

Compact Electromagnetic Flow Sensor

VNS

Measurement
of
pulsating flow

Measurement of
Sodium
Hypochlorite and
Caustic Soda

Detection of gas
lock of a constant
volume pump



This is the most suitable for water treatment facilities, etc.
Also usable for steady flow besides pulsating flow.

Specification		Other special specifications, please contact us.			
Classification	Item	Details			
Pulsation measurement mode specification	Model	VNS05-RF/RE	VNS10-RF/RE	VNS20-RF/RE	
	Accuracy guaranteed flow range (L/min)	0.01~1	0.1~10	0.6~60	
	Accuracy (Liquid temperature at 25°C)	Frequency pulse	±5.0%RS (100% to 20% of accuracy guaranteed maximum flow) ±1.0%FS (20% to 1% of accuracy guaranteed maximum flow)		
Steady flow measurement mode specification	Accuracy guaranteed-flow rate range (L/min)	0.05~1	0.5~10	3.0~60	
	Low flow cutoff (L/min)	0.025	0.25	1.5	
	Accuracy (Liquid temperature at 25°C)	Frequency pulse	±2.5%RS (100% to 20% of accuracy guaranteed maximum flow) ±0.5%FS (20% to 5% of accuracy guaranteed maximum flow)		
Common specification for each mode		Unit pulse	±2.0%RS (100% to 20% of accuracy guaranteed maximum flow) ±0.4%FS (20% to 5% of accuracy guaranteed maximum flow)		
	Pipe installation	Socket end union joint 16A		Socket end union joint 20A	
	Fluid temperature range	0 to 40°C (No freezing)			
	Fluid conductivity rate	14mS/cm or more			
	Measurable fluid	VNS□□-F: For sodium hypochlorite [Concentration 1 to 12%] VNS□□-E: For caustic soda [Concentration 10 to 25%]			
	Maximum working pressure	1MPa			
	Pressure loss (@Accuracy guaranteed maximum flow)	0.02MPa or less			
	Ambient working temperature/humidity	Temperature: -20°C to 60°C Humidity : 35% to 85%RH (No freezing)			
	Responsiveness	63% response Damping time : 2s (Standard) Settable in 0.1 sec steps at factory from 0.1 to 600 secs.			
	Signal cable	Length : 0.5m 4 core (Red: Power supply + wire / Blue: GND / White: Output 1 / Yellow: Output 2)			
	LED display	Two-color 1 light (Green: Blinks during measurement Red: Lights up or blinks in the event of error)			
	Installation position	Free (Vertical piping is recommended.)			
	Output 1 *2	Output specification	NPN open collector pulse Maximum load 28V DC 20mA DC Residual voltage at ON time 1V or less Minimum Pulse ON time 25ms (@Frequency pulse : 200Hz) Duty ratio 1 : 1		
		Frequency pulse	Standard 200Hz (Settable in 0.1Hz steps from 20 to 400Hz at factory before delivery)		
		Unit pulse	0.001L/P (Standard)	0.01L/P (Standard)	0.1L/P (Standard)
		Alarm *3	Selectable from Normal Open (standard) and Normal Close. Each alarm item is settable at factory before delivery : abnormal excitation / memory abnormality / power supply voltage drop / no water / excessive fluid noise / reverse flow / excessive flow		
		Switch *4	Selectable from Normal Open (standard) and Normal Close. Level or window judgment value : settable at factory before delivery in 1% step from 0 to 100% of accuracy guaranteed maximum flow		
	Output 2 *2	Output specification	NPN open collector pulse Maximum load 30V DC 20mA DC Residual voltage at ON time 1V or less Minimum Pulse ON time 25ms (@Frequency pulse : 200Hz) Duty ratio 1 : 1		
		Unit pulse	Same as output 1		
		Alarm *3	Same as output 1		
Switch *4		Same as output 1			
Protection level	Indoor use (Equivalent to IP64)				
Consumption current	60mA DC or less				
Power supply	24VDC (±10%) Power supply shall be supplied with isolated power supply and 1 unit of power supply is connected to 1 unit of VNS. In addition, in the case of pulsating flow mode measurement, grounding of power supply FG terminal (Class D or more) is required.				
Wetted materials	VNS□□-F: Main body (PEEK resin) / Electrodes - earth ring (Titanium) / O-ring (FKM) VNS□□-E: Main body (PEEK resin) / Electrodes - earth ring (Equivalent to hastelloyC22) / O-ring (EPDM)				

*1: Frequency at accuracy guaranteed maximum flow rate

*2: All are factory setting, and setting change on site is not available.

*3: Alarm is selectable only either one of Output 1 or Output 2.

*4: In case window judgment is selected, other function is not selectable for output 1 and output 2.
(Note) CE mark certification for lightening surge has not obtained.

Feature

Capable of detecting the gas lock of sodium hypochlorite

Gas lock detection is possible through the interlocking with actuating signal of pump. Gas lock is a phenomenon under which gas accumulates in a certain chamber of diaphragm of the metering pump and sodium hypochlorite is not transferred.

Air chamber is not required

Is a measurement performed while eliminating the pulsation with air chamber?
In the air chamber, time lag arises up to the buildup of pressure, therefore, a delay occurs in the measurement of flow rate.

Image of discharge flow from diaphragm electromagnetic metering pump

*Pulsating flow other than diaphragm electromagnetic metering pump is not covered by our accuracy guarantee.

Through the adoption of VNS
Air chamber is not required!
Measurement of pulsating flow is possible!

Wiring diagram (As to the wiring technique of attached cord)

Please set the sink current for open collector output of output 1 and output 2 to 20mA or less. For your reference, the recommendation for pull-up resistor is [10 to 20kΩ]

Sink current calculation formula

$$I_S = \frac{V}{R} \leq 20[\text{mA}]$$

V: Power supply (V)
R: Pull-up resistor (Ω)

External dimensions

Model	L	W	H	φD	R (Note)	Weight
VNS05	95	47	51	5.2	16A union (Male)	210g
VNS10	95	47	54	10	16A union (Male)	210g
VNS20	110	49	64	20	20A union (Male)	310g

Note: Exclusive of nion
Cable length: 0.5m

Manufactured and Distributed by

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Technical specifications in this catalog are up-to-date as of June 2020.

To Our Customers

Please understand that product specifications may be changed without notice in order to improve performance. We are always happy to provide the latest catalogs and brochures, and respond to inquiries made to our offices.

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