Liquid

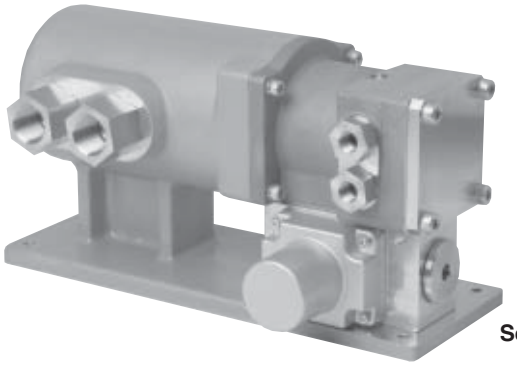
OVAL

Servo-controlled Microflow Meter
Hi SHOT SERVO 1

GENERAL SPECIFICATION
GS.No.GBB701E-3

■GENERAL

A servo controlled flowmeter for extralow flows "Hi Shot Servo 1" is the ripe fruitage of the specialized PD meter manufacturing experience and advanced know-how the OVAL has acquired over many years. By maintaining a zero pressure differential across the meter, accurate measurement over a wide flow range with fast speed of response time has successfully been achieved . This system consists of a basic meter and a controller with a display to show measured variables and control state. When used in combination with a PC, the operator can reconfigure parameters to best suit his specific process requirements. Typical applications include measurement of injected fluid quantity of the injector, playing the role of the master in extremely low flow measurement, and elsewhere where accurate flowmetering and control are required.



Sensor

Controller

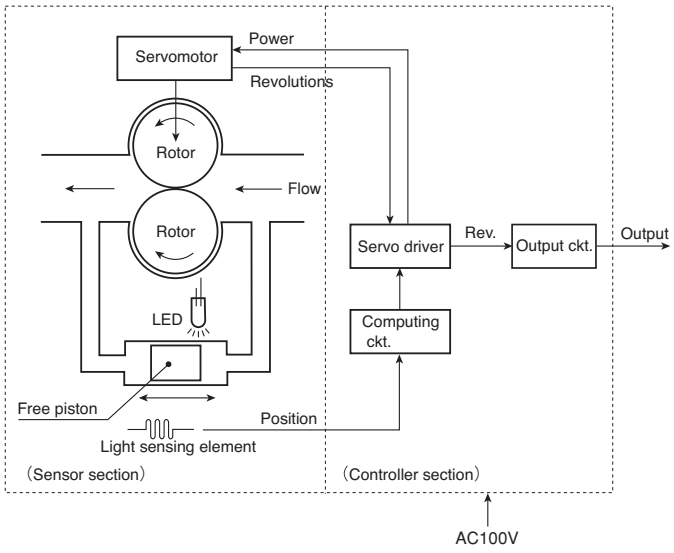
■FEATURES

1. Ensures accurate flowmetering by maintaining pressu differential across the meter at zero.
2. A wide flow range (1:300) with high meter accuracy and fa response.
3. A magnetic coupling used between the servomotor and roto serves to improve sealing performance and endurance even in low flow ranges.
4. A filter built in the meter body affords protection against fault in external filters.
5. Reconfiguring control parameters and setting individual met factors to suit your specific process is simple on the controller via a PC.
6. The controller display provides the operator with quick gra of flow signals and operating status, simplifying his maintenance management.
7. For ease of maintenance, unitized components facilita prompt parts replacement without sacrificing performance.
8. Explosionproof models are also availabl

●Controller

Item		Description
Output signal	Total flow	Open collector （NPN Transistor, Capacity：10 to 30VDC, 50mADC）
		Output frequency：Max. 50kHz, Factored / unfactored
		（Voltage pulse available as option.（"0"：1V max., "1"：5V min.））
	Temperature	4 to 20mADC（at 0 to 100℃）, Max. load resistance：500Ω
	Hardware error	Contact output（"b" contact）, Load resistance：5A, Instruction load：1A
Display	Type	7-segments, 8-digit LCD
	Menu items	Grand total, resettable total, Instant flowrate, fluid temp., error message, and measurement unit
	measurement unit	Grand total and resettable total: L (Reads in the same unit as output pulse) Instant flowrate: L/h Fluid temp.: °C
Flowrate factor		Full scale 30L/h model：196nL/P, Full scale 60L/h model：393nL/P（Output frequency variable up to 50kHz）
Ambient temp. range		0 to 50℃
Power supply		AC100V 50/60Hz（AC200V available）
Current		1.4A
Electricity		Approx. 80W
Apparent power		130VA
Transmission length		10 meters (between sensor and controller)
Construction		Non-explosionproof
Weight		Approx. 13 kg
Finish		Munsell N1.0

