



TECHNICAL GUIDANCE

Cost performance thoroughly pursued
Suitable for semiconductor chiller and various cooling water devices

W-2000

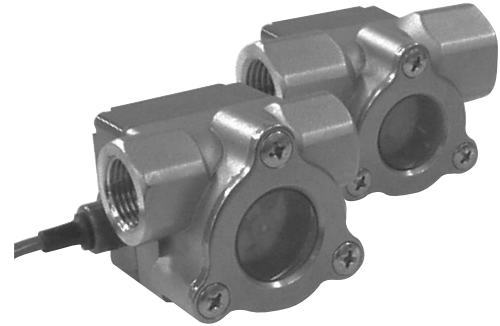
MINI-WHEEL FLOWMETER

OUTLINE

The technology of the W-200 series with the established reputation is accumulated in the W-2000 series Mini-wheel Flowmeter which can cope with the fluid temperature from -30 to 100°C in the precision casting of the body, making it very compact and excellent in the cost performance.

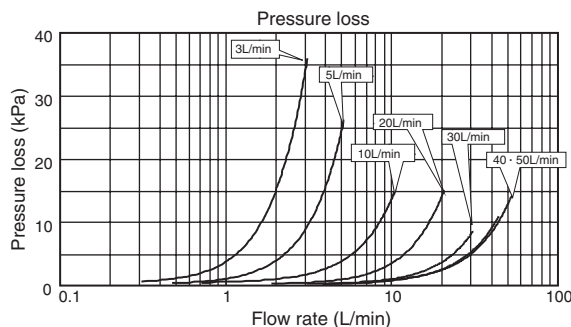
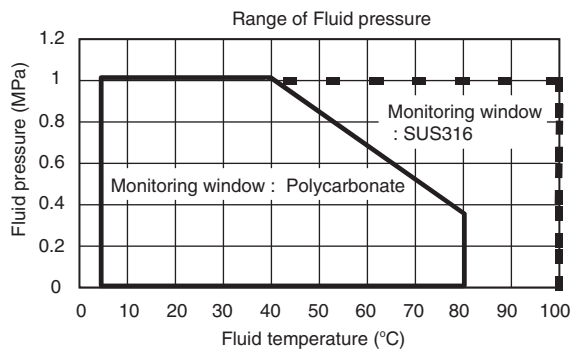
FEATURES

- Applicable for the fluid temperature between -30 and 100°C in the pulse output type.
- Very compact and light in the precision casting of the body.
- Less-expensive by the thorough cost control
- Current output or pulse output available
- Possible to watch the rotation of wheel
- Easy to disassemble or wash



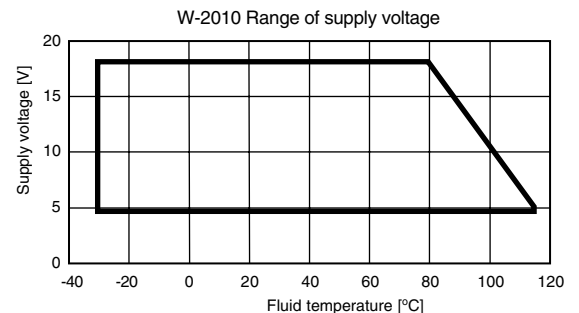
STANDARD SPECIFICATION

- Measuring fluid : Various liquids (Water, Fluorinert, Galden, Ethylene glycol etc.) (To be less than $2.0 \text{ mPa}\cdot\text{s}$)
- Fluid pressure : Max. 1.0 MPa
(Refer to "Range of Fluid Pressure".)
- Ambient temp. : 5 to 60°C
- Installation : Flow of fluid: Make it parallel or vertical.
(Make the position of wheel shaft parallel and the flow path to be on the upper part of wheel.)
- Construction : Drip-proof (Equivalent to IP62)



TRANSMITTER SPECIFICATION

- Open collector pulse
 - Output : Unscaled pulse
 - Power supply : DC5 to 18V, 12mA
(Refer to "Range of Supply voltage".)
 - Fluid temperature : -30 to 100°C
(Refer to "Range of Supply voltage".)
 - Load rating : DC18V (max), 15mA
 - Duty : H (Changing depending on flow rate),
L (2ms: Value of reference)
 - Pulse frequency : 85Hz approx. (Actual measurement value indicated on product name plate)
 - Accuracy : $\pm 5\%$ F.S. (W-20□2)
 $\pm 3\%$ F.S. (W-20□3 to 20□9)
 - Electric connection : Triplex cable (UL2936) equivalent to AWG.26



- Current output
 - Output : 4 to 20mA
 - Power source : DC24V $\pm 10\%$, 50mA
 - Load resistance : Less than 500Ω
 - Fluid temperature : 5 to 60°C
 - Accuracy : $\pm 5\%$ F.S. (W-20□2)
 $\pm 3\%$ F.S. (W-20□3 to 20□9)
 - Electric connection : Four-core cable (UL2941) equivalent to AWG.26

