: 150µS/cm or more
Supply voltage	: Rated voltage ±2%
Ambient temperature	: 18 to 28ºC
Upstream / Downstream pipe length	: 10D / 2D (D: Diameter)
Warm-up time	: About 10 minutes
Measuring time	: 100s

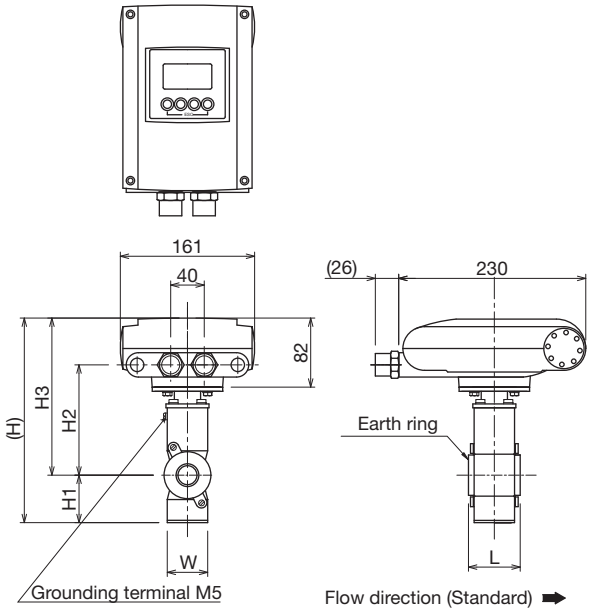
FLOW RANGE

Nominal size mm	Possible setting range m³/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

