CAT.No.CBN015E-12

OVAL

asit INSTRUMENTS Srl

Liquid Gas

Excellent Coriolis Flowmeter by OVAL

## OVAL Coriolis Flowmeter

# ALTImass Series

Big bore type (150 to 250mm) is added to ALTImass Type U.

High accuracy model
**ALTImass Type U**

Single, straight-tube model
**ALTImass Type S**

Low-price, general-purpose model
**ALTImass Type B**

**Sufficient self-diagnosis! Density accuracy improved!**
**Large screen! Setting can be changed in the field!**

Improved zero point stability. Fast response. Extra low flow measurement.
A Coriolis flowmeter capable of highly accurate measurement even for the purpose of short-time filling.

OVAL provides a product lineup to meet customer needs.
You can find your desired Coriolis flowmeter meeting your requirements.

# Ease of use, general-purpose use, and reliability. The source of these features stem from OVAL's ever-evolving sophisticated technologies.

## High accuracy model

The ultimate "U" shaped flow tube,
a fruitage of our optimized and unified design concept.

### ALTImass Type U

**Top-of-the-line model in OVAL Coriolis flowmeters. The highest performance you can think in every aspect - in accuracy, repeatability, flow range, pressure loss, and safety.**

- ◎ U-shaped flow tubes sense the Coriolis force reasonably and efficiently.
- ◎ High accuracy, low pressure loss model. A 1:200 flow range is attainable.
- ◎ Both of sensor integrated and separated transmitters are available.
- ◎ High-temperature sensor is best suited for flow and density measurements of fluids of max. temperature up to +350℃.
- ◎ Cryogenic sensor is applicable as an explosionproof instrument for cryogenic fluids such as LNG.


## Single, straight-tube model

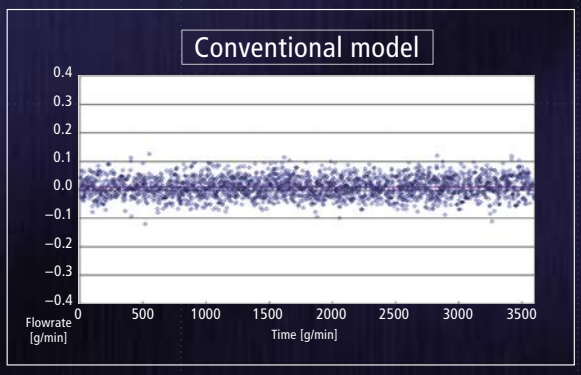
Vibration resistant, single, straight-tube

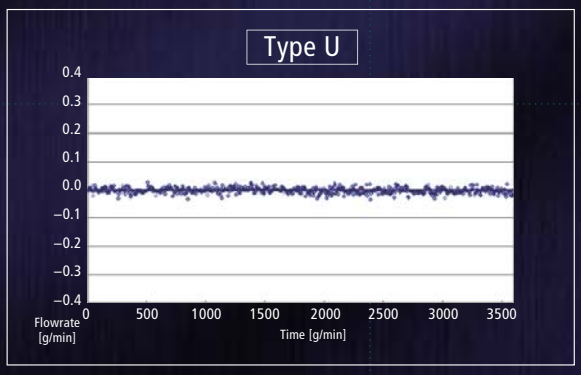
### ALTImass Type S

**Ideally suited for clean processes where the metered process fluid tends to build up or solidify, or where fast and positive process fluid replacement or draining of the pipeline is required.**

- ◎ A mass flowmeter built with a single, straight flow tube. Facilitates cleaning job of wetted parts.
- ◎ Requires minimum installation space, ideally suited for clean processes.
- ◎ A rangeability of 1:30 is attainable.
- ◎ The transmitter comes in a variety of types - mounted integrally or separately with the sensor.

## (1) Improved zero stability




## (2) Improved liquid density accuracy (Type U)

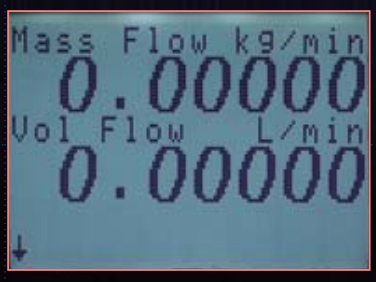
By the improvement of the density measurement processing, density measurement has become more stable than conventional model, improving the liquid density accuracy.

## (3) Improved responsibility

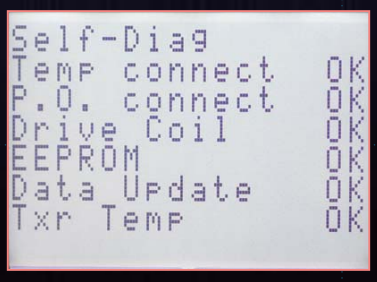
By using high speed real-time processing (10 times as fast as OVAL's conventional model), the responsiveness to change of flowrate and short-time batch measurement has been improved.

