GENERAL

**MAGMAX® EGM5300C** is a combination of EGS5000 primary head with Ceramic measuring tube and high performance converter EGC300. 
 EG5300C with high durability and high anti-corrosive capability is widely applicable for chemical liquid, slurry and many other applications. 
And improved self-diagnostic functions include vacancy detection and detection unit monitoring. 
2.5 to 100mm sizes are available.

FEATURES

- Combination of Ceramic tube and Platinum electrodes is adopted for high anti-corrosive, anti-erosion, and anti-penetration capability.
- Dimensionally stable measuring tube with excellent temperature resistance and long-term stability, no creep and no abrasion as is the case with plastic liners.
- Stainless steel housing is adopt.
- The newly designed reducing tube offers high accuracy and stability even for low velocity range and mechanical durability of measuring tube.
- High accuracy of ±0.5% of reading.
- High speed data processing for quick response. Suitable for batch process control and for pulsating flow.
- The excitation system extendable up to twice the commercial frequency allows applications to much fluid noise such as slurry.
- Blue dot matrix LCD (with backlight) used for the display. Capable of providing 1 to 3-digit display.
- Equipped with a quick setup function to readily respond to changed flow range, pulse rate, etc.
- 10kHz high-speed pulse output. Capable of responding to short batch processes.
- Current and pulse output, bi-directional measurement, double range, status output, control input...Full function provided in compact design.

STANDARD SPECIFICATION

**General Specification**

- Excitation : Square wave
- Nominal size : 2.5, 4, 6, 10, 15, 25, 40, 50, 80, 100mm
- Measuring range : Flow velocity Min. 0 to 0.3m/s Max. 0 to 12m/s Flow rate Min. 0 to 0.0054m³/h (Minimum flow at 2.5mm size) Max. 0 to 339m³/h (Maximum flow at 100mm size)
- Protection class : IP66/67 (IEC 60529)
- Housing material 
  - Primary head : Size 2.5 to 15mm : Stainless steel cast Size 25 to 100mm : Stainless steel 
  - Converter : Aluminum alloy (*1)
- Wetted part material 
  - Measuring tube : Size 2.5 to 25mm 
    - Zirconia ceramics (ZrO₂) 
    - Size 40 to 100mm 
    - Alumina ceramics (Al₂O₃) 
  - Electrode : Size 2.5 to 25mm ; Pt CERMET Size 40 to 100mm ; Platinum 
  - Earth ring : Stainless steel/SS316 [Standard], Hastelloy® B, Hastelloy® C, Titanium, Tantalum (*2, *3) 
  - Gasket for earth ring (*3) : PTFE jacket type with joint sheet core or Fluorocarbon resin 
- Painting : Siloxane coating (*4)
- Color (*4) : Grey (Converter housing) Jade green (Converter cover / Terminal box cover)

(*1) Anti-corrosive painting
(*2) Tantalum earth ring is a combination of tantalum plate and PTFE jacket type gasket with Viton core.
(*3) Refer to "Operating range for the earth ring gaskets".
(*4) Terminal box only
Cable entry: 2 × G1/2 female thread
2 × 1/2 NPT female thread
2 × M20 with watertight glands
(Option: Watertight glands for G1/2)
(Option: Number of wiring connection: 3)

Supply voltage: 100 to 230V AC (85 to 250V AC)
24V DC (9 to 31V)

Supply frequency: 48 to 63Hz (AC)

Power consumption: AC: approx. 22VA
DC: approx. 12W

Ambient temp.: –40 to +65°C (Fluid temp. ≤140°C)
≤–50 to +70°C (For storage)

Grounding: Grounding resistance must be less than 100Ω.

Process connection: Wafer type

Matching flanges: JIS10K/20K/30K/40K,
ANSI class 150/300, DIN PN16/40

Fluid Specification

Temperature: –40 to +140°C

Pressure: Size 2.5 to 80mm: 0 Pa (abs) to 4 MPa
Size 100mm: 0 Pa (abs) to 1.6 MPa

Conductivity: To be 1μ S/cm or more for size 25 to
100mm
To be 5μ S/cm or more for size 4 to 15mm
To be 10μ S/cm or more for size 2.5mm
(To be 20μ S/cm or more for water)