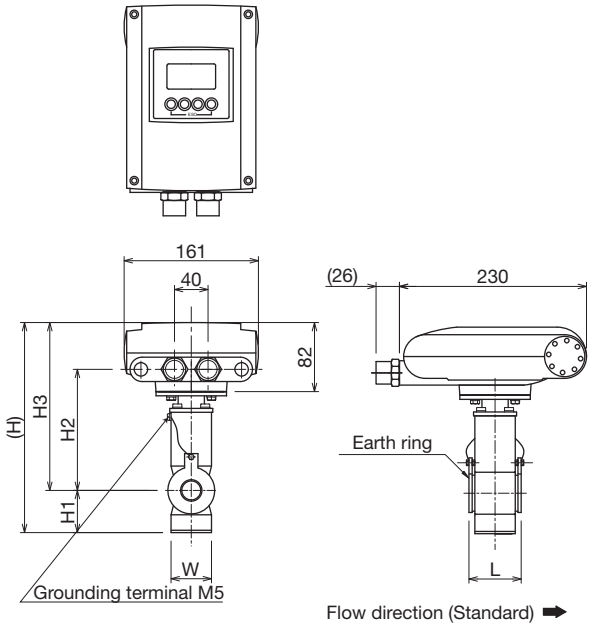
DIMENSIONS

Version 1 type

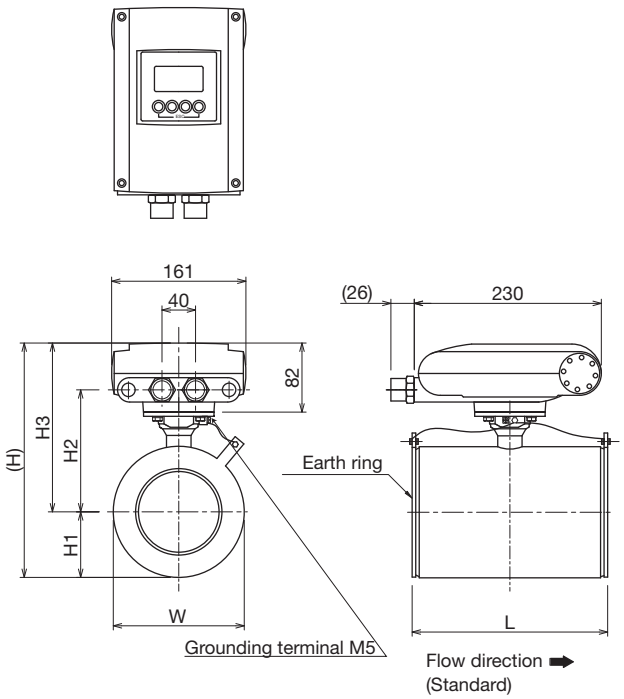
Nominal size 10mm, 15mm



Nominal size 25mm, 40mm



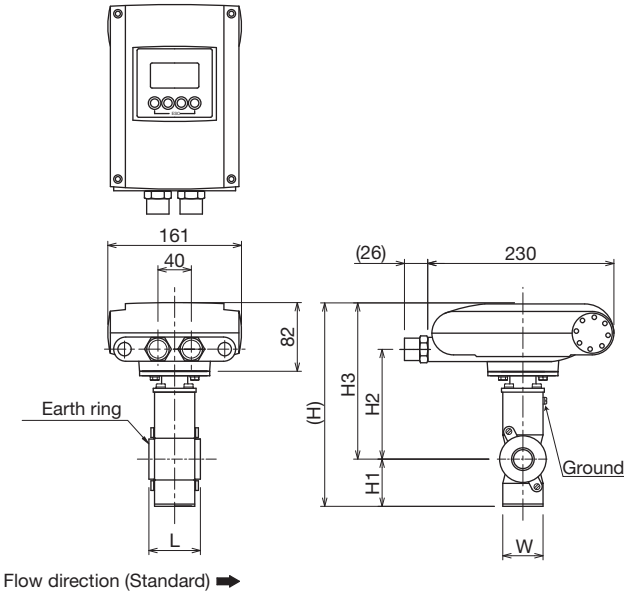
Nominal size 50 mm, 80 mm, 100 mm, 150 mm