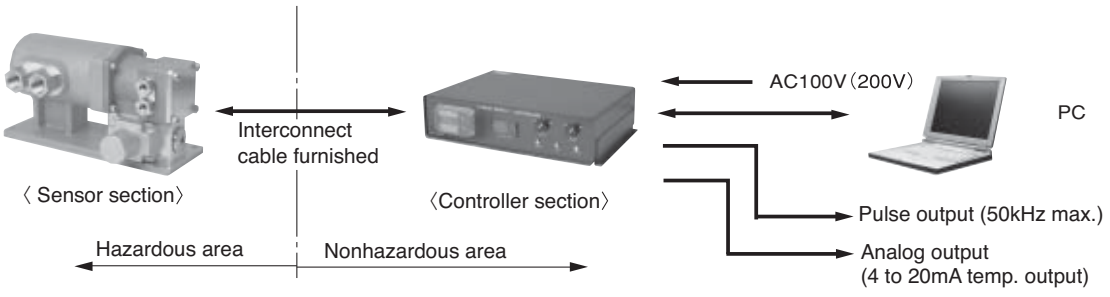
■SCHEMATIC DIAGRAM



Operating Principle

When the flow of a fluid runs across the meter, a pressure differential is created between the inlet and output. The resultant pressure differential moves the free piston incorporated in the capillary tube in the bypass. A light sensitive element locates the free piston position at all times; the position information is via the controller fed back to the servomotor, which is used to maintain the pressure differential between the inlet and output connections of rotors at a level close to zero. With no pressure differential, measurement over a wide flow range is thus achieved at a high degree of accuracy. An encoder synchronized with the revolution of servomotor produces a high rate pulse signal of exceptionally high resolution.