MODEL CODE

Model code											Description		
W-20	<input type="checkbox"/>	<input type="checkbox"/>	-	<input type="checkbox"/>	<input type="checkbox"/>	-	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Output	1											Pulse output: Open collector	
	3											Current output : 4 to 20mA	
Range of flow rate Connection size	2											Rc 3/8	0.5 to 3 L/min (Flow path nozzle ϕ 3.0)
	3												0.7 to 5 L/min (Flow path nozzle ϕ 4.0)
	4												1.0 to 10 L/min (Flow path nozzle ϕ 6.4)
	5												2.0 to 20 L/min (Flow path nozzle ϕ 10)
	6											Rc 1/2	3.0 to 30 L/min (Flow path nozzle ϕ 12)
	7												4.0 to 40 L/min (Flow path nozzle ϕ 14)
	8												5.0 to 50 L/min (Flow path nozzle ϕ 16)
	9												6.0 to 60 L/min (Flow path nozzle ϕ 16)
Inflow direction												R	Right to Left or Bottom to Top (Wheel on left side against flow path) (Standard)
												L	Left to Right or Bottom to Top (Wheel on right side against flow path)
Cable length												1	1m (Standard)
												2	2m
Material of O-ring												N	NBR (Nitrile rubber)
												F	FKM (Fluoro rubber)
												E	EPDM (Ethylene propylene rubber)
												S	FVMQ (Fluorosilicone rubber)
Material of monitoring window												C	Polycarbonate (Standard)
												S	SUS316
Wheel, bearing, shaft, and bush												1	Group 1 (Standard)
												2	Group 2
												3	Group 3
												4	Group 4
Accessories												0	None
												A	R3/8 X Rc1/4 Adapter (Overall length 18mm)
Incidental specification (Put applicable number in case of plural case.)												A	Degrease treatment (Standard)
												B	Non-water treatment
												C	Non-Dew drop treatment (Fluid temp. : -30°C to 5°C)

MATERIAL OF WHEEL, BEARING, SHAFT, AND BUSH

Parts name	Material	Group 1 (Standard)	Group 2	Group 3	Group 4
		For cooling water (W-201□ : 5 to 80°C) (W-203□ : 5 to 60°C)	For non-carbon (W-201□ : 5 to 80°C) (W-203□ : 5 to 60°C)	For low and high temperature For Fluorinert and Galden (W-201□ : -20 to 100°C) (W-203□ : 5 to 60°C)	For low temperature For Fluorinert and Galden (W-201□ : -30 to 60°C) (W-203□ : Not applicable)
Wheel		PPS (Magnet mold)	PPS (Magnet mold)	PPS (Magnet mold)	PPS + Fe (Plastic magnet)
Bearing		Carbon containing PTFE	Glass containing PTFE	Carbon containing PTFE	Carbon containing PTFE
Shaft		Quartz glass	Quartz glass	Quartz glass	Quartz glass
Bush		PTFE	PTFE	Carbon containing PTFE	Carbon containing PTFE

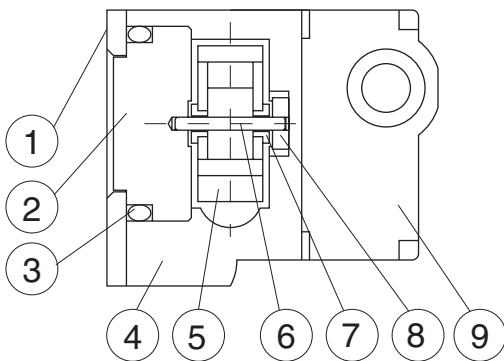
Note 1) W-203□ (Current output type) : 5 to 60°C

Note 2) Group 3. With Non-Dew drop treatment : -20 to 100°C

Without Non-Dew drop treatment: 5 to 100°C

Note 3) Non-Dew drop treatment will be added to Group 4. Fluid temperature: -30 to 60°C

STRUCTURE FIGURE



Parts no.	Parts	Material
1	Plate	SUS316
2	Monitoring window	Refer to "Model code"
3	O-ring	Refer to "Model code"
4	Body	SCS14
5	Wheel	Refer to "Model code"
6	Shaft	Quartz glass
7	Bearing	Refer to "Model code"
8	Bush	Refer to "Model code"
9	Housing	Polycarbonate

