GENERAL

*MAGMAX* EGS5000F is a separate type primary head of electromagnetic flowmeters with Ceramic measuring tube. 2.5 to 100mm sizes are available. EGS5000F with high durability and high anti-corrosive capability is widely applicable for chemical liquid, slurry and many other applications. EGS5000F can be used in combination with *MAGMAX* series converter of electromagnetic flowmeter.

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.

STANDARD SPECIFICATION

**General Specification**

- Converter for combination: *MAGMAX* series Converter
- 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: IP67 (equivalent to NEMA6)
- Housing material
  - Primary head: Size 2.5 to 15mm: Stainless steel cast
  - Size 25 to 100mm: Stainless steel
  - Converter: Aluminum alloy (*1)

(*1) Anti-corrosive painting
- Wetted part material
  - Measuring tube: Size 2.5 to 15mm
    Zirconia ceramics (ZrO₂)
  - Size 25 to 100mm
    Alumina ceramics (Al₂O₃)
  - Electrode: Size 2.5 to 15mm; Pt CERMET
  - Size 25 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: Polyurethane resin painting (*4)
  - Color (*4): Silver (Body), Jade green (Terminal box cover)
  - Cable entry: 2 × G1/2 female thread
    2 × 1/2 NPT female thread
    2 × M20 (with watertight glands)
    (Option: Watertight glands for G1/2)
  - Power supply: Supplied from converter
  - Ambient temperature: –40 to +65˚C (For operation)
    –50 to +70˚C (For storage)
  - Process connection: Wafer type
  - Flanges: JIS10K/20K/30K/40K, ANSI class 150/300, DIN PN16/40
  - Grounding: Grounding resistance must be 100Ω or less

(*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

---

**Fluid Specification**

- **Temperature**: –60 to +180˚C
  * Refer to "Flameproof specification" for ATEX Flameproof.

- **Pressure**: Size 2.5 to 80mm: 0 Pa (abs) to 4 MPa
  Size 100mm: 0 Pa (abs) to 1.6 MPa
  * The limitation for fluid temperature and pressure is subject to gasket for earth ring. Refer to "Operating range for the earth ring gaskets" table as details.

- **Conductivity**: To be 1µS/cm or more for size 25 to 100mm
  To be 5µS/cm or more for size 4 to 15mm
  To be 10µS/cm or more for size 2.5mm
  (To be 20µS/cm or more for water)
  * The minimum conductivity is restricted according to the kind of the converter to combine and the length of electrode signal cable.
  Refer to the Technical Guidance for Converter.

- **Permissible temperature change**: Temperature rising in 10 minutes; \( \Delta T \leq 150˚C \)
  (for sudden change; \( \Delta T \leq 120˚C \))
  Temperature falling in 10 minutes; \( \Delta T \leq 100˚C \)
  (for sudden change; \( \Delta T \leq 80˚C \))

**Accuracy**

\[ \pm 0.5\% \text{ of reading} \]

* Refer to the Technical Guidance for Converter as details.
**Flameproof Specification**

- ATEX [Europe ATEX instruction (94/9/EC)]
  KEMA 05 ATEX2056 X

<table>
<thead>
<tr>
<th>Nominal size</th>
<th>Possible setting range (m³/h)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.5 to 15 mm</td>
<td>20 ~ 0.0054 to 54.20 ~ 0.191</td>
</tr>
<tr>
<td>25 to 100 mm</td>
<td>60 ~ 0.0849 to 54.20 ~ 2.13</td>
</tr>
</tbody>
</table>

**FLOW RANGE**

<table>
<thead>
<tr>
<th>Nominal size (mm)</th>
<th>Min. (Flow velocity : 0 to 0.3 m/s)</th>
<th>Max. (Flow velocity : 0 to 12 m/s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.5</td>
<td>0 ~ 0.0054</td>
<td>0 ~ 0.212</td>
</tr>
<tr>
<td>4</td>
<td>0 ~ 0.0136</td>
<td>0 ~ 0.542</td>
</tr>
<tr>
<td>6</td>
<td>0 ~ 0.0306</td>
<td>0 ~ 1.22</td>
</tr>
<tr>
<td>10</td>
<td>0 ~ 0.0849</td>
<td>0 ~ 3.39</td>
</tr>
<tr>
<td>15</td>
<td>0 ~ 0.191</td>
<td>0 ~ 7.63</td>
</tr>
<tr>
<td>25</td>
<td>0 ~ 0.531</td>
<td>0 ~ 21.2</td>
</tr>
<tr>
<td>40</td>
<td>0 ~ 1.36</td>
<td>0 ~ 54.2</td>
</tr>
<tr>
<td>50</td>
<td>0 ~ 2.13</td>
<td>0 ~ 84.6</td>
</tr>
<tr>
<td>80</td>
<td>0 ~ 5.43</td>
<td>0 ~ 217</td>
</tr>
<tr>
<td>100</td>
<td>0 ~ 8.49</td>
<td>0 ~ 339</td>
</tr>
</tbody>
</table>

