



# Small Karman Vortex Flow Meter for Liquids

## MODEL31 (TEFLON®/PFA) SERIES

The Model31 Karman Vortex Flow Meter employs the following principle for measurement of flows:

When a columnar object (object that generates vortices) is placed in the flow path of a fluid, regular channels of vortices, called Karman vortex channels, are generated at the back of the object.

Since the frequency of a vortex generated is linearly proportional to the flow velocity within a given range, the flow amount can be measured by counting the number of vortices.

When the frequency of each vortex generated is detected by the incorporated vortex detector (piezoelectric device), the signal processing circuit outputs a signal which is linearly proportional to volume flow.

### Features

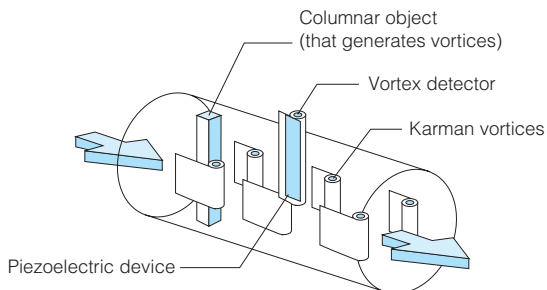
- Because of no moving part, the meter has superior reliability and durability and no error in mounting position is produced.
- Simple construction (its flow path of fluid contains a columnar object and a vortex detector only) ensures low pressure loss and low liquid leak. In addition, the detector does not get into contact with the fluid running through the path, therefore, it is ideal for process monitoring of various liquids.
- Two types of particle-free body materials (PPS and PFA) are available for choice according to your needs.
- Global specifications (Certification for CE Marking already acquired)
- Since Teflon is the material for the entire wetted part and no O-ring is in use, the Model31 Series Karman Vortex Flow Meter is optimum for monitoring liquid flows in the manufacturing process of semiconductors.

### Standard Specifications

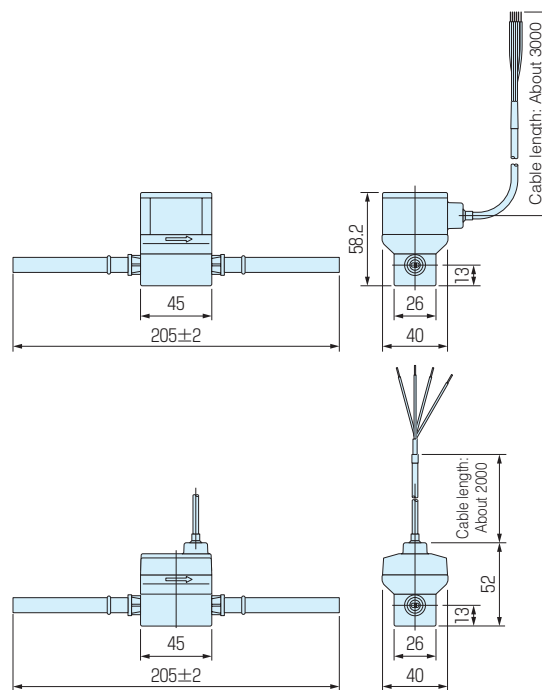
| Item                     | FM3101  | FM3102  | FM3103        | FM3104      |
|--------------------------|---|---|---------------|-------------|
| Flow range (L/min)       | 0.4-4   | 2-20  | 5-50          | 10-100      |
| Connection               | 3/8" Pipe end                                 | 1/2" Pipe end   | 3/4" Pipe end | 1" Pipe end |
| Fluids for measurement   | Ultrapure water, chemicals, and other liquids |   |               |             |
| Measuring accuracy       | ±3.0%+ 1 digit                                |   |               |             |
| Repeatability            | Within ±0.5% F.S.                             |   |               |             |
| Liquid temperature range | 0-90°C (No bedewing, no boiling)              |   |               |             |
| Amb. temperature range   | 0-50°C  |   |               |             |
| Outputs                  | With indicator                                | LED display in 3 digits   |               |             |
|                          |   | Current output: 4-20 mA (linear)  |               |             |
|                          | W/o indicator                                 | Alarm output: Open collector (2 LEDs; 80 mA, 30 VDC max.)   |               |             |
|                          |   | Current output: 4-20 mA (linear)  |               |             |
| Supply voltage           |   | 12-24VDC  |               |             |
| Materials                | Body  | All Teflon® (PFA), without O-rings  |               |             |
|                          | Cover   | Polybutylene terephthalate (PBT) resin  |               |             |
|                          | Cable   | 2 meters long; Conductor: Tinned bare annealed copper wire; Sheath: Heat-/cold-resistant polyvinyl chloride (POC) |               |             |

### Principle of Measurement

When a columnar object (object that generates vortices) is placed in the flow path of a fluid, regular channels of vortices, called Karman vortex channels, are generated at the back of the object. Since the frequency of a vortex generated is linearly proportional to the flow velocity within a given range, the flow amount can be measured by counting the number of vortices. The Model31 Series Karman Vortex Flow Meter makes use of this principle. When the frequency of each vortex generated is detected by the incorporated vortex detector (piezoelectric device), the signal processing circuit outputs a signal which is linearly proportional to volume flow.



### Dimensions



### Ordering

|                     |                      |   |  |   |   |    |
|---------------------|----------------------|---|--|---|---|----|
| The ModelFM31 (PFA) | Flow range           | P | Output   | X | P | /K |
|                     | 01<br>02<br>03<br>04 |   | S=4-20mADC<br>P = Pulse<br>D = 4-20 mADC + Indicator |   |   |    |

\* 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.