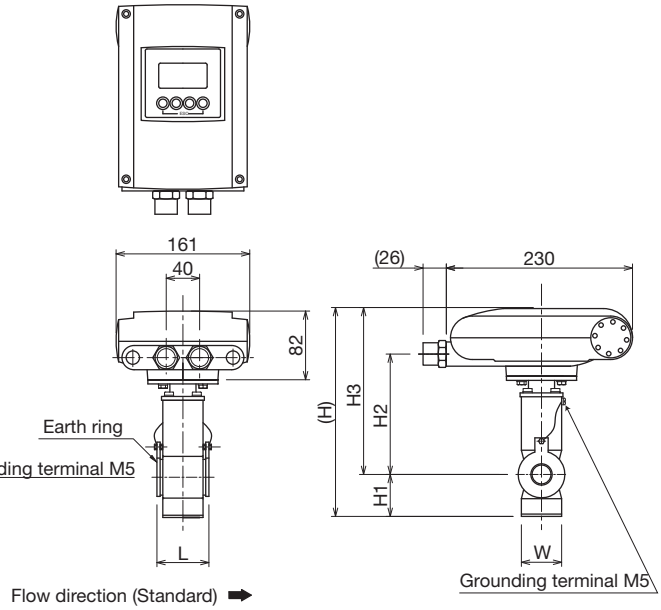
DIMENSIONS

Version 2 type

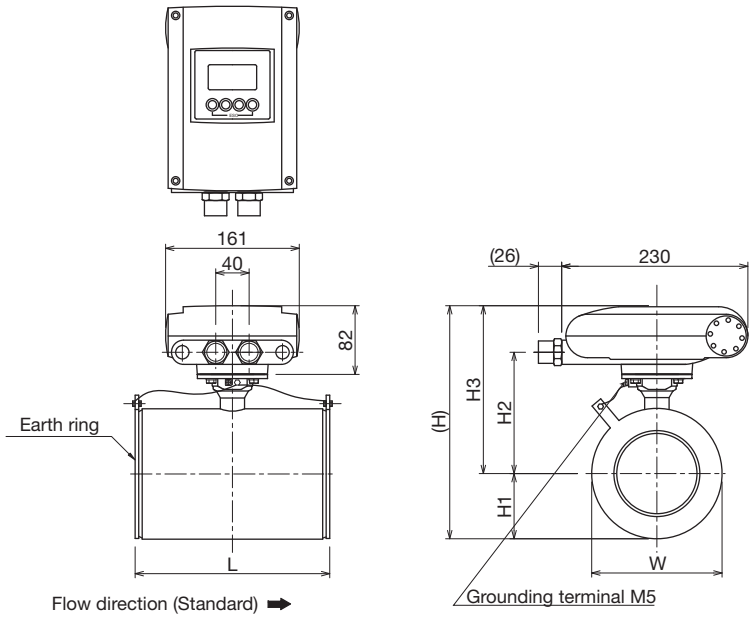
Nominal size 10mm, 15mm



Nominal size 25mm, 40mm



Nominal size 50 mm, 80 mm, 100 mm, 150 mm

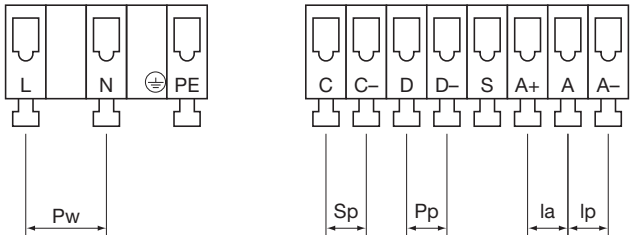


Nominal size mm	Dimensions mm						Approx. Mass kg
	L	(H)	H_1	H_2	H_3	W	
10	68	243	69	119	174	47	4
15	68	243	69	119	174	47	4
25	60	252	64	132	187	66	4
40	84	264	70	139	194	82	5
50	106	222	51	118	171	101	6
80	156	268	65	148	203	130	8
100	206	295	78	162	217	156	12
150	206	358	110	196	248	220	17

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

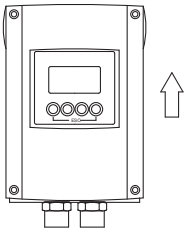


Mark	Terminal	Polarity	Description
Ip	A	+	Current output when power is supplied externally.
	A–	–	
Ia	A	–	Current output when power is supplied internally.
	A+	+	
Sp	C	+	Status output by open collector
	C–	–	
Pp	D	+	Pulse output by open collector
	D–	–	
Pw	L (L+)	(+)	AC or DC power supply The ( ) show DC power.
	N (L–)	(–)	
	PE (FE)		Grounding for power supply. The (FE) shows DC power.
	S		Grounding for shielded wire

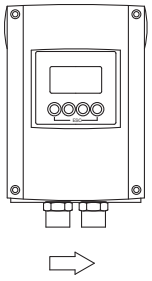
- Terminal type : Spring clamp terminal
- Applicable core size : 0.5 to 2.5mm^2

Mounting direction of indicator

Version 1 type (Standard)



Version 2 type



The flow directions can be set in the opposite direction by changing the setting data.

MODEL AND SPECIFICATION CODE

● Nominal size : 10 to 150 mm
Model : EGM1100C

Primary head spec. code	V N 1 7	4		N	0	1 3	0		0 0 0 0	0	0 2 0 0 0 0 0		Description			Standard
Primary head code	V N 1 7												Wafer type, PFA liner, Hastelloy® C22 electrodes			○
(Fixed code)		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				N									Wafer type, sandwiched between 2 flanges			○
(Fixed code)					0								Always 0			○
Type						1 3							Compact type, integrated with converter EGC100			○
(Fixed code)							0						Always 0			○
Earth ring material (Seal material for earth ring)								1					Stainless steel SS316 (FPM/FKM seal)		For size 10 and 15mm	○
								K					Stainless steel SS316		For size 25 to 150mm	○
								9					Other			
(Fixed code)									0 0 0 0				Always 0000			○
Calibration										0			Standard calibration			○
(Fixed code)											0 2 0 0 0 0 0		Always 0200000			○
Special feature												Blank	None			○
												／Z	Involved *1			

Converter spec. code	V N 3 1	4	4		0		6 0 0	1		2	1	0 0 0 0 0		Description		Standard
Converter code	V N 3 1													Converter Type :EGC100		○
(Fixed code)		4												Always 4		○
Type			4											Compact type integrated with EGC converter 0 degree type		○
Power supply				1										24V DC （11 to 31V）		
				A										100 to 230V 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		○
Housing								1						Standard		○
Orientation of indicator installation									1					Version 1	Refer to the drawing MOUNTING DIRECTION OF INDICATOR.	○
									2					Version 2		
(Fixed code)										2				Always 2		○
Output type											1			Standard (Current output + Pulse output + Status output)		○
(Fixed code)												0 0 0 0 0		Always 00000		○
Special feature													Blank	None		○
													／Z	Involved *1		

*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

● Parameter sheet : 1
● Instruction manual : 1

OPTION

● Bolts and nuts : 1 set [Symbol : BN]
Material : Stainless steel SUS304 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 mating flanges will be provided. Please specify the flange rating and size other than JIS 10K if those fittings are requested.
● G1/2 watertight glands for cable entry : [Symbol : WG]
We will supply with standard data setting in case you have no request.
Please set the data of flow range, pulse rate and flow direction etc. that required operating.

ORDERING INSTRUCTIONS

Specify the following when ordering :
1. Model and specification codes
Example : Model : EGM1100C
Primary head spec. code : VN174CN0130K000000200000
Converter spec. code : VN3144A05600112100000
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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