- Flameproof specification:
  - ATEX: KEMA 05 ATEX2056 X
  - II 2 GD EEx me ia IIC T6...T3

<table>
<thead>
<tr>
<th>Ta (°C)</th>
<th>Fluid temperature (Max.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 40</td>
<td>≤ 50°C</td>
</tr>
<tr>
<td>50 &lt; Ta</td>
<td>≤ 65°C</td>
</tr>
<tr>
<td>≤ 40°C</td>
<td>≤ 50°C</td>
</tr>
<tr>
<td>40 &lt; Ta</td>
<td>≤ 65°C</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Temperature class</th>
<th>Fluid temperature (Max.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>T6</td>
<td>65°C</td>
</tr>
<tr>
<td>T5</td>
<td>85°C</td>
</tr>
<tr>
<td>T4</td>
<td>125°C</td>
</tr>
<tr>
<td>T3</td>
<td>180°C</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fluid temperature (Min.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 20°C</td>
</tr>
<tr>
<td>≤ 40°C</td>
</tr>
</tbody>
</table>

- Fluid temperature:
  - T6...T3:
    - Fluid temperature (Min.): ≤ 20°C
    - Fluid temperature (Max.): ≤ 140°C

- Fluid pressure:
  - Gasket:
    - ≤ 1.5MPa
    - ≤ 4MPa
    - ≤ 0.7MPa

- Fluid pressure:
  - ≤ 1.5MPa
  - ≤ 4MPa
  - ≤ 0.7MPa

- Fluid temperature:
  - ≤ 140°C
  - ≤ 180°C
  - ≤ 40°C

- Fluid temperature:
  - ≤ 140°C
  - ≤ 180°C
  - ≤ 40°C

- Ex Sign:
  - II 2 GD EEx me ia IIC T6...T3
  - II 2 GD EEx de ia IIC T6...T3

- Ta : AMB

- Operating range for the earth ring gaskets:
  - Fluid pressure:
    - ≤ 1.5MPa
    - ≤ 4MPa
    - ≤ 0.7MPa
  - Fluid temperature:
    - ≤ 140°C
    - ≤ 180°C
    - ≤ 40°C

- Gasket:
  - PTFE jacket type with joint sheet core (equivalent to VALQUA No. N7035)
  - Fluorocarbon resin (equivalent to VALQUA No. 7020)
  - Tantalum earth ring (PTFE jacket type gasket with Viton core)
DIMENSIONS

Nominal size: 2.5 to 15mm

Nominal size: 25 to 100mm

<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>228</td>
<td>51</td>
<td>159</td>
<td>177</td>
<td>44</td>
<td>–</td>
</tr>
<tr>
<td>25</td>
<td>69</td>
<td>193</td>
<td>34</td>
<td>141</td>
<td>159</td>
<td>102</td>
<td>68</td>
</tr>
<tr>
<td>40</td>
<td>94</td>
<td>208</td>
<td>42</td>
<td>148</td>
<td>166</td>
<td>117</td>
<td>84</td>
</tr>
<tr>
<td>50</td>
<td>114</td>
<td>226</td>
<td>51</td>
<td>157</td>
<td>175</td>
<td>136</td>
<td>102</td>
</tr>
<tr>
<td>80</td>
<td>164</td>
<td>258</td>
<td>67</td>
<td>173</td>
<td>191</td>
<td>168</td>
<td>134</td>
</tr>
<tr>
<td>100</td>
<td>214</td>
<td>283</td>
<td>79</td>
<td>186</td>
<td>204</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>
<th>Da</th>
<th>Di</th>
<th>X</th>
<th>Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.5</td>
<td></td>
<td>6</td>
<td>2</td>
<td>20</td>
<td>50</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>7</td>
<td>3</td>
<td>20</td>
<td>50</td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>9</td>
<td>5</td>
<td>20</td>
<td>50</td>
</tr>
<tr>
<td>10</td>
<td></td>
<td>12</td>
<td>7</td>
<td>20</td>
<td>50</td>
</tr>
<tr>
<td>15</td>
<td></td>
<td>14</td>
<td>12</td>
<td>20</td>
<td>50</td>
</tr>
<tr>
<td>25</td>
<td></td>
<td>24</td>
<td>20</td>
<td>26</td>
<td>55</td>
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<tr>
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<td>37</td>
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<td>36</td>
<td>80</td>
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<td>80</td>
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<td>78</td>
<td>60</td>
<td>70</td>
<td>150</td>
</tr>
<tr>
<td>100</td>
<td></td>
<td>98</td>
<td>80</td>
<td>103</td>
<td>200</td>
</tr>
</tbody>
</table>
ELECTRICAL CONNECTION

