

Easy-to-use flow sensor for water

Powerful functions in compact unit
Flow sensor for water realizing easy operation and high accuracy

Sensor

Powerful for
measuring flow

The WF Series is an easy-to-use flow sensor for water capable of direct alarm setting and direct output. Pressure loss is extremely low with this highly accurate model. When used in combination with the optional monitor, the flow rate is digitally displayed, and a variety of switch outputs are used. This flow sensor is ideal for a variety of applications.

Drip-proof cover (excluding WF3000)

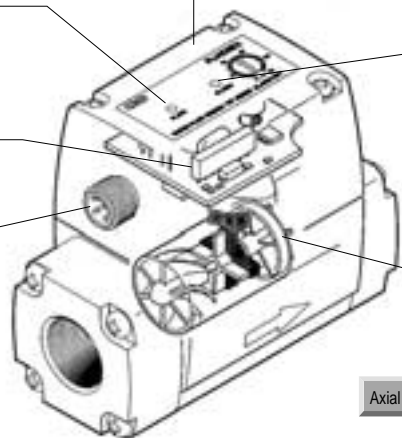
Alarm output and ample analog outputs

Water flow detection light

Integral F/V converter
robust against noise

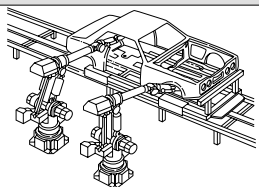
Drip-proof connector

Axial flow with extremely small pressure loss

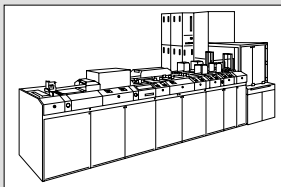


Examples of major applications

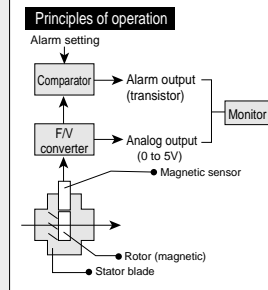
Control of welding gun cooling water



Control of etching equipment cooling water



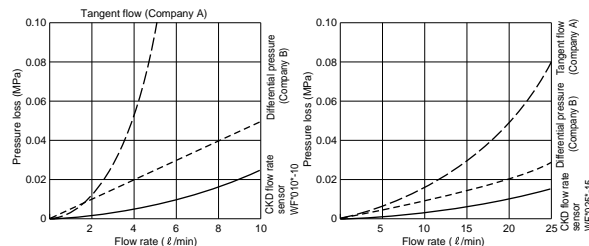
Control of dry vacuum pump cooling water



Water from the port is spun axially by stator blades and received by the rotor, which rotates in proportion with the flow (axial flow turbine). Rotor rotation is detected by the magnetic sensor, converted to a voltage signal by the F/V converter, and output as an analog signal. Values set for the alarm and voltage signal are compared, and an alarm is output. The instantaneous flow, cumulative flow, etc., are displayed by connecting output to the optional monitor.

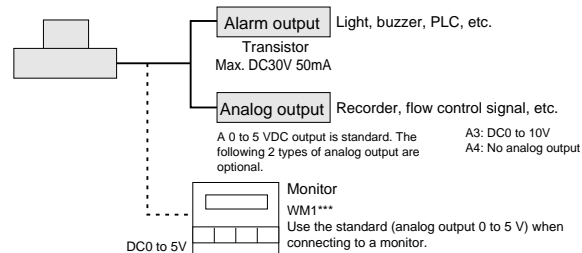
Axial flow with extremely small pressure loss

An axial flow turbine that circulates water directly is incorporated. This reduces energy loss and enables highly accurate, stable flow detection ($\pm 2.5\%$ F.S.). There is no need to worry about pressure loss when selecting peripheral devices.



Alarm output and ample analog outputs

Two types of alarm output and 2 types of analog output are selected based on the application and work.



For enhanced functions: Flow monitor for water WM Series

- This is a panel-mounted flow indicator. (DIN \square 72)
- Instantaneous and cumulative flow displays are toggled in key operation.
- Power supply is used for both AC and DC. (100/200 VAC and 24 VDC)
- Three types of alarm output are set to match your application.

WF1000 Series Page 1152

Light weight resin

Shape: Resin body
Male screw
Port size : R1/2
Flow rate : 1.0 to 10 l/min
2.5 to 25 l/min



WF3000 Series Page 1156

Small, device-integrated custom

Shape: SUS body
Female screw
Port size : Rc1/2
Flow rate : 1.0 to 10 l/min
2.5 to 25 l/min



WF5000 Series Page 1160

Standard for a variety of applications

Shape: Resin body
SUS female screw
Port size : Rc3/8, 1/2, 3/4
Flow rate : 1.0 to 10 l/min
2.5 to 25 l/min



WF6000 Series Page 1164

Maintenance-oriented module

Shape: Resin body
SUS female screw
Port size : Rc3/8, 1/2, 3/4
Flow rate : 1.0 to 10 l/min
2.5 to 25 l/min



WF7000 Series Page 1168

Large flow with stainless steel body

Shape: Resin body
Female screw
Port size : Rc3/4, 1, 1 1/4, 1 1/2
Flow rate : 5 to 50 l/min
10 to 100 l/min
20 to 200 l/min



WM Series Page 1200

Flow monitor for water



Safety Precautions

Read this before starting use.

Please refer to Intro 43 for general precautions.

