

**OVAL Colioris Flowmeter** 



Sufficient self-diagnosis! Density accuracy improved! Large screen! Setting changes available on-site!

Improved zero point stability. Fast response. A Coriolis flowmeter capable of highly accurate measurement even at extra low flow range and short-time filling.





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



# (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.



# **OVAL Coriolis Flowmeter ALTImass Series**



# <section-header><text><text><text><text><text>

◎ 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.			
	Analog Output 2 Saturated	Analog output 2 value exceeds the output range and normal output is not available.			14/1-14-1
	Pulse Output 1 Saturated	Pulse output 1 value exceeds 11kHz and normal output is not available.	BIINK	ON	vvnite
	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.			
	Scale Over	Mass flowrate exceeds 110% of max. allowable range; possible failure to make proper measurement.			
	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.	ON	OFF	Orange
	P.O. Sig Error	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	An error in parameters; inactive operation.	Blink (%1)	OFF	Orange
	Data Update Error	Internal data is abnormal.	ON	OFF	Orange
Parameter Alarm	Analog 1 Set Alarm	Analog output 1 parameter set value is abnormal.			
	Analog 2 Set Alarm	Analog output 2 parameter set value is abnormal.	Blink	ON	White
	H/L Alarm Point Set Alarm	H/L Alarm parameter set value is abnormal.			
Calibration Failure	Auto Zero Failed	Auto Zero has not been completed normally.		0.55	144.1
	Sensor Stability Check Failed	Air density adjustment has not been completed normally.	Blink	OFF	White
Slug Flow Alarm	Slug Flow Alarm	Mixed bubble may possibly have caused abnormal measurement value.	Blink	ON	White
Transmitter Alarm	Xmtr Temperature Alarm	Transmitter internal temperature is abnormal.	Blink	ON	White
	Xmtr Operating-Time Over	When the number of run hours has exceeded 100,000 hours.	OFF	ON	White

(%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.





#### **GENERAL SPECIFICATIONS**

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



Item			Description		
Model			CA00A, CA001, CA003, CA006, CA010, CA015, CA025, CA040, CA050, CA080, 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 ASME 150, 300, 600 RF, JPI 150, 300, 600 RF DIN PN 10, 16, 25, 40RF, Ferrule, Screw		
Acceptable fluids			Liquids, Gases		
Flow range			0 to 2800000kg/h (16 models)		
F	Flow	Liquids	±0.1%RD (CA003 to CA200) ±0.1%RD±Zero stability error (CA20H to CA250, High temperature service model) ±0.2%RD (CA00A, CA001) ±0.2%RD±Zero stability error (High pressure service model)		
Accuracy		Gases	±0.5%RD±Zero stability error		
	Density	Liquids	±0.0005g/mL (CA003 to CA250) ±0.003g/mL (CA00A, CA001, High temperature service model) ±0.004g/mL (High pressure service model)		
Temperature range (Differs by explosionproof specification)			Standard model : -200 to +200°C (Applicable to all models)		
		oof	High temperature service model : -40 to +350°C (CA025 to CA150)		
			Low temperature service model : -200 to +50°C (CA025 to CA250) (Explosionproof model)		
Max. operating pressure		re	Depends on flange rating		
Wetted materials			SUS 316L, SUS 316L + Alloy C, Alloy C		
Explosionproof specification		cation	TIIS, ATEX, IECEx, KCs, CSA, EAC, NEPSI, ITRI		
Maritime certification			DNV GL		



Type B

Item	Description		
Model	CS010, CS015, CS025, CS040, CS050, CSR50, CS080		
Nominal size	10mm, 15mm, 25mm, 40mm, 50mm, 80mm		
Process Connection	JIS 10, 20K RF ASME150 RF, JPI 150 RF Ferrule		
Acceptable fluids	Liquids		
Flow range	0 to 108000kg/h (6 models)		
Accuracy	±0.15%RD±Zero stability error (Titanium alloy) ±0.2%RD±Zero stability error (SUS 316L)		
Temperature range (Differs by explosionproof specification)	-40 to +130°C		
Max. operating press.	Depends on flange rating		
Wetted materials	Titanium alloy, SUS 316L		
Explosionproof specification	TIIS, ATEX, IECEX, KCs, CSA, EAC, NEPSI, ITRI		
Maritime certification	DNV GL		
* In case of non-explosionproof ty	pe, the maximum measurement temperature of integral type is 130°C.		

Item		Description	
Model		CB006, CB010, CB015, CB025, CB040, CB050	
Nominal size		10mm, 15mm, 25mm, 40mm, 50mm	
Process Connection		JIS 10, 20, 30K RF ASME 150, 300, 600 RF, JPI 150, 300, 600 RF Ferrule	
Acceptable fluids		Liquids	
Flow range		0 to 96000kg/h (6 models)	
Δοςμερογ	Flowrate	±0.2%RD	
Accuracy	Density	±0.003g/mL	
Temperature range (Differs by explosionproof s	pecification)	-40 to +130°C	
Max. operating press.		Depends on flange rating	
Wetted materials		SUS 316L	
Explosionproof specification		TIIS, ATEX, IECEx, KCs, CSA, EAC, NEPSI, ITRI	
Maritime certification		DNV GL	

#### High-Performance Small Transmitter (Rack-Mount) MODEL: PA5K

Item		Description		
Connectable sensor		Mass flowmeter ALTImass Type U, S, and B		
Power supply		AD specifications: 100V – 240V 50/60Hz (allowable voltage range: AC 85V – 264V) DC specifications: 20V – 30V (recommended power supply capacity of DC specifications: 24VDC, 1A or higher)		
Power consumption		Max. 21VA or Max. 7W		
Ambient temperature		-20 to +50°C		
Transmission distance		Type U: Max. 200m (CA00A, CA001: Max. 100m) Type S: Max. 100m (titanium), Max. 50m (stainless steel) Type B: Max. 50m (all items are connected with dedicated 9-core cable) %1		
Explosionproof configuration		TIIS, ATEX, IECEx		
Communication protocol	HART communication type (standard)	Superimposed on HART 7 analog output 1		
	Modbus communication type	RS-485 Modbus protocol RTU or ASCII Baudrate: 9600bps, 19200bps, 38400bps (Standard) *Analog output 1and 2 are not applicable to Modbus communication type.		
Display / Operation		LED for operating status display 2 (red) (green), zeroing button		

This product may be used in applications as a flowmeter, densitometer, gas meter, water meter, and concentration measurement device, as well as in systems functioning as a calorimeter and viscometer.

The specification as of October, 2019 is stated in this catalog. Specifications and design are subject to change without notice.



# OVAL Corporation

3-10-8 Kamiochiai, Shinjuku-ku, Tokyo 161-8508 Phone: 81-3-3360-5121 FAX: 81-3-3365-8605

http://www.oval.co.jp/english