Permissible temperature change: Temperature rising
in 10 minutes; ΔT≤150°C
(for sudden change; ΔT≤120°C)
Temperature falling
in 10 minutes; ΔT≤100°C
(for sudden change; ΔT≤80°C)

Indication and Output Specification

Indicator: Blue, 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 (Only nominal size 25 to 100 mm), and coil tempera
ture

Current output: 4 to 20mA DC (Max. 22mA)
Internal power supply:
Less than 1000ohms (Load resistance)
External power supply:
32V DC (External voltage)

Pulse output
Open collector output
Rating: Less than 32V DC, 20mA (≤10kHz)
Less than 100mA (≤100Hz)

Pulse rate:
2 to 36,000,000 pulse/h (0.000056Hz 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 2000m/s

Status output
Open collector output
Rating: 32V DC, 100mA Max.

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 detection (Only nominal size 25 to 100 mm)

Control input
Voltage input
Low: 0 to 2.5V DC  High: 19 to 32V DC

Contents
One of the following selectable:
1) No control input (Standard factory setting)
2) Signal hold
3) Signal lock to 0%
4) Total counter reset
5) Error reset
6) Range selection (For double range measurement)

Description of input and output terminal

Terminal
A (A, A / A–)
B (B / B–)
C (C / C–)
D (D / D–)

Standard setup
Current output
Status output
Status output
Pulse output

Switchover by reprogramming
–
Control input
–
Status output

Low flow cutoff
Current output, Pulse output, Indicator (Separate setting is possible.)
Setting value: 0.0 to 20.0%
Setting value (Standard):
Current output, Pulse output; ON 1%, OFF 3% 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; 3s
Pulse output; Damping time constant 0

Isolation of input and output
Each circuit of power supply, electrode input, terminal A,
terminal B, 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 cre-
ated.

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 ; By automatic or control input signal

Excitation current frequency switching function
Standard mode :
1/6 of supply frequency (Standard)
High frequency mode :
1/50 to 2 of supply frequency (For slurry, pulsating flow, etc.)

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 :
Velocity distribution, Linearity, Magnetizing current / frequency, Empty 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 and pulse output is 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

Touch sensor setting function (Infrared radiation)
By four infrared sensors, data setup from exterior is possible without removing cover.

HART communication
Please confirm the specification to us.

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

Explosionproof Specification
- ATEX [EU ATEX directive (94/9/EC)]

Accuracy™
- Indication and pulse output
[Size : 2.5 to 6mm]
For velocity ≥ 1m/s ; ±0.5% of reading
For velocity < 1m/s ; ±0.4% of reading + velocity error of ±0.001m/s

[Size : 10 to 100mm]
For velocity ≥ 0.33m/s ; ±0.5% of reading
For velocity < 0.33m/s ; ±0.2% of reading + velocity error of ±0.001m/s

Current output :
Additional error of ±0.01mA be added onto display and pulse output.

(*)6 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

Operating range for the earth ring gaskets

<table>
<thead>
<tr>
<th>Gasket</th>
<th>Fluid pressure</th>
<th>Fluid temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>PTFE jacket type with joint sheet core (equivalent to VALQUA No. N7035)</td>
<td>1.5MPa</td>
<td>140°C</td>
</tr>
<tr>
<td>Fluorocarbon resin (equivalent to VALQUA No. 7020)</td>
<td>4MPa</td>
<td>140°C</td>
</tr>
<tr>
<td>Tantalum earth ring (PTFE jacket type gasket with Viton core)</td>
<td>0.7MPa</td>
<td>140°C</td>
</tr>
</tbody>
</table>

FLOW RANGE

<table>
<thead>
<tr>
<th>Nominal size (mm)</th>
<th>Possible setting range (m³/h)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Min. (Flow velocity : 0 to 0.3 m/s)</td>
</tr>
<tr>
<td>2.5</td>
<td>0 ~ 0.0054</td>
</tr>
<tr>
<td>4</td>
<td>0 ~ 0.0136</td>
</tr>
<tr>
<td>6</td>
<td>0 ~ 0.0306</td>
</tr>
<tr>
<td>10</td>
<td>0 ~ 0.0849</td>
</tr>
<tr>
<td>15</td>
<td>0 ~ 0.191</td>
</tr>
<tr>
<td>25</td>
<td>0 ~ 0.531</td>
</tr>
<tr>
<td>40</td>
<td>0 ~ 1.36</td>
</tr>
<tr>
<td>50</td>
<td>0 ~ 2.13</td>
</tr>
<tr>
<td>80</td>
<td>0 ~ 5.43</td>
</tr>
<tr>
<td>100</td>
<td>0 ~ 8.49</td>
</tr>
</tbody>
</table>
MAGMAX® Compact Electromagnetic Flowmeter EGM5300C