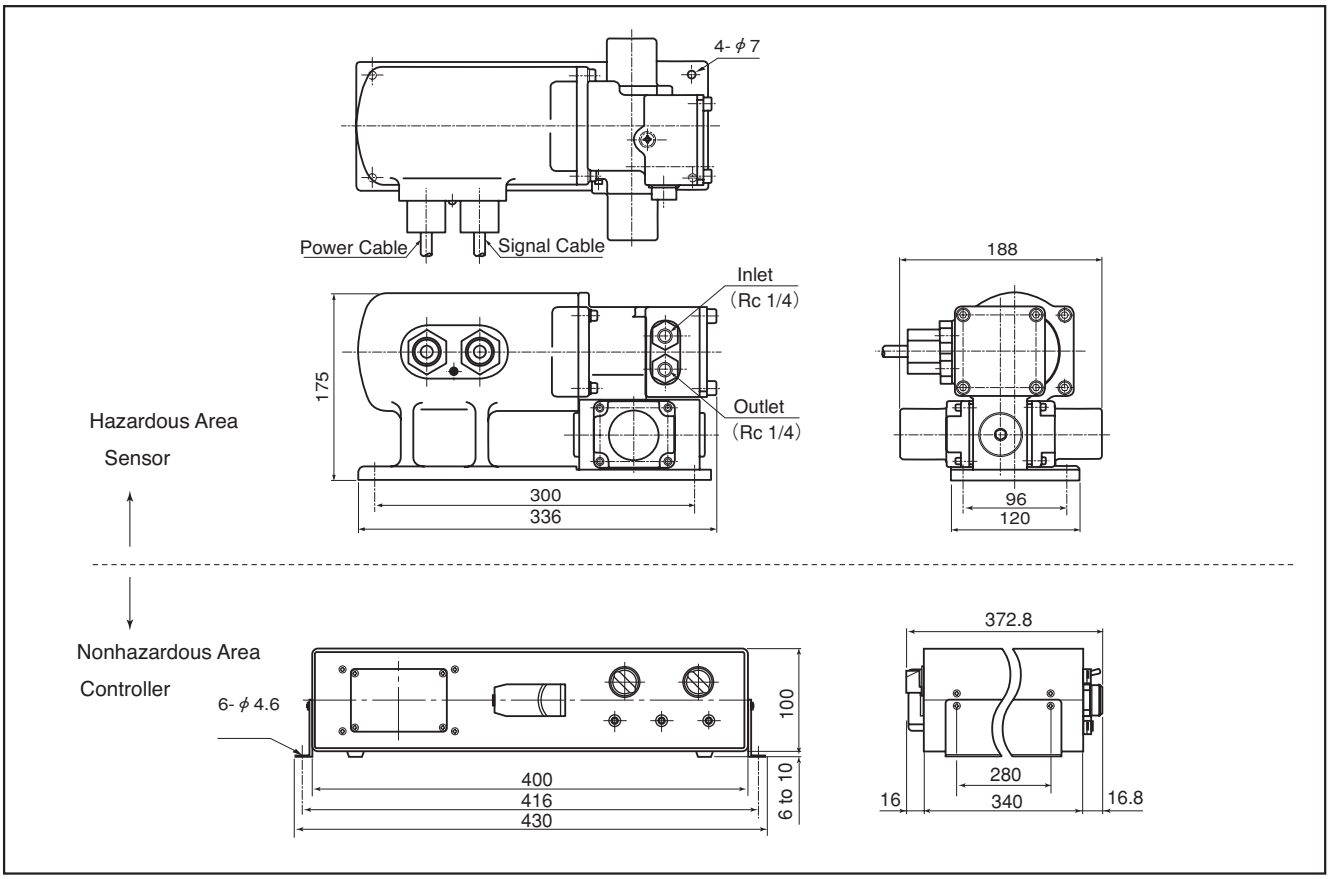
■RECEIVING INSTRUMENTS HOOKUP DIAGAM



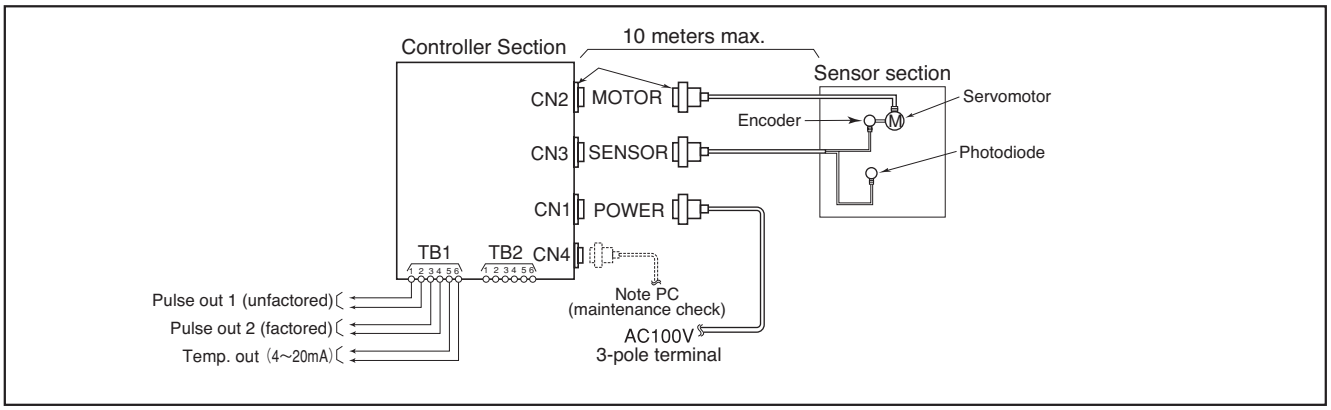
■PRODUCT CODE EXPLANATION

Item	Product Code ① ② ③	④	⑤	⑥ ⑦ ⑧	⑨	⑩	⑪	⑫	⑬	⑭	—	⑮	⑯	⑰	Description
Model	**L H S**														Hi SHOT SERVO 1
Construction		**1**													Remotely located controller
Application category			**D**												Light oil
			G												Gasoline
			Z												Others
Flow range				**0 3 0**											0.1 to 30 L/h
				0 6 0											0.2 to 60 L/h
Meter materials					**C**										Stainless steel（standard）
					Z										Others
Pressure rating						**S**									1 MPa
Process connection							**1**								Rc 1/4
Operating temp. range								**1**							Standard（−10 to +80℃）
								9							Others
Explosionproof									**0**						Non-explosionproof
									1						TIIS explosionproof
									2						ATEX explosionproof（in preparation）
Reserved										**0**	—				Always "0"
Power to the controller												**1**			100VAC 50/60Hz
												2			200VAC 50/60Hz
												3			110/115VAC 50/60Hz
												4			220/230VAC 50/60Hz
Controller output signals													**0**		Output not provided
													1		Pulse output 1（unfactored）
													2		Pulse output 1（unfactored）, 2（factored）
													3		Pulse output 1（unfactored）+temp. out（4 to 20mA）
													4		Pulse output 1（unfactored）, 2（factored）+temp. out（4 to 20mA）
													9		Other than above
Reserved														**0**	Always "0"

■OUTLINE DIMENSIONS [Unit in mm]



■WIRING CONNECTIONS



■FILTER

To safeguard the meter against foreign solids entrained in the process fluid, locate an external filter of the same mesh size. Or periodically replace the filter (furnished as standard accessory) installed at the inlet of the meter with new one.

■OPERATING PRECAUTIONS

①This meter is precisely adjusted for measuring extremely low flows; Use extra care when unpacking, installing in the pipeline, and commencing a test run.

②Never allow foreign solids to get into the measuring chamber.

③Thoroughly flush the pipeline.

④Never allow the rotors to spin too fast by directing compressed air, etc. or admitting an excessively high rate of flow.

⑤For the built-in filter, use only OVAL dedicated filters.

■WHEN YOU INQUIRE, PLEASE SUPPLY US WITH THEFOLLOWING INFORMATION

1. Meter ty	LHS _____
2. Metered flu	Name Viscosity mpa・s Sp. gr
3. Flow range（L/h）	Max. Normal Min
4. Fluid temp.（℃）	Max. Normal Min
5. Ambient temp.（	Max. Normal Min
6. Pressure（MP	Max. Normal Min
7. Fluid flow directi	Bottom ⟶ top only
8. Pulse outp	☐ Open collector ☐ Voltage pulse（5VDC）
9. Explosionpro	☐ Req'd Type _____ ☐ Not req'd
10. Peq'd number of un	Accessories incl. _____
11. Applicat	（additive dosing, sampling, blending process, etc.） ☐ Total flow ☐ Volume display ☐ Record ☐ Flow control ☐ Batch control ☐ Hookup to a PC, etc. ☐ Others _____
12. Receiving instrum	Type, manufacturer name, model, specifications（input / output, power, etc.）
13. Controller-receiver distance	Standard 5 meters （10 meters max.）