

### GENERAL

**MAGMAX<sup>®</sup>** EGC050W is a highly-reliable separate type converter for electromagnetic flowmeter with the simple design. The enhanced self-diagnostic functions provide empty pipe detection, monitoring various states of detector and much more. The easy-to-use converter in the field, EGC050W is used in combination with the **MAGMAX<sup>®</sup>** series primary head.

### FEATURES

- ❑ Standardized high-performance functions such as pulse output, bi-directional flow measurement and status outputs including flow rate alarms.
- ❑ High accuracy of  $\pm 0.5\%$  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 magnet keys 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 SPECIFICATION

#### General Specification

- Primary head for combination : MAGMAX Series Primary head  
EGS1000, EGS2000, EGS4000,
  - Excitation : Square wave
  - Measuring range : Flow velocity Min. 0 to 0.3m/s  
Max. 0 to 12m/s
  - Protection class : IP66/67 (IEC 60529)
  - Material  
Housing : Aluminum alloy <sup>(\*)1</sup>  
Converter cover : Aluminum alloy <sup>(\*)1</sup>
  - Painting : Polyurethane resin paint
  - Color : Silver (Housing)  
Jade green (Converter cover)
  - Installation : Wall mount, Optionally 2 inch pipe mount
- (\*)1 Anti-corrosive painting
- Cable entry : 4 × G1/2 female thread  
4 × 1/2 NPT female thread  
4 × M20 with watertight glands  
(Option : Watertight glands for G1/2)
  - Supply voltage : 100 to 230V AC (85 to 253V AC)  
24V DC (17 to 31V)  
Note: Figures in ( ) show allowable voltage range.

- Supply frequency : 48 to 63Hz (AC)
- Power consumption : AC; approx. 15VA  
DC; approx. 6W
- Ambient temp. : -40 to +65°C  
(For operation)  
-40 to +70°C (For storage)
- Grounding : Grounding resistance must be less than 100Ω.
- Cable  
Exclusive cable for electrode signal : DS cable  
2c × 0.5mm<sup>2</sup> with double shield, PVC sheath, outer diameter ; approx. 10mm
- Excitation current : 2c × 0.75 to 2.5mm<sup>2</sup> with shield <sup>(\*)2</sup>,  
cable outer diameter ≤ 12mm
- Power supply and output signal cables : 2 to 4c × 0.5 to 2.5mm<sup>2</sup> <sup>(\*)3</sup>,  
outer diameter ≤ 12mm

(\*)2 Cable length is defined and core size is subject to the terminal structure.

Refer to "Excitation current cable" for details on page 3.

(\*)3 Core size is subject to the terminal structure.

Refer to "Applicable core size" for details on page 5.

**Indication and Output Specification**

- Indicator : Dot matrix LCD (With backlight)  
128 × 64 pixels (59 × 31mm)  
Indication by initial setting  
1 st page, indicated in 2 lines  
Upper line : Flow rate  
Lower line : Flow rate in bar-graph in %  
2 nd page, indicated in 3 lines  
Upper line : Flow rate  
Middle line : Total flow in forward direction  
Lower line : Total flow in reverse direction
- 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 0.2 VDC at 10 mA  
Leak current: Less than 0.05 mA at 32 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 500ms
- Status output  
Open collector output (Status output is selected from pulse outputs by switching.)  
Rating : Less than 32V DC, 100mA Max.  
Residual voltage: Less than 0.2 VDC at 10 mA  
Leak current: Less than 0.05 mA at 32 VDC  
Contents of output  
One of the followings is selectable, for example. Other status outputs are also available.:  
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 (The outputs work in conjunction with each other.)  
Setting value : 0.0 to 20.0% FS
- Damping time constant  
Current output, Pulse output, Indicator (The outputs work in conjunction with each other.)
- Isolation of input and output  
The circuits among power supply, electrode input, excitation output, terminal A and terminal B are isolated each other.

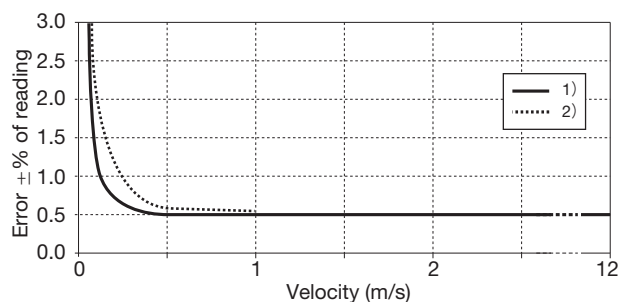
**Standard Functions**

- 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.
- 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<sup>(\*)4</sup>
- 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
- Magnet key setting function  
The magnet keys allow you to alter the settings without removing the cover of conversion section.

