



TECHNICAL GUIDANCE

MAGMAX[®]

EGC100W

Converter for Electromagnetic Flowmeter

GENERAL

MAGMAX[®] EGC100W is the high-performance separate type converter for electromagnetic flowmeters with the compact housing. Improved self-diagnostic functions include empty pipe detection and conductivity monitoring.

The easy-to-use converter in the field, EGC100W is used in combination with the **MAGMAX[®]** series primary head.

FEATURES

- ❑ Standardized high-performance functions such as pulse output, bi-directional measurement, double ranges 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 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 SPECIFICATION

General Specification

- Primary head for combination : MAGMAX Series Primary head
EGS1000, EGS2000, EGS4000,
EGS5000, EGS6000 or others
- 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 ^(*)
Converter cover : Aluminum alloy ^(*)
Indicator water protection sheet : Polyester
- Painting : Siloxane coating
- Color : Grey (Housing)
Jade green (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 (11 to 31V) General purpose
(Non explosionproof)
24V DC (18 to 31V) ATEX explosionproof
Note: Figures in () show allowable voltage range.
- Supply frequency : 48 to 63Hz (AC)
- Power consumption : AC; approx. 8VA
DC; approx. 4W
- Ambient temp. : -40 to +65°C (For operation)
-40 to +70°C (For storage)
Note: Refer to "Explosionproof Specification" for ATEX explosionproof.
- Grounding : Grounding resistance must be less than 100Ω.

- Cable
 - Exclusive cable for electrode signal : DS cable
2c × 0.5mm² with double shield, PVC sheath, outer diameter ; approx. 10mm
 - Excitation current cable : 2c × 0.75 to 2.5mm² with shield^{(*)2},
outer diameter ≤ 12mm
 - Power supply and output signal cables : 2 to 4c × 0.5 to 2.5mm² ^{(*)3},
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 4.
(*3) Core size is subject to the terminal structure.
Refer to "Applicable core size" for details on page 6.

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 (In case of primary head type EGS5000, it is only nominal size 25 to 100 mm), 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 (In case of primary head type EGS5000, it is only nominal size 25 to 100 mm)
- 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 ^{(*)4}
- 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
Please confirm the specification to us.

(*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, EGS5000 (Nominal size 10 to 250 mm),
EGS6000

For flow velocity ≥ 0.5 m/s: ±0.5% of reading
For flow velocity < 0.5 m/s: ±0.3% of reading + Velocity error of ±0.001 m/s

2) Used in combination with following primary heads

EGS1000, EGS5000 (Nominal size 2.5 to 6 mm)

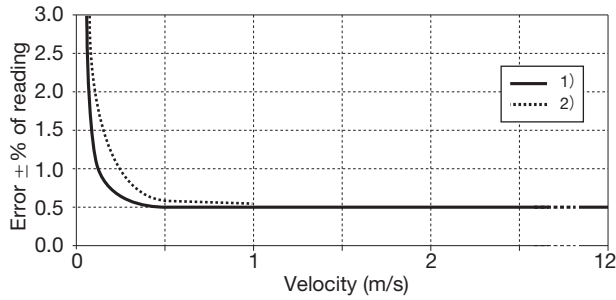
For flow velocity ≥ 1 m/s: ±0.5% of reading
For flow velocity < 1 m/s: ±0.4% of reading + Velocity error of ±0.001 m/s

● Current output :

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

(*5) Basis condition

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



Explosionproof Specification

● ATEX explosionproof : Under examination for certification

CABLE LENGTH BETWEEN PRIMARY HEAD AND CONVERTER

[Electrode signal cable]

