

# TECHNICAL GUIDANCE

Low-priced flowmeters for chillers used in the semiconductor industry that use Fluorinert and Galden

## W-2000N MINI-WHEEL FLOWMETE (Impeller Flowmeter)

### OUTLINE

The W-2000N is a impeller-type flowmeter that can be used on chillers that use Fluorinert, Galden, and other fluids. There is a magnetic impeller in the flow path, and the number of its rotations that is proportional to the flow rate is counted in a non-contact manner using a magnetic sensor. As it is inexpensive and able to be used in both low and high temperature conditions, the W-2000 series is optimal for use on semiconductor chillers.

### FEATURES

- Pulse output
- Covering a wide fluid temperature range from -20 to +100°C
- A minimum range of 0.5 to 3 L/min and a maximum range of 6 to 60 L/min
- Easy overhauling, cleaning, and maintenance
- Low price owing to intensive cost down
- Complying with RoHS

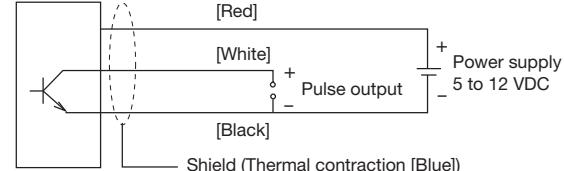


### STANDARD SPECIFICATIONS

- Measuring fluid : Liquids including Fluorinert, Galden, and ethylene glycol. The liquid viscosity must be 2 mPa·s or less.
- Fluid pressure : Maximum 1.0 MPa
- Fluid temperature : See MODEL CODE table
- Ambient temperature : 5 to 60°C
- Flow direction and posture : The fluid flows in a horizontal or vertical direction. (When the fluid flows in a horizontal direction, a posture in which the shaft of the impeller is in a horizontal orientation and the fluid flows at the top of the impeller will be obtained.)
- Output : Open collector pulse (Unscaled)
- Pulse frequency : Approximately 85 to 105 Hz at the maximum flow rate  
(Actual measured value is indicated on the product name plate.)

- Accuracy : ±5% of F.S. for model W-2012N  
±3% of F.S. for models W-2013N to 2019N
- Construction : Waterproof (Equivalent to IP65)
- Power supply : 5 to 12 VDC, 12 mA
- Load rating : Maximum 12 VDC, 15 mA
- Electric connection : 3-core cable (UL2517) AWG24

#### [WIRING]



### MODEL CODE

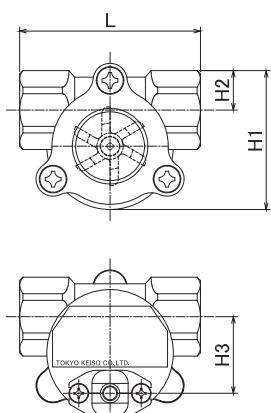
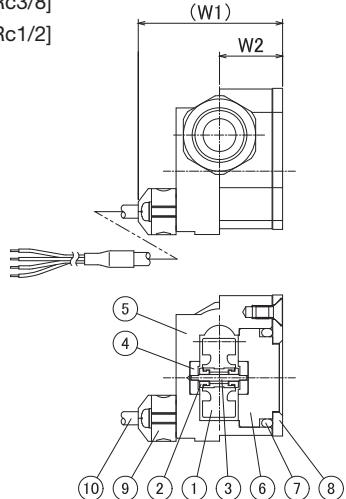
Model code										Description	
W-20	1	<input type="checkbox"/>	N	-	<input type="checkbox"/>	<input type="checkbox"/>	-	<input type="checkbox"/>	<input type="checkbox"/>		
Output	1									Pulse output: Open collector	
		2	N							0.5 to 3 L/min	(Flow path nozzle Φ 4.0)
Range of flow rate		3	N							0.7 to 5 L/min	(Flow path nozzle Φ 5.7)
Connection size		4	N							1.5 to 15 L/min	(Flow path nozzle Φ 10)
		5	N							2 to 20 L/min	(Flow path nozzle Φ 11.5)
		6	N							3 to 30 L/min	(Flow path nozzle Φ 14)
		7	N							4 to 40 L/min	(Flow path nozzle Φ 16)
		8	N							5 to 50 L/min	(Flow path nozzle Φ 18)
		9	N							6 to 60 L/min	(Flow path nozzle Φ 18)
Inflow direction		R								Right to Left or Bottom to Top (Impeller on left side against flow path) (Standard)	
		L								Left to Right or Bottom to Top (Impeller on right side against flow path)	
Cable length		2								2 m	
Material of O-ring			E							EPDM (Ethylene propylene rubber) *1 Recommended temperature range: -20 to +80°C	
Material of monitoring window			S							FVMQ (Fluorosilicone rubber) *1 Recommended temperature range: -20 to +100°C	
Materials of Impeller, bearing, shaft, and bushing (Indicated as groups)				5						SCS14 (No monitoring)	
Special connection specifications				0						Group 5	