(\*)4 It can be changed for every application, such as slurry and a pulsating flow.

**Accuracy (\*5)**

- Indication and Pulse output  
1) Used in combination with following primary heads  
EGS2000, EGS4000  
For flow velocity ≥ 0.5 m/s: ±0.5% of reading  
For flow velocity < 0.5 m/s: Velocity error ±2.5 mm/s  
$$\left( \pm \frac{0.0025}{\text{Flow velocity}} \times 100\% \right)$$
- 2) Used in combination with following primary heads  
EGS1000  
For flow velocity ≥ 1 m/s: ±0.5% of reading  
For flow velocity < 1 m/s: Velocity error ±0.001 m/s  
$$\left( \pm 0.4 + \frac{0.001}{\text{Flow velocity}} \times 100\% \right)$$



- Current output :  
Additional error of  $\pm 0.01\text{mA}$  be added to the accuracy of indication or pulse output.

- (\*5) Basis condition
- Fluid : Water
  - Fluid temperature : 10 to 30°C
  - Conductivity : 150 $\mu\text{S/cm}$  or more
  - Supply voltage : Rated voltage  $\pm 2\%$
  - Ambient temperature : 18 to 28°C
  - Upstream / Downstream pipe length: 10D / 2D (D: Diameter)
  - Warm-up time : About 10 minutes
  - Measuring time : 100s

**CABLE LENGTH BETWEEN PRIMARY HEAD AND CONVERTER**

**[Electrode signal cable]**

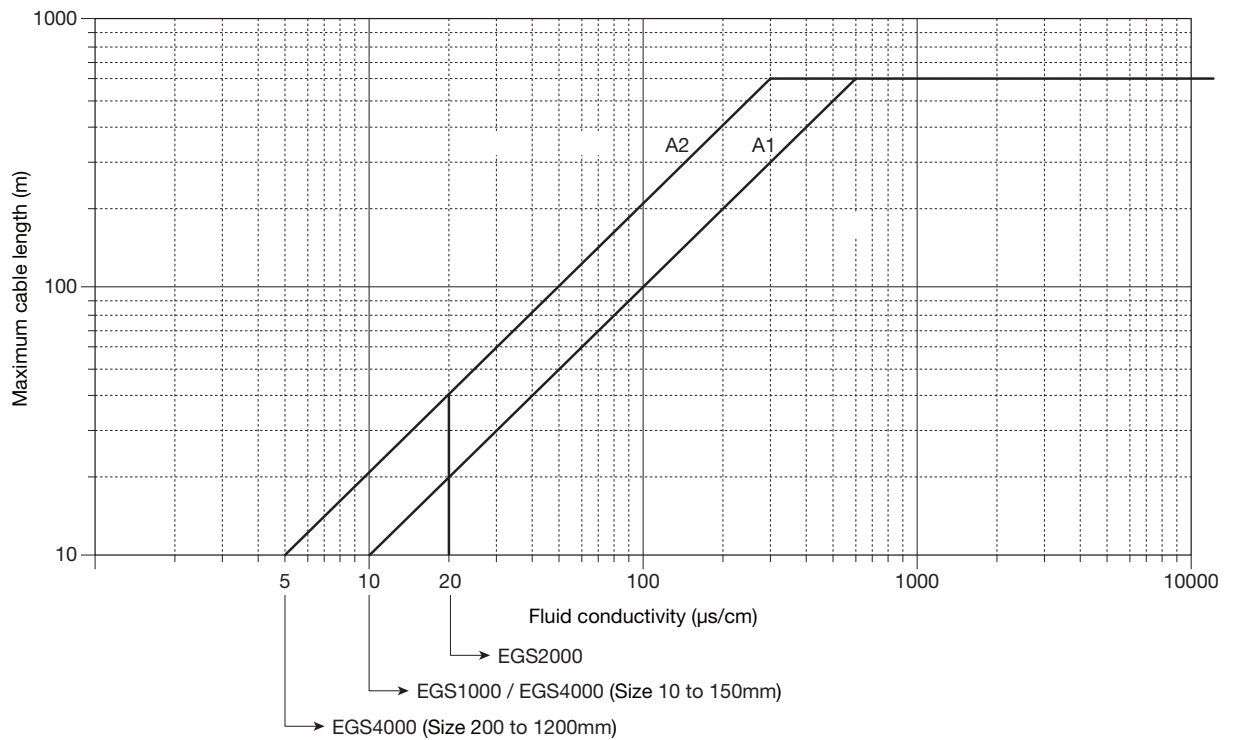
- The maximum length of electrode signal cable