RECOMMENDED MODEL

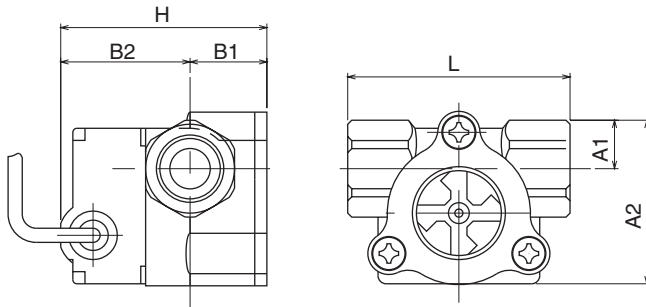
Pulse output type

Fluid	Fluid temp.	Fluid pressure	Recommended model
Cooling water	5 to 60°C	0.6 MPa	W-201□-R1-NC10-A
Ethylene glycol	5 to 60°C	0.6 MPa	W-201□-R1-NC10-A
Fluorinert, Galden	5 to 60°C	0.6 MPa	W-201□-R1-NC30-AB
Fluorinert, Galden	5 to 100°C	1.0 MPa	W-201□-R1-SS30-AB
Fluorinert, Galden	-20 to 100°C	1.0 MPa	W-201□-R1-SS30-ABC
Fluorinert, Galden	-30 to 60°C	1.0 MPa	W-201□-R1-SS40-ABC

Current output type

Fluid	Fluid temp.	Fluid pressure.	Recommended model
Cooling water	5 to 60°C	0.6 MPa	W-203□-R1-NC10-A
Ethylene glycol	5 to 60°C	0.6 MPa	W-203□-R1-NC10-A
Fluorinert, Galden	5 to 60°C	0.6 MPa	W-203□-R1-NC30-AB

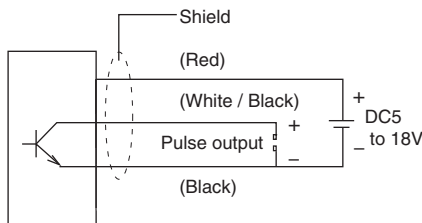
EXTERNAL DIMENSION & MASS



Mark	Connection size		
	Rc3/8	Rc1/2	Rc3/4
L	55	70	80
A1	12	14.5	17
A2	41	43	49.5
H	51	55	57
B1	19	22	22
B2	32	33	35
Mass	0.24kg	0.29kg	0.38kg

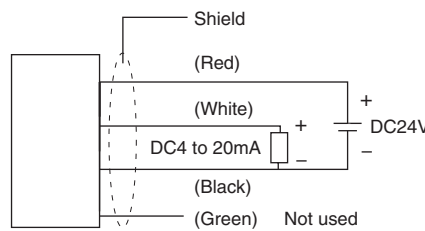
SCHEMATICS

Pulse output type [W-2010]



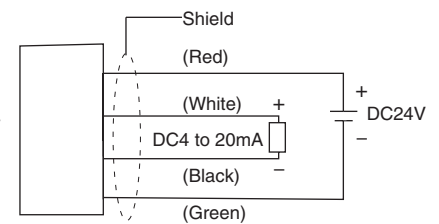
Current output type [W-2030]

Three-wire system



Current output type [W-2030]

Four-wire system



FLOW RATE INDICATOR

The following are the representative indicators. The various indicators are provided and available upon request. Consult with factory - Tokyo Keiso Co., Ltd. about details.

Pulse output type

RR9□0N series



Flow rate indication
RS485 output
1-point alarm output
DC4 to 20mA output

IR16□0 series



Indication of flow rate and totalization
2 points alarm output
Totalizing pulse output
Totalizing preset output

Current output type

IR46□□-02



Indication of flow rate and Totalization
DC4 to 20mA output
Totalizing pulse output
Totalizing preset or Alarm output

NOTES

- Do not put a signal cable adjacent to other power line.
- Inside diameter of process piping and fitting is to be more than that of flow path nozzle.
- Installation is to be made at the place free from the influence of external magnetic field which affects the property.
- Use this flowmeter where there is no stagnation of air around the wheel and also in the state of water filled up.
- Avoid the air blow since wheel and shaft may be damaged.
- Besides the above, the instruction manual describes in details installation, operation and maintenance.

SPECIFY THE FOLLOWING IN PLACING ORDER

- Name of fluid, temperature and pressure
- Model code

INTRODUCTION OF OTHER TYPES W SERIES

For measurement of large flow rate

Connection size: 15mm to 200mm



- W-490 & 590 series
Battery operated flow rate indication and integration
- W-421 & 521 series
Two-wire system 4 to 20mA output
- W-450 & 550 series
No power source required, and analog indication of flow rate
- W-453 & 553 series
Open collector output

For the application for which the mixing of metal ion is not accepted

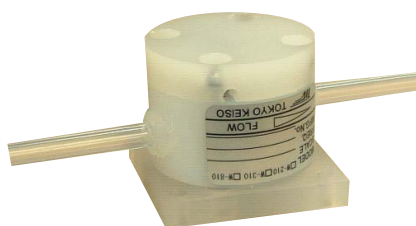
Liquid contact part manufactured by perfect non-metal



- W-200 series
Compact body made of PP and PVC
Pulse output or 4 to 20mA output
- W-300 series
Body almost made of resin
Wide output variation

For the application of pure water and various chemical liquids

All Teflon made by optical sensing system



- W-800 series
Open collector output
PFA tube or Rc screw connection

* Specification is subject to change without notice.

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