\*1 When an O-ring made of a material that withstands low and high temperatures is used, it is recommended that the product be used within the recommended temperature range.

## DIMENSIONS AND CONSTRUCTION

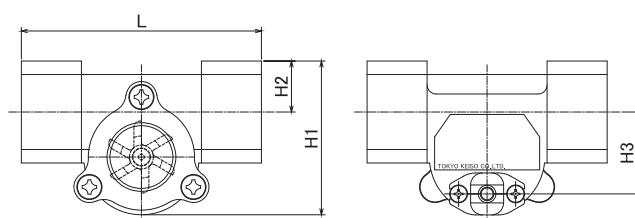
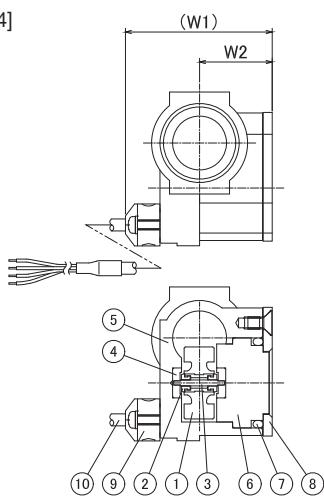
[Connection Rc3/8]

[Connection Rc1/2]



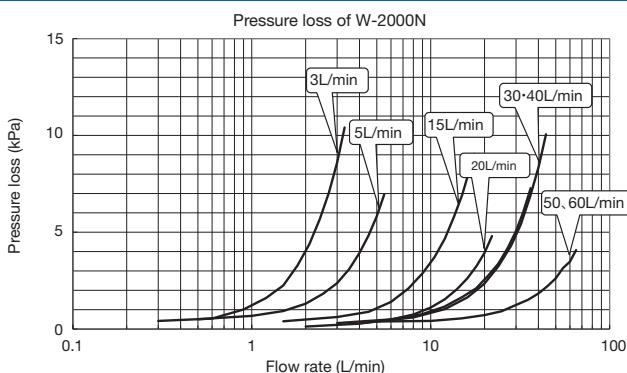
No.	Name	Material group 5
1	Wheel (Impeller)	PPS + Fe (Plastic magnet)
2	Bearing	Carbon-containing PTFE
3	Shaft	HC-276
4	Bush	PPS
5	Flow path body	SCS14
6	Monitoring window	SCS14
7	O-ring	See MODEL CODE
8	Cover plate	SUS316
9	Holder	PBT
10	Cable	PVC sheath

[Connection Rc3/4]



Connection	L	H1	H2	H3	W1	W2	Mass
Rc3/8	55	42.5	12	23.3	44	19.3	330 g
Rc1/2	70	45	14.5	23.3	47	22.3	400 g
Rc3/4	80	51.5	17	27.3	49	24.3	490 g

## PRESSURE LOSS



Note: This graph shows reference values for pressure losses that may occur when there are no drifts or swirling flows and the viscosity is equivalent to that of water.

## NOTES

- Do not run signal cables along with other power or motor cables.
- The inside diameter of process piping and fittings must be greater than the diameter of the flow path nozzle.
- Install this product in a location where it will not be affected by magnetic fields.
- When using the product, ensure that the main body is filled with water and that there is no air near the Impeller.
- Do not use air blowers to blow the product. Otherwise, the Impeller and/or shaft may be damaged.
- It is recommended that a straight section with a diameter of 10 D or larger (D: Inside diameter of the connected pipe) be provided in the upstream piping if an uneven or swirling flow is expected to occur.

\* Specification is subject to change without notice.



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