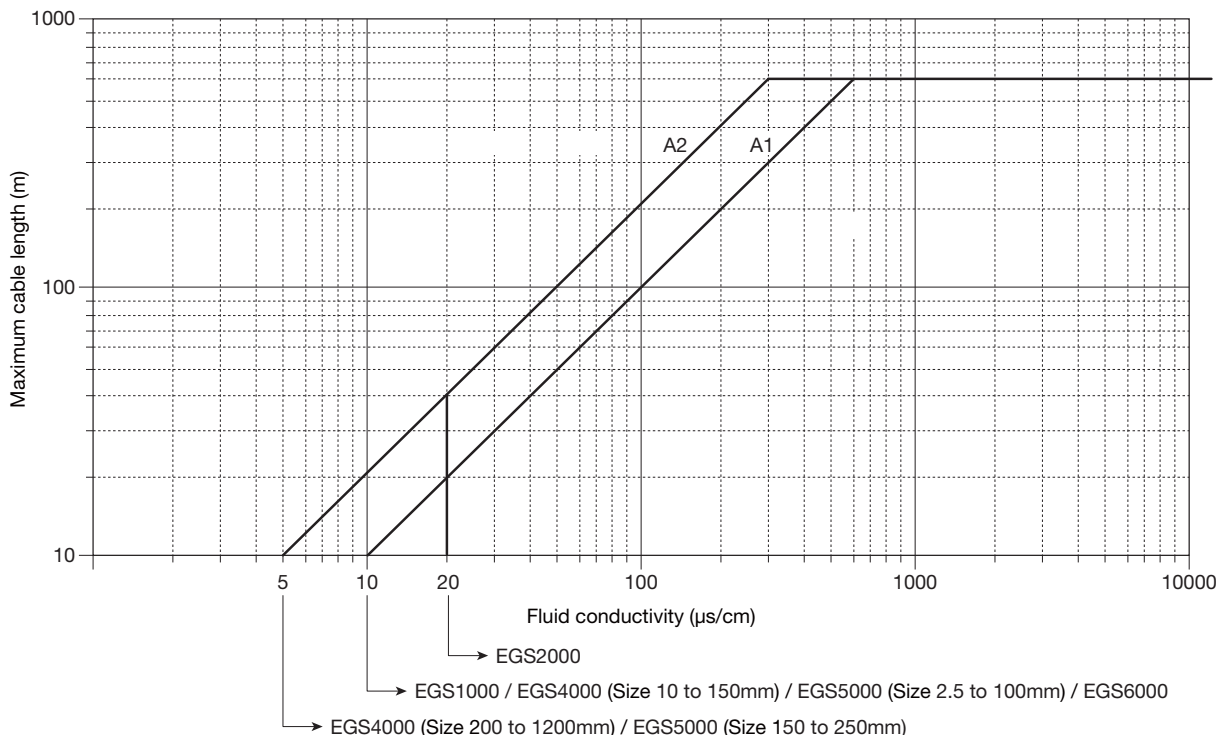
● The maximum length of electrode signal cable

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
EGS5000	2.5 to 100	10 to 600m	A1
	150 to 250	10 to 600m	A2
EGS6000	2.5 to 150	10 to 600m	A1

[Excitation current cable]

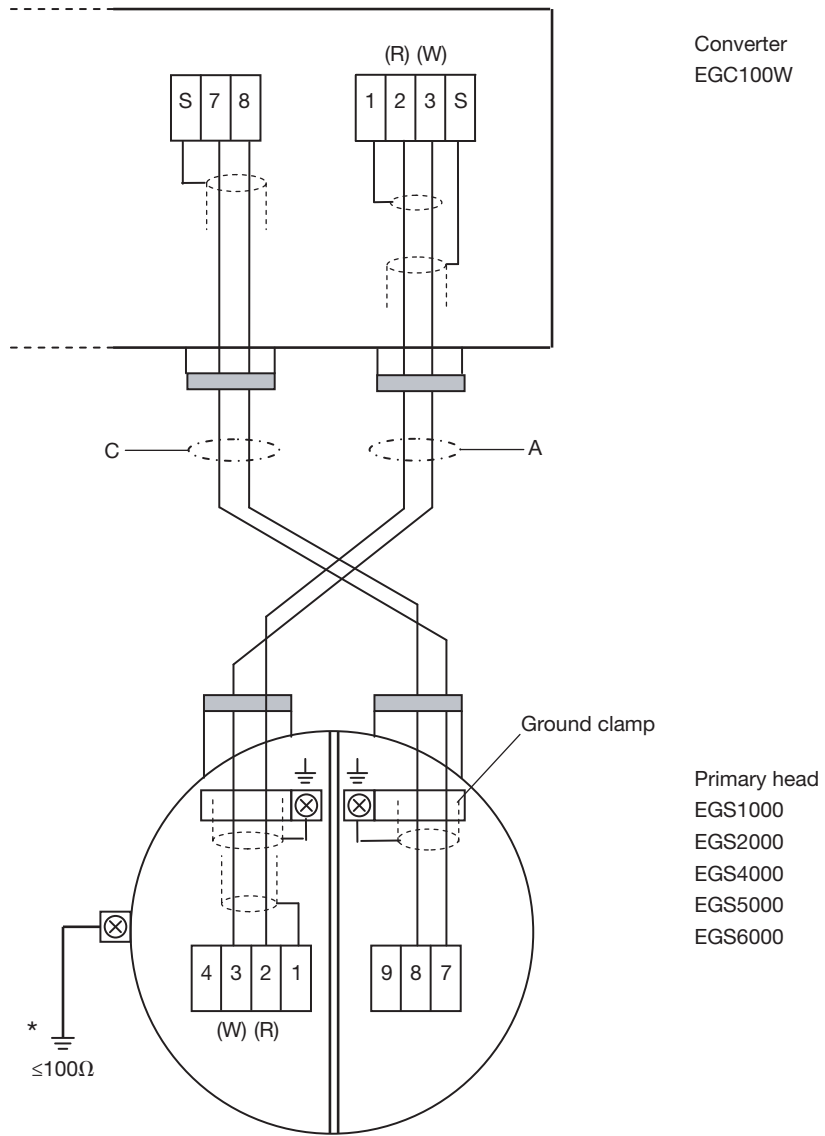
Cable length	Nominal cross-section
0 to 150m	2 × 0.75 to 2.5mm ²
150 to 300m	2 × 1.5 to 2.5mm ²
300 to 600m	2 × 2.5mm ²

