Vortex Flowmeter VY Series
Designed by Total Insight concept
As the inventor of the vortex flowmeter, Yokogawa is bringing the vortex technology to a new era

Seamless integration into Digital transformation

Since we brought out the world’s first vortex flowmeter for process control market 1969, Yokogawa is the leading supplier of vortex flowmeters worldwide. The VY series has inherited the superior YEWFLO’s sensing structure and evolved from Sensing to Sensemaking combining reliable technology with superior field knowledge on the path to digitalization.

**Digitalization**

Supporting efficient and planned plant operations

- Remote maintenance
- Self diagnostic

**Inheritance**

Stable measurement and high maintainability

Yokogawa unique sensing structure brings robustness and long term stability

Well-established vibration resistance
Total Insight is the product to support customers every phase of the product lifecycle.

Through excellence in the technology and insight throughout the plant lifecycle, we evolve products to provide new value for optimization of total expenditure.

**Smart device maintenance**
- Easy to identify process-side or device-side abnormality
- Easy maintenance
- Reduced downtime

**Expert Solution**
Utility and Maintenance

**Total Insight**

**Simplified Selection**
- Model selection is easy
- Supports a wide range of standards
- Built-in abundant calculation function

**Truly universal lineup**
- Model selection is easy
- Supports a wide range of standards
- Built-in abundant calculation function

**Smart Assist**
Installation and Commissioning

**Vibration-resistant and stable flow measurement**
- Realizes stable measurements
- Accurately captures flow signals
- Ready to use right after installation

**Process Guard**
Operation and Observation

**Advanced self-diagnostics and remote maintenance**
- Ready to diagnose all function blocks
- Confirms device health from remote locations such as instrument room
- Supports condition-based maintenance

The VY series is designed based on the Total Insight concept.
**Truly universal lineup**

**Model selection is easy**

- A wide flow range up to size 400 mm is available. And the Reduced Bore Type can be supported by two sizes down.
- The face to face lengths are the same as those of the previous YEWFLO series, so it can be used for a long time.

**Supports a wide range of standards**

- Functional Safety IEC 61508 compliant Safety Integrity Level SIL2
- General Safety, EMC, PED, EUROHS, CE Mark, CRN, ABS / DNV ship’s classification
- Industry standards: NAMUR NE21, NE107, NACE materials

**Built-in abundant calculation function**

- Calculates volume, mass and energy flow rates using temperature / pressure / density from the built-in temperature sensor or external input
- Calculates mass and energy of saturated / superheated steam using the built-in steam table

**Vibration-resistant and stable flow measurement**

**Realizes stable measurements**

- Yokogawa’s unique sensing structure which are integrated the sensor and the shedder bar, captures vortex signals with the entire shedder bar
- Provides stable measurement even with short straight pipe lengths, regardless of the installation orientation

**Accurately captures flow signals**

- Unique sensing structure with two sensor elements cancels piping vibration noise
- Mature and proprietary digital signal processing technology (SSP) eliminates noise and extracts vortex signals only
- Alarm outputs possible false outputs due to piping vibration

SSP: Yokogawa’s proprietary signal processing that removes noise extracts vortex signals from two sensor elements.

**Ready to use right after installation**

- Parameters are factory-set before shipment
- Automatic adjustment function of SSP makes field adjustment omitted
- Verification tools including Waveform monitoring facilitate post-installation condition checks

**Vortex waveform monitor**

**Face to face length**

- Size from 15 mm to 400 mm

**Flow profile**

**Bent pipe**
**Advanced self-diagnostics and remote maintenance**

Ready to diagnose all function blocks
- All functional blocks are self-diagnosed in compliance with the requirements of the SIL2 standard for functional safety
- Easily identifies where device maintenance is required

Confirms device health from remote locations such as instrument room
- Wizard style remote maintenance with FSA130 Verification Tool
- Check vortex signal waveforms from the instrument room without bringing an oscilloscope to the site

Supports condition-based maintenance
- FSA130 Verification tool can predict sensor status

