



High-grade Mass Flow Controller

MODEL 3200 SERIES

Model 3200 Series Mass Flow Controller is an advanced model designed as a successor of the 3910 Series that enjoys a wide use for diverse applications such as manufacture of semiconductors, LCDs, combustion equipment, analytical devices, and biotechnology fields. Its high performance is equal to a new standard of KOFLOC.

Features

- Equipped with a temperature follow-up type current difference detection flow sensor (patent applied for) to ensure high accuracy and high-speed response
- Use of a normally closed valve to ensure safety
- Reduced dead volume thanks to the diaphragm seat valve
- Control of small quantities of flows available up to 1 SCCM full scale (SR option)
- Low differential pressure type control available for combustible gases (LP option)

Standard Specifications

| | |
|--|--|
| Flow range (N2 equivalent, 20°C/1 atm) | 1 SCCM-20 SLM (The conditions are freely selectable) |
| Sensor | Thermal mass flow sensor |
| Valve type | Proportional solenoid valve (closed when not energized) |
| Control range | 2-100% (F.S.) |
| Response | 1 sec. or less (0-100% within ±2% typical) |
| Accuracy | ±1% F.S. (Accuracy guaranteed at 15-35°C) |
| Repeatability | ±0.2%F.S. |
| Operating differential pressure | F.S. ≤ 5 SLM: 50-300 kPa (G) |
| | F.S. > 5 SLM: 100-300 kPa (G) |
| | Option: Low differential pressure (LP) specification is available depending on conditions. |
| Allowable operating pressure | 300 kPa (G) or less |
| Proof pressure | 980 kPa (G) |
| Leak rate | 1 × 10 ⁻⁸ Pa·m ³ /s or less (excluding permeation of He) |
| Allowable ambient temperature | 0-50°C |
| Allowable ambient humidity | 10-90% (No condensation allowed) |
| Materials of parts in contact with gases | Body: SUS316L |
| | Diaphragm: SUS316 |
| | Valve seat: FKM (option: CR, NBR or perfluor) |
| | Sealing: FKM (option: CR, NBR or perfluor) |
| Electric connection | Dsub 9-pin connector as per KFC Standard (Compliant with SEMI Standard) |
| Flow rate input signals | 0-5 VDC (Input impedance: 1 MΩ or more) |
| Flow rate output signals | 0-5 VDC (External load resistance: 250 kΩ or more) |
| Required power supply | +15 VDC (±5%) 100 mA, -15 VDC (±5%) 200 mA |
| Joint (Main unit bore) | Standard: 1/4SWL Option: 1/8SWL 1/4VCR RC1/4, etc. |
| Weight | 1000 g |

Note
Specifications relating to the flow range (e.g., flow range, accuracy and response) are expressed in N₂ or air equivalent. The product will be built with the primary pressure of 300 kPa or less and the secondary side open to the atmosphere. For details on the pressure requirements, please contact us.

Harness Layout

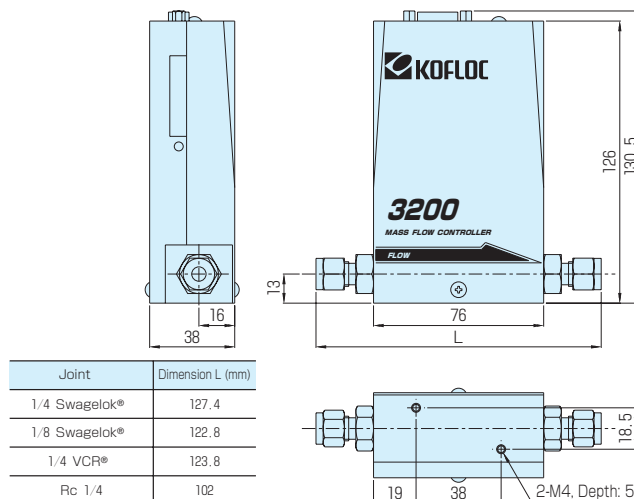
Pin Assignment of Dsub 9-pin Connector per KFC Standard

| Pin No. | Signal | Pin No. | Signal |
|---------|----------------------------------|---------|-----------------|
| 1 | Input valve open/close operation | 6 | Flow input Hi |
| 2 | Flow output 0-5 V | 7 | Flow output COM |
| 3 | +15 VDC Power source | 8 | Flow input Lo |
| 4 | Power source COM | 9 | NC |
| 5 | -15 VDC Power source | | |

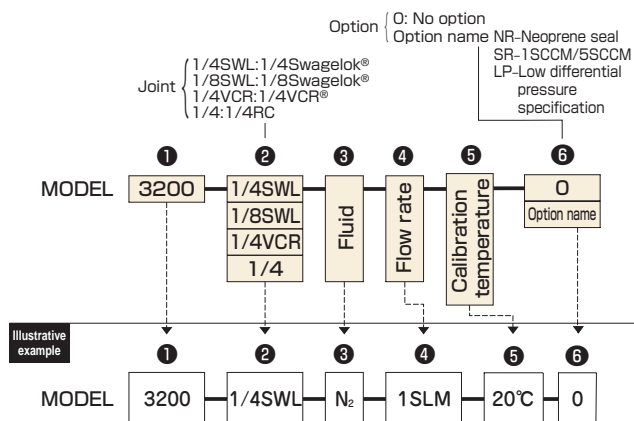
* Because a differential input system is used for the product, pin 4 (Power source COM) and pin 7 (Flow output COM) are connected inside the mass flow controller while pin 8 (Flow input Lo) is isolated. In case of a single-ended connection, connect pin 8 to pin 4.



Dimensions



Ordering



* Refer to "Ordering" and "Illustrative example" when placing an order or requesting a quotation. Fill in the blanks in the "Order/Quotation Request Card" at the end of the catalog, and send the card by fax.