● Fluid conductivity characteristics graph



ELECTRICAL CONNECTION BETWEEN CONVERTER AND PRIMARY HEAD

EGC100W (Wall installation type)

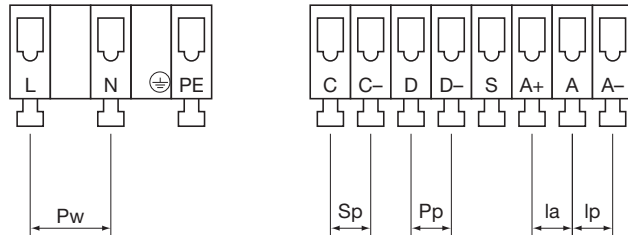


Colors in () show sheath color of cores.
 (R): Red, (W): White

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
 $2c \times 0.75$ to 2.5mm^2 with shield
 (Supplied by customer)
- Terminal : Spring clamp terminal
- * Connect to the ground using the grounding wire in cross-section area from grounding terminal.
 (Supplied by customer)

ELECTRICAL CONNECTION

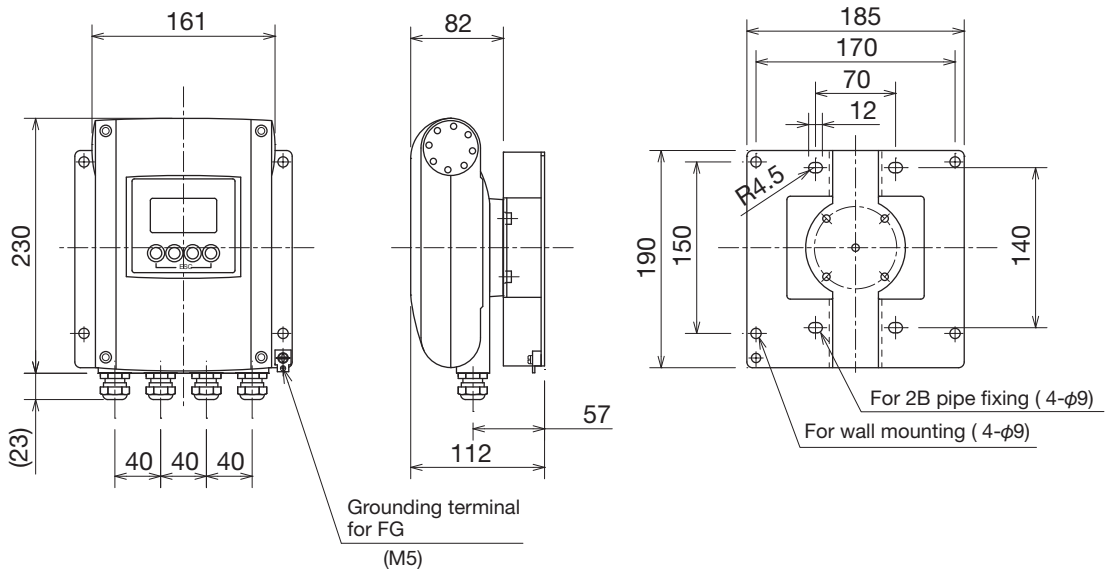


Mark	Terminal	Polarity	Description
Ip	A	+	Current output when power is supplied externally.
	A-	-	
Ia	A	-	Current output when power is supplied internally.
	A+	+	
Sp	C	+	Status output by open collector
	C-	-	
Pp	D	+	Pulse output by open collector
	D-	-	
Pw	L (L+)	(+)	AC or DC power supply
	N (L-)	(-)	The () show DC power.
	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 2.5mm²

DIMENSIONS

EGC100W



Mass:
 Approx. 1.9kg for general purpose
 Approx. 2.4kg for ATEX explosionproof type

MODEL AND SPECIFICATION CODE

Model : EGC100W

Converter Spec. code	V	N	3	1	4	N			6	0	0	1	2	1	0	0	0	0	0	Description	Standard
Converter code	V	N	3	1																Type:EGC100	○
(Fixed code)					4															always 4	○
Type						N														Separate type	○
Power supply							1													24V DC (11 to 31V), General type (Non-explosionproof)	
							4													24V DC (18 to 31V), ATEX explosionproof	
							A													100 to 230V AC (85 to 253V)	○
Explosionproof specification								0												General type (Non-explosionproof)	○
								2												ATEX explosionproof (in preparation)	
Cable entry									4											1/2 NPT female thread	
									5											G1/2 female thread	○
									6											M20 with watertight glands *1	
(Fixed code)									6	0	0									always 600	○
Housing												1								Standard	○
(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 *2	

*1 Specify M20 with watertight glands, code " 6" for the cable entry of ATEX explosionproof.

*2 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 : EGC100W

PSpecification codes : VN314NA0560012100000

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.

TIV TOKYO KEISO CO., LTD.

Head Office : Shiba Toho Building, 1-7-24 Shibakoen, Minato-ku, Tokyo 105-8558

Tel : +81-3-3431-1625 (KEY) ; Fax : +81-3-3433-4922

e-mail : overseas.sales@tokyokeiso.co.jp ; URL : http://www.tokyokeiso.co.jp