**Smart device maintenance**

Easy to identify process-side or device-side abnormality
- Process diagnostics detect piping vibration and fluid fluctuations
- Self-diagnostic function monitors device health

Easy maintenance
- Yokogawa's unique shedder bar structure is known for its robustness and long-term stability
- The shedder bar can be removed for cleaning or replacement in case of unforeseen circumstances

Reduced downtime
- The parameters of the transmitter can be backed up to the sensor and it is easy to restore when replacing the transmitter

FSA130 Verification Tool

Vortex Sensor Prediction
## Outline specification

<table>
<thead>
<tr>
<th>Type of body</th>
<th>General Type, Reduced Bore Type (1 or 2 Size Reduction), High Pressure Reduced Bore Type (1 Size Reduction), Dual-Sensor (Welded) Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of shedder bar</td>
<td>General Type, General Type with Temperature Sensor, Long Neck Type, Long Neck Type with Temperature Sensor, High Temperature Type, High Temperature Type with Temperature Sensor, Cryogenic Type</td>
</tr>
<tr>
<td>Fluid to be Measured</td>
<td>Liquid, Gas, Saturated Steam, Superheated Steam (Avoid multiphase flow and sticky or corrosive fluids)</td>
</tr>
<tr>
<td>Volumetric flow rate accuracy</td>
<td>Liquid ±0.75% of reading, Gas/Steam ±1.0% of reading</td>
</tr>
<tr>
<td>Connection Size</td>
<td>Wafer: 15, 25, 40, 50, 80, 100 mm 1/2, 1, 1-1/2, 2, 3, 4 inch, Flange: General Type: 15, 25, 40, 50, 80, 100, 150, 200, 250, 300, 400 mm 1/2, 1, 1-1/2, 2, 3, 4, 6, 8, 10, 12, 16 inch, Reduced Bore Type (1 Size Reduction): 25, 40, 50, 80, 100, 150, 200 mm 1, 1-1/2, 2, 3, 4, 6, 8, 10 inch, Reduced Bore Type (2 Size Reduction): 40, 50, 80, 100, 150, 200 mm 1-1/2, 2, 3, 4, 6, 8 inch, High Pressure Reduced Bore Type (1 Size Reduction): 25, 40, 50, 80, 100, 150 mm 1, 1-1/2, 2, 3, 4, 6, 8 inch, Dual-Sensor (Welded) Type: 15, 25, 40, 50, 80, 100, 150, 200 mm 1/2, 1, 1-1/2, 2, 3, 4, 6, 8 inch</td>
</tr>
<tr>
<td>Process connection</td>
<td>Wafer, Flange: ASME Class 150 to 1500, EN PN10 to PN100, JIS 10K to 40K</td>
</tr>
<tr>
<td>Process Temperature Range</td>
<td>-196 to 450 °C Depends on the shedder bar type and material</td>
</tr>
<tr>
<td>Process Pressure Limit</td>
<td>From -0.1MPa to the process connection pressure rating</td>
</tr>
<tr>
<td>Ambient Temperature Range</td>
<td>-50 to 85 °C Depends on the shedder bar type, material and display installed condition</td>
</tr>
<tr>
<td>Cable entry</td>
<td>ASME 1/2NPT, ISO M20x1.5, JIS G1/2</td>
</tr>
<tr>
<td>Communication and input/output</td>
<td>HART 7 communication, 4 to 20 mA DC, Pulse, alarm, or status output, Analog input, FOUNDATION Fieldbus communication, Modbus communication, Pulse, alarm, or status output</td>
</tr>
<tr>
<td>Conformity Standards</td>
<td>Safety Requirements, EMC, PED, EU RoHS, CE marking, NACE, SIL2, NE21, NE107, ABS, DNV, CRN, Morocco Conformity Mark</td>
</tr>
<tr>
<td>Explosion protection</td>
<td>ATEX Ex db/Ex ia, IECEx Ex db/Ex ia, FM Ex db/Ex ia, FMc Ex db/Ex ia, Japan Ex db, Korea Ex db/Ex ia, INMETRO(Brazil) Ex db/Ex ia</td>
</tr>
</tbody>
</table>