EX DELTA II Series

- Battery powered EX DELTA II
- Smart type EX DELTA II
- Insertion type EX DELTA II

We add value to the flow

OVAL Corporation
An extensive product lineup that enables flexible measurement system configuration.

**EX DELTA II Series**

**High performance supports various applications**
With a combination of a triangular-section bluff body and a piezoelectric sensor, the flow rate of liquid, gas, and steam can be measured to a high degree of accuracy.

**User-friendly and low-cost**
Simple and durable design provides ease of use and maintainability, substantially saving initial cost, running expense, and total cost.

**Increased safety**
A hard-to-clog structure with minimum seals. The replaceable sensor in particular enables servicing and maintenance while the sensor is installed without interrupting the flow.

**Saves energy and space**
Low pressure loss is synonymous with energy saving. A dedicated flow straightener also reduces installation space.

<table>
<thead>
<tr>
<th>Piping Arrangement</th>
</tr>
</thead>
<tbody>
<tr>
<td>OVAL’s Flow Straightener</td>
</tr>
<tr>
<td>Honey Vane L</td>
</tr>
<tr>
<td>OVAL’s Flow Straightener</td>
</tr>
<tr>
<td>Flow Straightener</td>
</tr>
</tbody>
</table>

(L=Straight Pipe Length, \(D\)=Nominal size)

**Operating temperature range: -30 to +460°C (high temperature type)**
The minimum temperature of -196°C is available by special request. Explosionproof protection is available for -196°C to +420°C.

**Vortex detection principle**
The vortex flowmeter is configured with a bluff body that generates Karman vortices, a sensor that detects vortices, and a converter that processes signals detected by the sensor. When the flow creates Karman vortices alternately on each side of the bluff body, alternating stress on the sensor is generated. This is detected by the piezoelectric element, amplified and shaped by the converter, and then obtained as a pulse proportional to the flow velocity.

**Battery powered EX DELTA II**
- No power supply installation required
- Available with separate type converter and explosionproof protection
- 7 year battery life when operated 24 hours a day (Integral converter type)
- Large and clear digital display including total and resettable counters, instant flow rate and alarm displays
- Can be installed horizontally or vertically, making it optimal for use in place of area flowmeters which are limited in their installation position.
Maintenance/inspection can be carried out without stopping the line

**Replaceable sensor**

[Nominal diameter] 15 to 300mm

- Maintenance and inspection of vortex detector can be done without disconnecting the flowmeter from piping or stopping the fluid flow.
- Bypass piping is unnecessary
- Suitable for long-term continuous operation process

**EX DELTA II · DIA**

- The diamond-shaped bluff body with superior characteristics is adopted.
- Separate-sensor configuration separates the sensor from the bluff body.
- Suitable for the measurement of fluids with easily-accumulating components.

**The insertion type reduces construction cost and maintenance cost**

**Insertion type EX DELTA II**

[Nominal diameter]
- Fixed type: 200 to 2,000mm
- Hot-tap type: 400 to 2,000mm

- Considerably reduces construction and maintenance costs related to fluid measurement of large-diameter piping.
- Flow rate can be measured by just inserting the probe in a newly installed or existing piping.
- The hot-tap type enables maintenance and inspection of vortex detection sensor without stopping the flow of fluid.
- The hot-tap type is most suitable if the bypass piping is unavailable.

**Separate type converter**

- Suitable for where the piping is densely installed, high places, dangerous zones, etc.
- The converter can be installed up to 200m (Max. 50 m for the battery type) away from the flowmeter body.
- Multiple converters of dispersedly located flowmeters can be installed in one location.
General Specifications

<table>
<thead>
<tr>
<th>Item</th>
<th>Standard Type</th>
<th>Insertion Type</th>
<th>DIA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wafer type (fixed sensor)</td>
<td>10 to 150mm</td>
<td>—</td>
<td>15 to 80mm</td>
</tr>
<tr>
<td>Flanged type (fixed sensor or replaceable sensor)</td>
<td>15 to 300mm</td>
<td>—</td>
<td>15 to 80mm</td>
</tr>
<tr>
<td>Applicable pipeline diameter</td>
<td>—</td>
<td>200 to 2000mm (mounted on a 100mm flange)</td>
<td>—</td>
</tr>
</tbody>
</table>

Accuracy

- Nominal size: 10mm ±2% of full scale or better
- Nominal size: 15 to 300mm ±1% of reading or better ±1% of full scale or better

Flow range

<table>
<thead>
<tr>
<th>Fluid</th>
<th>Liquid</th>
<th>Gas</th>
<th>Steam</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal size: 10mm</td>
<td>±2% of full scale or better</td>
<td>±1% of reading or better or ±1% of full scale or better</td>
<td></td>
</tr>
<tr>
<td>Nominal size: 15 to 300mm</td>
<td>±1% of reading or better</td>
<td>±1% of full scale or better</td>
<td></td>
</tr>
</tbody>
</table>

Operating temperature range

- Ambient temperature type: -30 to +120°C (Fixed sensor only)
- Standard type: -30 to +300°C
- High temperature type: -30 to +460°C (Replaceable sensor only)
- Cryogenic type: -196 to +300°C

Max. operating pressure

<table>
<thead>
<tr>
<th>Fluid</th>
<th>Liquid</th>
<th>Gas</th>
<th>Steam</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal size: 10mm</td>
<td>0.2 to 2510 m³/h</td>
<td>2 to 15000 m³/h</td>
<td>0.02 to 47.6 t/h</td>
</tr>
<tr>
<td>Nominal size: 15 to 300mm</td>
<td>72 to 67800 m³/h</td>
<td>923 to 565000 m³/h</td>
<td>3.06 to 1790 t/h</td>
</tr>
</tbody>
</table>

Converter (integral or separate type)

<table>
<thead>
<tr>
<th>Display</th>
<th>Smart</th>
<th>Output</th>
<th>Current pulse (Factored, Unfactored), Open collector pulse (Factored, Unfactored), Analog output</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other</td>
<td>Calculation (Mass flow fixed calculation, normal flow fixed calculation)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Battery</td>
<td>HART protocol communications (Parameter change by dedicated communication kit is available.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construction</td>
<td>Non-explosionproof or explosionproof</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Power Supply

<table>
<thead>
<tr>
<th>Battery powered</th>
<th>Smart converter</th>
<th>12 to 45VDC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Battery</td>
<td>3.6V lithium-metal battery (TL-5930/F) Battery life: 7 years (integral type) or 4 years (separate type)</td>
<td></td>
</tr>
</tbody>
</table>

Related products tailored to applications

- **OVAL VORTEX FLOWMETER**
- **Hybrid Multi DELTA**
- **DELTA FLOWPET-DX**

The OVAL VORTEX FLOWMETER measures the flow rate by detecting the vortices generated by flow velocity change in the following manner: temperature change in thermistor sensor → resistance change → pulses proportional to the flow velocity.
As the actual flow rate is measured, the measurement is not affected by changes in temperature, pressure, and physical properties of the fluid.

1. The configuration may vary depending on the model.
2. Flow range shown above is the sum of all sizes.

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