The following figure shows connection with EGC300W converter. Refer to Technical Guidance of a converter when EGS5000F is combined with other converters.

Terminal symbol | Description
--- | ---
1 | Electrode signal output
2 | Excitation current input
3 | Grounding
7 | 
8 | 
9 | 

A : Exclusive cable for electrode signal (DS cable)
B : Exclusive cable for electrode signal (BTS cable)
C : Excitation current cable

Cable length between Primary head and Converter

- Maximum cable length for electrode signal cable *1

<table>
<thead>
<tr>
<th>Converter</th>
<th>Cable *2</th>
<th>Nominal size (2.5 to 15mm)</th>
<th>Nominal size (25 to 100mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EGC010W</td>
<td>A</td>
<td>10m</td>
<td>200m</td>
</tr>
<tr>
<td>EGC300F/W</td>
<td>A</td>
<td>–</td>
<td>600m</td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>150m</td>
<td>600m</td>
</tr>
</tbody>
</table>

*1 Refer to Technical Guidance for Converter as details.
*2 Electrode signal cable A : DS cable
   
B : BTS cable

● Cable
- A : Exclusive cable for electrode signal (DS cable)
- B : Exclusive cable for electrode signal (BTS cable)
- C : Excitation current cable (Supplied by customer)

● Terminal structure : Spring clamp type terminal

● Applicable electric wire : 0.5 to 2.5mm²
## Model and Specification Code

- **Nominal size**: 2.5 to 100mm

Model: EGS5000F (General type) / EGS5000F-EE (ATEX Flameproof version)

### Table: Specification Code

<table>
<thead>
<tr>
<th>Primary head Spec. code</th>
<th>Description</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>V N 1 8 4 N 0 0 0 0 0 2 0 0 0 0 0</td>
<td>Wafer / Ceramic type / Platinum electrodes</td>
<td>○</td>
</tr>
</tbody>
</table>

#### Nominal size

- V (Fixed code): 4
- Nominal size: 2.5mm to 100mm
  - 4mm
  - 6mm
  - 10mm
  - 15mm
  - 25mm
  - 40mm
  - 50mm
  - 80mm
  - 100mm

#### Process connection

- N (Fixed code): 0
- Wafer type

#### Flameproof specification

- 0 (Fixed code): General type (Non-flameproof)
- ATEX Flameproof

#### Terminal box / Cable entry

- 4 (Fixed code): Aluminum alloy / 1/2 NPT female thread
- 5 (Fixed code): Aluminum alloy / 1/2 G female thread
- 6 (Fixed code): Aluminum alloy / M20 with watertight glands
- 8 (Fixed code): Others

#### Type

- 0 (Fixed code): Separate type

#### Earth ring / Gasket for earth ring

- 1 (Fixed code): Stainless steel (SS316) / PTFE
- 2 (Fixed code): Hastelloy C / PTFE
- 3 (Fixed code): Hastelloy B7 / PTFE
- 4 (Fixed code): Titanium / PTFE
- 5 (Fixed code): Stainless steel (SS316) / Fluorocarbon resin
- 6 (Fixed code): Hastelloy C / Fluorocarbon resin
- 7 (Fixed code): Hastelloy B / Fluorocarbon resin
- 8 (Fixed code): Titanium / Fluorocarbon resin
- 9 (Fixed code): Tantalum with PTFE gaskets

#### Electrode material

- 0 (Fixed code): Standard

#### Protection class

- 0 (Fixed code): IP67

#### Calibration

- 0 (Fixed code): Always 0000

#### Special feature

- Blank (Fixed code): None
- /Z: Involved

---

1. Refer to “Operating range for the earth ring gaskets”.
2. In case of ATEX Flameproof version, cable entry will be 1/2 NPT female thread.
3. 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.
STANDARD ACCESSORIES

- 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]

ORDERING INSTRUCTIONS

Specify the following when ordering :

1. Model and spec. code
   Example : Model : EGS5000F
   Spec. code : VN1848N05001000000200000

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.