## (4) Large-size display! Settings can be changed in the field!

Display screen is large and easy to view with a backlight facilitating setting in a dark place.




(a) Transmitter




(b) Self-check screen

**Display screen of ALTImass Transmitter**

## Low-price, general-purpose model

OVAL technology pursuing

Rainbow type flow tube

# ALTImass Type B

**New direction of Coriolis flowmeter presented by OVAL.**
**Small-size, stable truly innovative product with high cost performance.**

◎ Low priced, general-purpose mass flowmeter.
◎ Rainbow-shaped flow tube design, facilitating self drain, offers ease of cleaning and consistent performance.
◎ A complete set of ferrule fittings are available.
◎ High metering accuracy and low pressure loss. A rangeability of 1:50 is attainable.

## (5) Satisfactory self-diagnostic feature

- Status of the flowmeter is presented by two-color backlight (white, orange) and two LEDs (red, green).
- Input signal (sensor) check for disconnection
- Pipeline vibration check

| Error type | Name (Status display) | Description | Display status at error | | |
|---|---|---|---|---|---|
| | | | RED LED | Green LED | Backlight (White, Orange) |
| Saturated Alarm | Analog Output 1 Saturated | Analog output 1 value exceeds the output range and normal output is not available. | Blink | ON | White |
| | Analog Output 2 Saturated | Analog output 2 value exceeds the output range and normal output is not available. | | | |
| | Pulse Output 1 Saturated | Pulse output 1 value exceeds 11kHz and normal output is not available. | | | |
| | Pulse Output 2 Saturated | Pulse output 2 value exceeds 11kHz and normal output is not available. | | | |
| Sensor Failure | Drive Input Out of Range | Drive frequency is not within the regular range and normal measurement is not possible. | ON | OFF | Orange |
| | Scale Over | Mass flowrate exceeds 110% of maximum allowable flowrate and normal measurement may not be possible. | | | |
| | | Volume flowrate exceeds 110% of maximum allowable flowrate and normal measurement may not be possible. | | | |
| | Temperature Out of Range | Temperature is not within the regular range and normal measurement is not possible. | | | |
| | Density Outside Limit | Density is not within the regular range and normal measurement is not possible. | | | |
| | P.O. Sig Alarm | Pickoff signal voltage is not within the regular range and normal measurement is not possible. | | | |
| | Temperature Connect Error | Temperature sensor cannot be checked for normal connection. | | | |
| | P.O. Connect Error | Pickoff sensor cannot be checked for normal connection. | | | |
| Transmitter Failure | EEPROM Error | Writing to EEPROM is abnormal. | Blink (※1) | OFF | Orange |
| | Data Update Error | Internal data is abnormal. | ON | OFF | Orange |
| Parameter Alarm | Analog 1 Span Set Error | Analog output 1 parameter set value is abnormal. | Blink | ON | White |
| | Analog 2 Span Set Error | Analog output 2 parameter set value is abnormal. | | | |
| | H/L Alarm Point Set Error | H/L Alarm parameter set value is abnormal. | | | |
| Calibration Failure | Auto Zero Failed | Auto Zero has not been completed normally. | Blink | OFF | White |
| | Sensor Stability Check Failed | Air density adjustment has not been completed normally. | | | |
| Slug Flow Alarm | Slug Flow Alarm | Mixed bubble may possibly have caused abnormal measurement value. | Blink | ON | White |
| Xmtr Alarm | Xmtr Temperature Error | Transmitter internal temperature is abnormal. | Blink | ON | White |
| | Xmtr Operating-Time Error | Transmitter operating time exceeds 50000 hours. | | | |

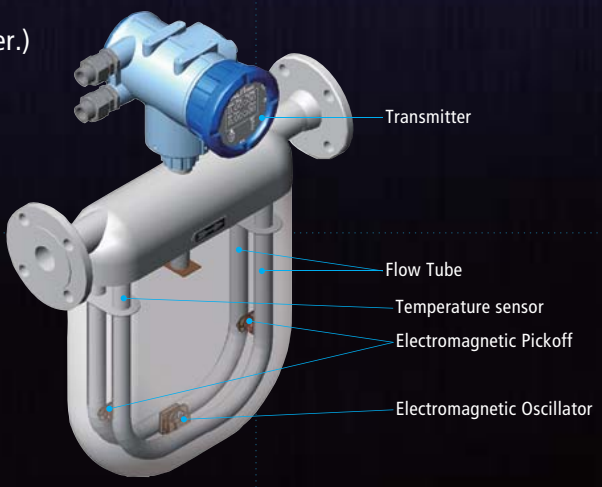
(※1) LED blinking at EEPROM error (100ms interval) is faster than that in other alarm condition (250ms interval)