Primary head	Nominal size (mm)	DS	
		Max. cable length	Graph
EGS1000	10 to 150	10 to 600m	A1
EGS2000	25 to 150	10 to 600m	A1
	200 to 1200	10 to 600m	A2
EGS4000	10 to 150	10 to 600m	A1
	200 to 1200	10 to 600m	A2

**[Excitation current cable]**

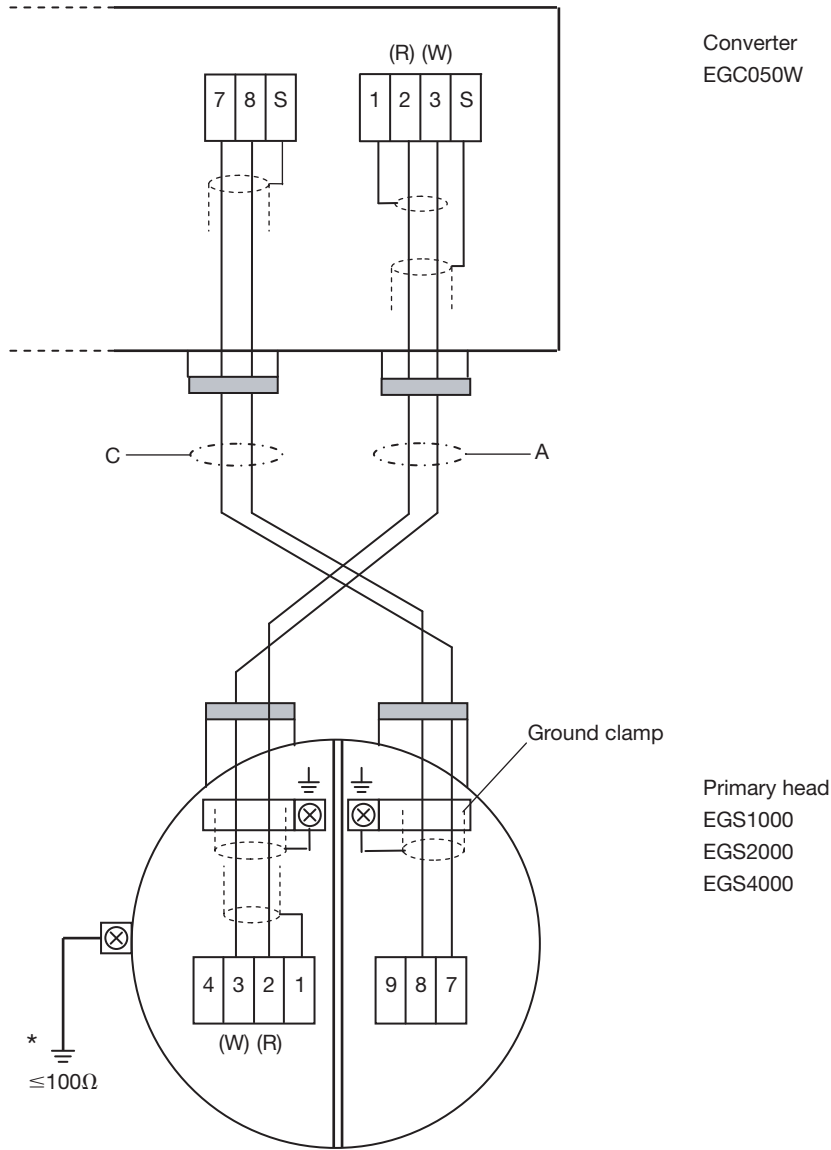
Cable length	Nominal cross-section
0 to 150m	2 × 0.75 to 2.5mm <sup>2</sup>
150 to 300m	2 × 1.5 to 2.5mm <sup>2</sup>
300 to 600m	2 × 2.5mm <sup>2</sup>

- Fluid conductivity characteristics graph



**ELECTRICAL CONNECTION BETWEEN CONVERTER AND PRIMARY HEAD**

**EGC050W (Wall installation type)**

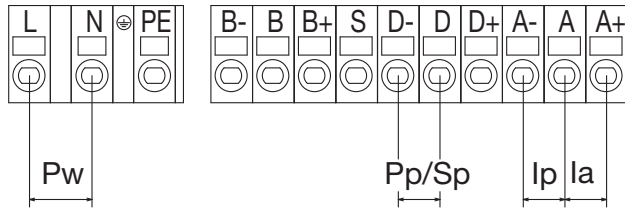


Colors in ( ) show sheath color of cores.  
(R): Red, (W): White

Terminal No.	Description
1	Electrode signal input
2	
3	
4	Not used
7	Exciting current output
8	
9	Not used
S	Shield
⏏	Grounding

