

# ND Flow Sensor for Liquid

The ND-type flow sensor has the measuring principle of impellers and is suitable for measuring various types of liquid. It is one of our best-selling products with high quality.



## Feature

- Excellent repeatability
- Amplifier built-in magnetic sensor, which is strong against noise, operates in proportion to the flow velocity.
- Pulse output by open collectors.
- Measures a wide range of flow rate with high accuracy.
- Simple structure due to the tangential flow impeller method employed as a measuring principle.
- Capable of measuring various liquids.
- CE certified product
- RoHS compliant (Complies with the RoHS directive to address the environmental issues.)

## Specifications

Model	ND05-N ATAAO	ND05-P ATAAO	ND05-T ATAAA	ND10-N ATAAA	ND10-P ATAAA	ND10-T ATAAA	ND20-N ATAAA	ND20-P ATAAA
Flow rate range	0.3 – 3.0 L/min			1.5 – 20 L/min		1.0 – 10 L/min	3.0 – 60 L/min	
Accuracy	±2%RS (In the standard installation position)							
Measurable liquid	Types of measurable liquid (Please decide based on the major materials exposed to fluid, which are described below.)							
Maximum operating pressure	1MPa (When the liquid is at 20 °C)							
Pressure loss	12 kPa or less (at 3 L/min)			20 kPa or less (at 20 L/min)		15 kPa or less (at 10 L/min)	60 kPa or less (at 60 L/min)	
Range of liquid viscosity	0.5 – 1.5 mPa · s (Water equivalent)							
Fluid temperature range	0 to + 70°C	0 to + 60°C		0 to + 70°C	0 to + 60°C		0 to + 70°C	0 to + 60°C
Responsiveness	10 to +70°C 35 to 85%RH (No condensing)							
Output signal	Open collector pulse, 4 wire Length of wire: Approx. 600 mm Duty ratio $3/7 < A/B < 7/3$							
Pulse constant	2.5 mL/P			7.69 mL/P	7.59 mL/P		25 mL/P	

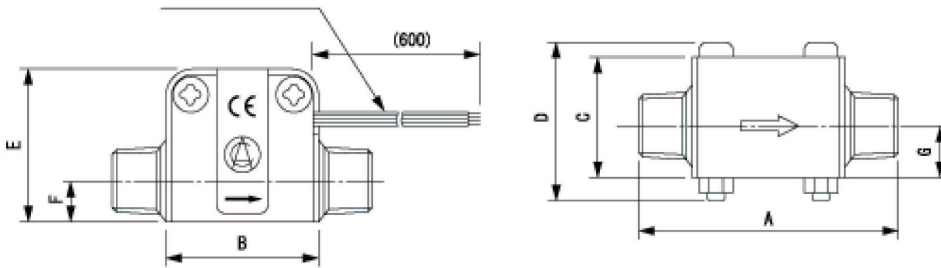
Maximum frequency	20Hz	Approx. 44Hz	Approx.22Hz	40Hz					
Minimum pulse width	0.015s	Approx. 0.007s	Approx.0.014s	0.0075s					
Applied voltage range	3 – 24VDD								
Power consumption	0.2 VA or less								
Structure	Splash-proof structure (IP64 compatible) for indoor use								
Connection	R1/2			R3/4					
Mass	Approx. 150g		Approx. 120g						
Major materials of the part exposed to liquid	Case	Denatured PPO	PP	ETFE	Denatured PPO	PP	ETFE	Denatured PPO	PP
	Impellers	POM		ETFE	POM		ETFE	POM	
	Pivot	SUS304	PA	ETFE	SUS304	PA	ETFE	SUS304	
	O-ring	NBR	FKM		NBR	FKM		NBR	FKM
	Magnet	Sa-Co *			Ba-Fe		Sm-Co*	Ba-Fe	

– ND05-TATAAA and ND10-TATAAA should only be installed in the standard installation position.

\*1. Apply the same voltage to the sensor power supply (red – black) and pulse output (blue and white – black).

\*2. This magnet is not exposed to liquid.

## Dimensions



MODEL	ND05	ND10	ND20
A	80	80	110
B	47	47	68
C	375	37.5	50
D	49	49	65
E	47	47	68
F	12.5	12.5	18
G	16	16	23

## Summary of Types

Model	Type
ND05-T ATAAA-RC	0.3~3(L/min) 、 Temp. 0~60°C 、 Max. Frequency & Pulse width 20Hz 、 0.015s
ND05-P ATAAC-RC	0.3~3(L/min) 、 Temp. 0~60°C 、 Max. Frequency & Pulse width 20Hz 、 0.015s
ND05-N ATAAC-RC	0.3~3(L/min) 、 Temp. 0~70°C 、 Max. Frequency & Pulse width 20Hz 、 0.015s
ND10-T ATAAA-RC	1.0~10(L/min) 、 Temp. 0~60°C 、 Max. Frequency & Pulse width 22Hz 、 0.014s
ND10-P ATAAA-RC	1.5~20(L/min) 、 Temp. 0~60°C 、 Max. Frequency & Pulse width 44Hz 、 0.007s
ND10-N ATAAA-RC	1.5~20(L/min) 、 Temp. 0~70°C 、 Max. Frequency & Pulse width 44Hz 、 0.007s
ND20-P ATAAA-RC	3.0~60(L/min) 、 Temp. 0~60°C 、 Max. Frequency & Pulse width 40Hz 、 0.0075s
ND20-N ATAAA-RC	3.0~60(L/min) 、 Temp. 0~70°C 、 Max. Frequency & Pulse width 40Hz 、 0.0075s