## (6) Satisfactory maintenance function

- Error logging
- Clock (Accumulated time from power on is saved in the transmitter.)
- Data storage at the shipment from the factory

## ■Measurement Principle and Construction

The mass flowmeter operates on the principle of Coriolis force. A pair of flow tubes fixed at both ends is excited by an electromagnetic oscillator to maintain oscillation at resonant frequency. A twist of these flow tubes takes place in proportion to the mass flowrate of the process fluid, which is sensed by the right-hand and left-hand electromagnetic pickoffs. The transmitter then sends its output as a mass flow signal.




Coriolis Mass Flowmeters

## GENERAL SPECIFICATIONS

**※: For details, please refer to general specification sheets.**

### Type U

Liquid Gas

| Item | | | Description |
|---|---|---|---|
| Model | | | CA00A, CA001, CA003, CA006, CA010, CA015, CA025, CA040, CA050, CA080<br>CA100, CA150, CA15H, CA200, CA20H, CA250 |
| Nominal size | | | 1/4", 10mm, 15mm, 25mm, 40mm, 50mm, 80mm, 100mm, 150mm, 200mm, 250mm |
| Process Connection | | | JIS 10, 20, 30, 40, 63K RF<br>ASME 150, 300, 600 RF, JPI 150, 300, 600 RF<br>DIN PN 10, 16, 25, 40RF, Ferrule, Screw |
| Acceptable fluids | | | Liquids, Gases |
| Flow range | | | 0 to 2800000kg/h (16 models) |
| Accuracy | Flow | Liquids | ±0.1%RD (CA003 to CA080)<br>±0.1%RD±Zero stability error (CA100 to CA250, High temperature service model)<br>±0.2%RD±Zero stability error (CA00A, CA001, High pressure service model) |
| | | Gases | ±0.5%RD±Zero stability error |
| | Density | Liquids | ±0.0005g/mL (CA003 to CA250)<br>±0.003g/mL (CA00A, CA001, High temperature service model)<br>±0.004g/mL (High pressure service model) |
| Temperature range (Differs by explosionproof specification) | | | Standard model : –200 to +200℃ (Applicable to all models) |
| | | | High temperature service model : –40 to +350℃ (CA025 to CA150) |
| | | | Low temperature service model : –200 to +50℃ (CA025 to CA250) (Explosionproof model) |
| Max. operating pressure | | | Depends on flange rating |
| Wetted materials | | | SUS 316L, SUS 316L+Alloy C, Alloy C |
| Explosionproof specification | | | TIIS, ATEX, IECEx, KOSHA/KTL, CSA, GOST, NEPSI |

### Type S

Liquid

| Item | Description |
|---|---|
| Model | CS010, CS015, CS025, CS040, CS050, CS080 |
| Nominal size | 15mm, 25mm, 40mm, 50mm, 80mm |
| Process Connection | JIS 10, 20K RF<br>ASME150 RF, JPI 150 RF<br>Ferrule |
| Acceptable fluids | Liquids |
| Flow range | 0 to 108000kg/h (6 models) |
| Accuracy | ±0.2%RD±Zero stability error |
| Temperature range (Differs by explosionproof specification) | –40 to +130℃ |
| Max. operating press. | 2.45MPa (Depends on flange rating) |
| Wetted materials | SUS 316L |
| Explosionproof specification | TIIS, ATEX, IECEx, KOSHA/KTL, CSA, GOST, NEPSI |

※ In case of non-explosionproof type, the maximum measurement temperature of integral type is 130℃.

### Type B

Liquid

| Item | | Description |
|---|---|---|
| Model | | CB006, CB010, CB015, CB025, CB040, CB050 |
| Nominal size | | 10mm, 15mm, 25mm, 40mm, 50mm |
| Process Connection | | JIS 10, 20, 30K RF<br>ASME 150, 300, 600 RF, JPI 150, 300, 600 RF<br>Ferrule |
| Acceptable fluids | | Liquids |
| Flow range | | 0 to 96000kg/h (6 models) |
| Accuracy | Flowrate | ±0.2%RD±Zero stability error |
| | Density | ±0.003g/mL |
| Temperature range (Differs by explosionproof specification) | | –40 to +125℃ |
| Max. operating press. | | 7.9MPa (Depends on flange rating) |
| Wetted materials | | SUS 316L |
| Explosionproof specification | | TIIS, ATEX, IECEx, KOSHA/KTL, CSA, GOST, NEPSI |

The specification as of July, 2015 is stated in this catalog. Specifications and design are subject to change without notice.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