

## Z512, Z522 Digital / Analog Mass Flow Controller / Meter

| Mass flow controller model *1                                 | SEC-Z512KX   | SEC-Z512MGX  | SEC-Z522MGXN       | SEC-Z522MGX   |
|---|--|--|--------------------|---|
|   |  | SEC-Z512X  | SEC-Z522XN         | SEC-Z522X   |
| Mass flow meter model *1                                      | SEF-Z512KX   | SEF-Z512MGX  | SEF-Z522MGXN       | SEF-Z522MGX   |
|   |  | SEF-Z512X  | SEF-Z522XN         | SEF-Z522X   |
| Full-scale flow rate<br>(N <sub>2</sub> conversion flow rate) | 1/2SCCM  | MR/MG number<br>#R01:10SCCM<br>#R1.5:17.5SCCM<br>#01:30SCCM<br>#1.5:55SCCM<br>#02:100SCCM<br>#2.5:175SCCM<br>#03:300SCCM<br>#3.5:550SCCM<br>#04:1SLM<br>#4.5:1.75SLM<br>#05:3SLM<br>#5.5:5.5SLM<br>#06:10SLM |                    | MR/MG number<br>#6.5: 22SLM<br>#07: 30SLM<br>#08: 50SLM |
| Valve Type  | O: Normally open C: Normally closed                              |  |                    |   |
| Flow rate at fully closed control valve                       | ≤ 2% F.S.  |  |                    |   |
| Flow rate control range                                       | 2-100% of F.S.   |  |                    |   |
| Flow rate measuring range (SEF)                               | 0-100% of F.S.   |  |                    |   |
| Accuracy *2   | ±1.0%F.S.  | ±1.0%S.P.(Flow rate>25%F.S.)   |                    |   |
|   |  | ±0.25%F.S.(Flow rate≤25%F.S.)  |                    |   |
| Operating temperature   | 5 to 50°C (recommended temperature range: 15 to 45°C)            |  |                    |   |
| Response  | ≤ 1 second: Over full flow rate range                            |  |                    |   |
| Linearity   | ≤ ±0.5% F.S.   |  |                    |   |
| Repeatability   | ≤ ±0.2% F.S.   |  |                    |   |
| Operating differential pressure                               | 50 to 300 kPa (d)  | 50 to 300 kPa (d)  | 200 to 300 kPa (d) |   |
|   |  | #5.5, #06: 100 to 300 kPa (d)  |                    |   |
| Operating differential pressure (SEF)                         | ≤ 300 kPa (d)  |  |                    |   |
| MAX. Operating pressure                                       | 450 kPa (g)  |  |                    |   |
| Pressure resistance   | 1000 kPa (g)   |  |                    |   |
| Leak Integrity  | ≤ 5 x 10 <sup>-12</sup> Pa·m <sup>3</sup> /s (He)                |  |                    |   |
| Flow rate setting signal                                      | 0.1 to 5 V DC (2% to F.S.); Input impedance 1 MΩ or higher       |  |                    |   |
| Flow rate output signal                                       | 0 to 5 V DC (0% to F.S.); Minimum load resistance 2 kΩ or higher |  |                    |   |
| Digital interface   | With address function: RS-485 (transmission speed 38,400 bps)    |  |                    |   |
|   | F-Net Protocol   |  |                    |   |
| Wetted materials  | 316L Stainless Steel (polished surface)                          |  |                    |   |
| Power supply  | +15V±5% 150mA  |  |                    |   |
|   | -15V±5% 150mA  |  |                    |   |
| Signal response   | Analog: D-Sub 9-pin (TOP)  |  |                    |   |
|   | Digital: 2 LAN jacks (TOP)                                       |  |                    |   |
| Standard Fitting *3   | 1/4 inch VCR equivalent  | 1/4 inch VCR equivalent  | 1.5 inch IGS       |   |
|   | Option: 1.125 inch IGS, 1.5 inch IGS                             |  |                    |   |
| Mounting orientation  | Free   |  |                    |   |

\*1 The gas type and full scale settings for the SEC(SEF)-Z512MGX, Z522MGX, and Z522MGXN can be changed by the operator, using special software.

\*2 The flow rate precision guaranteed temperatures conform to SEMI E56-1296 standards. The precision is that associated with the full-scale MR and MG number values.

\*3 IGS: Integrated Gas System

\* SCCM and SLM are notations indicating the gas flow rate (mL/min, L/min, at 0°C and 101.3 kPa).