- Cable
  - A: DS cable for electrode signal (Exclusive cable)
  - C: Excitation current cable  
2c × 0.75 to 2.5mm<sup>2</sup> with shield  
(Supplied by customer)
- Terminal : Spring clamp terminal
- \* Connect to the ground using the grounding wire from grounding terminal.  
(Supplied by customer)

**ELECTRICAL CONNECTION**

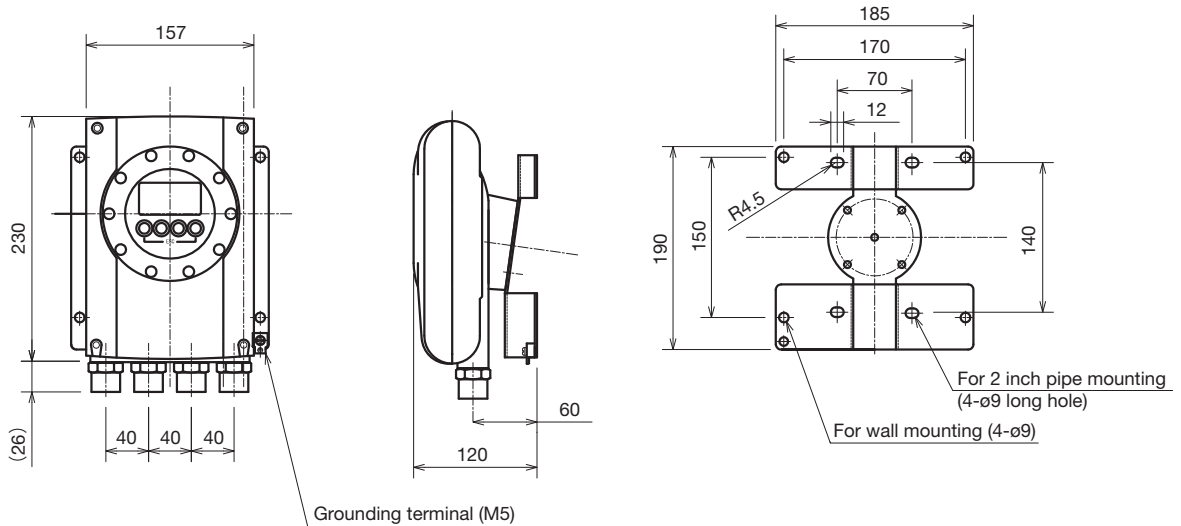


Mark	Terminal	Polarity	Description
Ip	A	+	Current output when power is supplied externally.
	A-	-	
Ia	A	-	Current output when power is supplied internally.
	A+	+	
Pp or Sp	D	+	Pulse output or Status output by open collector
	D-	-	
Pw	L (L+)	(+)	AC or DC power supply The ( ) show DC power.
	N (L-)	(-)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

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

**DIMENSIONS**

**EGC050W**



Mass: Approx. 2.7kg

## MODEL AND SPECIFICATION CODE

Model : EGC050W

Converter Spec. code	V N 3 4 4				6 0 0	1 2 1	0 0 0 0 0	Description	Standard
Converter code	V N 3 4							Type: EGC050W	○
(Fixed code)	4							always 4	○
Type	N							Separate type	○
Power supply	1							24V DC (16 to 32 V)	
	A							100 to 230 V AC (85 to 250 V)	○
Explosionproof specification	0							General type (Non-explosionproof)	○
Cable entry	4							1/2 NPT female thread	
	5							G1/2 female thread	○
	6							M20 with watertight glands	
(Fixed code)				6 0 0				always 600	○
Housing					1			Standard	○
(Fixed code)					2			always 2	○
Output type						1		Standard (Current output + Pulse 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

- G1/2 watertight glands for cable entry [Symbol : WG]
- Metal fixtures for 2 inch pipe mount [Symbol : PM]

## ORDERING INSTRUCTIONS

Specify the following when ordering :

1. Model and specification codes  
Example : Model : EGC050W  
Specification codes : VN344NA0560012100000
2. Full scale flow range and pulse rate.  
However, Unnecessary if [Symbol : NS] is specified.
3. Optional requirements will be added using above mentioned symbols if required.
4. Specify the length of DS cable with maximum 600m in 10m increments.

\* Specification is subject to change without notice.

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