DIMENSIONS

Nominal size: 2.5 to 15 mm

Nominal size: 25 to 100 mm

Dimensions (mm)

<table>
<thead>
<tr>
<th>Nominal size (mm)</th>
<th>L*</th>
<th>H</th>
<th>H1</th>
<th>H2</th>
<th>H3</th>
<th>W</th>
<th>d</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.5 ~ 15</td>
<td>68</td>
<td>306</td>
<td>51</td>
<td>185</td>
<td>255</td>
<td>44</td>
<td>-</td>
</tr>
<tr>
<td>25</td>
<td>69</td>
<td>271</td>
<td>34</td>
<td>167</td>
<td>237</td>
<td>102</td>
<td>68</td>
</tr>
<tr>
<td>40</td>
<td>94</td>
<td>286</td>
<td>42</td>
<td>174</td>
<td>244</td>
<td>117</td>
<td>84</td>
</tr>
<tr>
<td>50</td>
<td>114</td>
<td>304</td>
<td>51</td>
<td>183</td>
<td>253</td>
<td>136</td>
<td>102</td>
</tr>
<tr>
<td>80</td>
<td>164</td>
<td>336</td>
<td>67</td>
<td>199</td>
<td>269</td>
<td>168</td>
<td>134</td>
</tr>
<tr>
<td>100</td>
<td>214</td>
<td>361</td>
<td>79</td>
<td>212</td>
<td>282</td>
<td>193</td>
<td>158</td>
</tr>
</tbody>
</table>

*1 Dimension L is for with PTFE jacket type gaskets for earth rings.
   Dimension L is shorter by 2mm in case of Fluorocarbon resin gaskets for earth rings.

*2 Dimension L is shorter by 5mm (size 2.5 to 15mm) or 1mm (size 25 to 100mm) in case of Tantalum earth rings.
DIMENSIONS FOR CERAMIC TUBE

<table>
<thead>
<tr>
<th>Nominal size (mm)</th>
<th>Dimensions (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Da</td>
</tr>
<tr>
<td>2.5</td>
<td>6</td>
</tr>
<tr>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>10</td>
<td>12</td>
</tr>
<tr>
<td>15</td>
<td>14</td>
</tr>
<tr>
<td>25</td>
<td>24</td>
</tr>
<tr>
<td>40</td>
<td>37</td>
</tr>
<tr>
<td>50</td>
<td>49</td>
</tr>
<tr>
<td>80</td>
<td>78</td>
</tr>
<tr>
<td>100</td>
<td>98</td>
</tr>
</tbody>
</table>
**ELECTRICAL CONNECTION**

Protection cover is provided for power supply terminals.

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>L / L+</td>
<td>L+ (+) • L– (–) (AC power supply / DC power supply)</td>
</tr>
<tr>
<td>N / L–</td>
<td>Grounding</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Description</th>
<th>Polarity</th>
</tr>
</thead>
<tbody>
<tr>
<td>D–</td>
<td>Pulse output or Status output</td>
<td>–</td>
</tr>
<tr>
<td>D</td>
<td></td>
<td>+</td>
</tr>
<tr>
<td>C–</td>
<td>Status output</td>
<td>–</td>
</tr>
<tr>
<td>C</td>
<td></td>
<td>+</td>
</tr>
<tr>
<td>B–</td>
<td>Status output or Control input</td>
<td>–</td>
</tr>
<tr>
<td>B</td>
<td></td>
<td>+</td>
</tr>
<tr>
<td>A+</td>
<td>Current output (4 to 20mA DC / HART: Internal power supply)</td>
<td>+</td>
</tr>
<tr>
<td>A–</td>
<td>Current output (4 to 20mA DC / HART: External power supply)</td>
<td>–</td>
</tr>
<tr>
<td>A</td>
<td></td>
<td>–</td>
</tr>
</tbody>
</table>

- **Terminal type**: Plug-in type screw terminal
- **Connection capacity**: 0.5 to 2.5mm²

**Mounting position of LCD display**

Indication part of EGM5300C can be changed according to the flow direction.

