**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 m³/h equivalent to minimum flow rate of size 10 mm Max. 0 to 763 m³/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
  *1 The earth rings of flowmeters 25 mm to 150 mm have no special sealing materials. The gasket face of lining materials works as sealing.
  *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)
MAGMAX®  EGM1100C Compact Electromagnetic Flowmeter

- 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)
- 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
- 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.

*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.
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 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

FLOW RANGE

<table>
<thead>
<tr>
<th>Nominal size mm</th>
<th>Minimum flow rate at flow velocity 0 to 0.3 m/s</th>
<th>Maximum flow rate at flow velocity 0 to 12 m/s</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>0 to 0.0849</td>
<td>0 to 3.39</td>
</tr>
<tr>
<td>15</td>
<td>0 to 0.191</td>
<td>0 to 7.63</td>
</tr>
<tr>
<td>25</td>
<td>0 to 0.531</td>
<td>0 to 21.2</td>
</tr>
<tr>
<td>40</td>
<td>0 to 1.36</td>
<td>0 to 54.2</td>
</tr>
<tr>
<td>50</td>
<td>0 to 2.13</td>
<td>0 to 84.8</td>
</tr>
<tr>
<td>80</td>
<td>0 to 5.43</td>
<td>0 to 217</td>
</tr>
<tr>
<td>100</td>
<td>0 to 8.49</td>
<td>0 to 339</td>
</tr>
<tr>
<td>150</td>
<td>0 to 19.1</td>
<td>0 to 763</td>
</tr>
</tbody>
</table>
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

<table>
<thead>
<tr>
<th>Nominal size mm</th>
<th>Dimensions mm</th>
<th>Approx. Mass kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>80</td>
<td></td>
<td></td>
</tr>
<tr>
<td>100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>150</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

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

- Terminal type: Spring clamp terminal
- Applicable core size: 0.5 to 2.5mm²

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

<table>
<thead>
<tr>
<th>Primary head spec. code</th>
<th>V N 1 7 4</th>
<th>N 0 1 3 0</th>
<th>0 0 0 0</th>
<th>0 2 0 0 0 0</th>
<th>Description</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary head code</td>
<td>V N 1 7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Fixed code)</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nominal size</td>
<td>S</td>
<td>10mm</td>
<td>10 or 15A</td>
<td>1/2&quot;</td>
<td>○</td>
<td></td>
</tr>
<tr>
<td></td>
<td>G</td>
<td>15mm</td>
<td>15A</td>
<td>1/2&quot;</td>
<td>○</td>
<td></td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>25mm</td>
<td>25A</td>
<td>1&quot;</td>
<td>○</td>
<td></td>
</tr>
<tr>
<td></td>
<td>C</td>
<td>40mm</td>
<td>40A</td>
<td>1-1/2&quot;</td>
<td>○</td>
<td></td>
</tr>
<tr>
<td></td>
<td>S</td>
<td>50mm</td>
<td>90A</td>
<td>1/2&quot;</td>
<td>○</td>
<td></td>
</tr>
<tr>
<td></td>
<td>F</td>
<td>80mm</td>
<td>80A</td>
<td>3&quot;</td>
<td>○</td>
<td></td>
</tr>
<tr>
<td></td>
<td>H</td>
<td>100mm</td>
<td>100A</td>
<td>4&quot;</td>
<td>○</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>150mm</td>
<td>150A</td>
<td>6&quot;</td>
<td>○</td>
<td></td>
</tr>
<tr>
<td>Process connection</td>
<td>W</td>
<td>Wafer type, sandwiched between 2 flanges</td>
<td>○</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Fixed code)</td>
<td>0</td>
<td>Always 0</td>
<td></td>
<td></td>
<td>○</td>
<td></td>
</tr>
<tr>
<td>Type</td>
<td>1 3</td>
<td>Compact type, integrated with EGC100</td>
<td>○</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Fixed code)</td>
<td>0</td>
<td>Always 0</td>
<td></td>
<td></td>
<td>○</td>
<td></td>
</tr>
<tr>
<td>Earth ring material</td>
<td>1</td>
<td>Stainless steel SS316/FPM/FKM seal</td>
<td>○</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Fixed code)</td>
<td>0 0 0 0</td>
<td>Always 0</td>
<td></td>
<td></td>
<td>○</td>
<td></td>
</tr>
<tr>
<td>Calibration</td>
<td>0</td>
<td>Standard calibration</td>
<td>○</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Fixed code)</td>
<td>0 2 0 0 0 0</td>
<td>Always 0200000</td>
<td></td>
<td></td>
<td>○</td>
<td></td>
</tr>
<tr>
<td>Special feature</td>
<td></td>
<td>Blank</td>
<td>None</td>
<td></td>
<td>○</td>
<td></td>
</tr>
</tbody>
</table>

Converter spec. code: V N 3 1 4 4 | 0 6 0 0 1 2 1 0 0 0 0 | Description | Standard
- Converter code: V N 3 1
  - (Fixed code) 4
    - Always 4
- Type
  - Always 0
- Power supply: 24V DC (11 to 31V)
- Cable entry: 1/2 NPT female thread
- Orientation of indicator installation: Version 1
  - Always 600
- Housing: Standard
- Output type: Standard (Current output + Pulse output + Status output)
- Special feature: Blank

*1 Add code "1/2" 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
   - Full scale flow range.
   - Optional requirements will be added using above mentioned symbols if required.
   - Fluid name

* Specification is subject to change without notice.