![Version A](version_a.png)
![Version B](version_b.png)
![Version C](version_c.png)

The mounting position will be arranged according to the customer’s request when ordering.
The arrow indicates standard flow direction.
Flow direction can be changed by data setting.
# MODEL AND SPECIFICATION CODE

- **Nominal size**: 2.5 to 100mm
- **Model**: EGM5300C (General type) / EGM5300C-EEx (ATEX version)

## Primary head

<table>
<thead>
<tr>
<th>Spec. code</th>
<th>V N 1 B 4</th>
<th>N 1 C 0</th>
<th>0 0 0 0 0 0 2 0 0 0 0 0</th>
<th>Description</th>
</tr>
</thead>
</table>

### Nominal size

<table>
<thead>
<tr>
<th>Nominal size</th>
<th>Model code</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.5mm</td>
<td>1</td>
</tr>
<tr>
<td>4mm</td>
<td>2</td>
</tr>
<tr>
<td>6mm</td>
<td>3</td>
</tr>
<tr>
<td>10mm</td>
<td>5</td>
</tr>
<tr>
<td>15mm</td>
<td>6</td>
</tr>
<tr>
<td>25mm</td>
<td>8</td>
</tr>
<tr>
<td>40mm</td>
<td>B</td>
</tr>
<tr>
<td>50mm</td>
<td>C</td>
</tr>
<tr>
<td>80mm</td>
<td>E</td>
</tr>
<tr>
<td>100mm</td>
<td>F</td>
</tr>
</tbody>
</table>

### Process connection

- **N**: Wafer type

### Ex proof

- **D**: General type (Non-Ex)
- **E**: ATEX

### Type

- **1 C**: Compact version (EGC300 Converter)

### Earth ring / Gasket for earth ring

1. **Nominal size**: 2.5mm 40mm
2. **Material**: Wafer / Ceramic type / Platinum electrodes
3. **Fluid Pressure**: 1.5MPa or less

### Electrode material

- **Wafer / Ceramic type / Platinum electrodes**: 4

### Protection class

- **IP66/67**: 0

### Calibration

- **Standard calibration**: 0

### Special feature

- **Blank**: None

## Converter

### Spec. code

<table>
<thead>
<tr>
<th>Spec. code</th>
<th>V N 3 0 4 4</th>
<th>2 0 0 1 2 1 0 0 0 0 0 0 0</th>
<th>Description</th>
</tr>
</thead>
</table>

### Type

- **4**: LCD indication

### Power supply

- **1 A**: 24V DC (18 to 31V)
- **1 B**: 100 to 230V AC (85 to 250V)

### Ex proof

- **D**: General type (Non-Ex)
- **E**: ATEX

### Cable entry

- **M20 with watertight glands**: 6

### Housing

- **A**: Standard (Aluminium alloy)

### Output type

- **Standard (Current output + Pulse output + Control input + Status output)**: 1

### Special feature

- **Blank**: None

### Note

1. Refer to "Operating range for the earth ring gaskets".
2. In case that Special feature are involved, put /Z at the end of spec. code and specify the details.
   - It is recommended to consult TOKYO KEISO for such availability before ordering.
   - In case of ATEX Flameproof version, cable entry will be 1/2 NPT female thread.
STANDARD ACCESSORIES

- Parameter sheet : 1
- Instruction manual : 1

OPTION

- Bolt and nut for piping : 1 set [Symbol : BN]
  Material : SUS304, for JIS10K flange
- PTFE jacket type gaskets for piping : 2 pcs [Symbol : FG]
  VALQUA No. N7030, for JIS10K flange
  Note) Inform us of the flange rating in case of the piping
  side flange is except JIS10K with bolts and nuts.
- G1/2 watertight glands for cable entry : 1 set [Symbol : WG]
- Number of wiring connection : 3 [Symbol : 3G]
- No converter data (parameter) setting [Symbol : NS]
  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 spec. code
   Example : Model : EGM5300C
     Primary head spec. code :
     VN1848N010000000200000
     Converter spec. code : VN3044A0520012100000

2. Flow range (Full scale) (Unnecessary when option is NS.)
3. Option (Specify if necessary.)
   Specify the symbol with reference to the option.
4. Fluid name

* Specification is subject to change without notice.