Turbine type flow rate sensor WF Series

DANGER

1 Working fluid

- Do not use this product for drinking water.
This product does not comply with food product health laws, and must not be used to measure water that could be consumed in human body. Use this product as an industrial sensor.
- Do not use this product for flammable fluids.

Design & Selection

2 Work environment

- Explosion-proof environment
Do not use this product in an atmosphere containing flammable gas. It does not have an explosion-proof structure, so flame or fires could occur.

WARNING

1 Working fluid

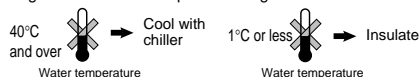
- This product is not to be used as a business meter.
This product does not conform to Measuring Laws, and thus cannot be used for commercial purposes. Use this sensor for industrial applications.
- This product is compatible with water (industrial water, clean water). Do not use for other fluids because accuracy cannot be guaranteed.
Consult with CKD if other applications are required.

2 Working environment

- Corrosive environment
Do not use this product in an environment containing corrosive gases such as sulphur dioxide.
- Fluid temperature
The fluid temperature must be between 1 and 40°C. If the fluid temperature exceeds 40°C, cool with a cooling device such as a chiller. If there is risk of freezing, drain water or provide insulation so water does not freeze.

Design & Selection

Do not use this product if ambient temperature suddenly changes even within the specified range.

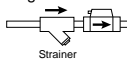


- Maximum working pressure
This product fails if pressure exceeding the maximum working pressure is used. Check that pressure is less than the maximum working pressure. Take the following measures to prevent maximum working pressure from being exceeded by a water hammer:
(1) Use a water hammer proof valve, etc., and ease valve opening.
(2) Use elastic piping material such as a rubber hose and an accumulator to absorb impact pressure.
(3) Keep the pipe as short as possible.
- Drip-proof environment
A dust proof and drip proof structure (excluding WF3000) is used, so this product can be used worry-free even if water could come in contact during maintenance or cleaning. Avoid use where water will come in constant contact, or where water or oil could splatter intensely.

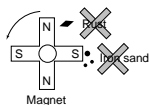
CAUTION

1 Working fluid

- Rotation is used for the sensor's operation, so check that foreign substances that could obstruct rotation does not enter.

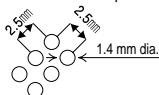


Strainer



Magnet

Strainer hole shape



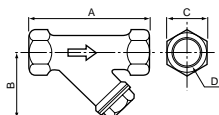
Specifications

Descriptions	Specifications
Working fluid	Water
Withstand pressure	2
Working pressure range	0 to 1
Working temperature range	1 to 90

Main materials

Body	Cast bronze
Strainer	Stainless steel

Strainer dimensions



Model No.		A	B	C	D
Strainer	Strainer with magnet				
WF-FL-280730	WF-FL-280334	70/75	44/55	23/24	Rc3/8
WF-FL-280731	WF-FL-280335	80	49/55	28/29	Rc1/2
WF-FL-280732	WF-FL-280336	100	57/65	35	Rc3/4
WF-FL-280733	WF-FL-280337	115	72/75	43	Rc 1
WF-FL-280734	WF-FL-280338	135	82/95	52/54	Rc1 1/4
WF-FL-280735	WF-FL-280339	160/150	98/100	59/61	Rc1 1/2

Provide protection with a CDK strainer, etc., if foreign substances could enter.

A magnet and magnetic sensor are used so check that magnetic substances such as iron chips or rust from piping do not enter.

Provide protection with a CKD strainer with magnet, etc., if iron chips, etc., could enter.

2 Working environment

- Ambient temperature
Use within an ambient temperature range 0 to 50°C.
- Vibration and impact

Vibration of 49m/s^2 and over Impact of 294m/s^2 and over

Refrigerating
type dryer

Desiccant
type dryer

High polymer
membrane
dryer

Air filter

Automatic
drain
other

F.R.L.
(Module)

F.R.L.
(Separate)

Small
F.R.

Precise
R.

Electro
pneumatic R.

Auxiliary

Flow control
valve

Silencer

Check valve
/ others

Joint
/ tube

Vacuum
F.

Vacuum
R.

Vacuum
generator

Vacuum
auxiliary
/ pad

Mechanical
pressure SW

Electronic
pressure SW

Electronic
diff. pres.
SW

Sealing / close
contact conf.
SW



DANGER

Installation, Piping & Wiring

1 Wiring

- Set power voltage and output within the specified range.
- Application of a voltage exceeding the specified range could result in malfunctions, sensor damage, electric shock, or fire.
- Do not use a load exceeding the output rating. Failure to observe this could result in output damage or fire.



WARNING

Installation, Piping & Wiring

1 Wiring

- Check the wire color and terminal numbers when wiring.
- A protective circuit against incorrect wiring is provided with a reverse-connection-prevention diode, but this is not compatible with all incorrect wiring. Incorrect wiring connections could result in sensor damage, problems, and malfunctions, so check wire color and terminal numbers against the instruction manual before wiring.
- Check wiring insulation.
- Check that wire does not contact other wiring, and that there are no ground or insulation faults between terminals.
- Overcurrent could flow and damage the sensor.

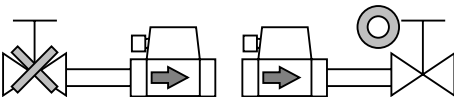


CAUTION

Installation, Piping & Wiring

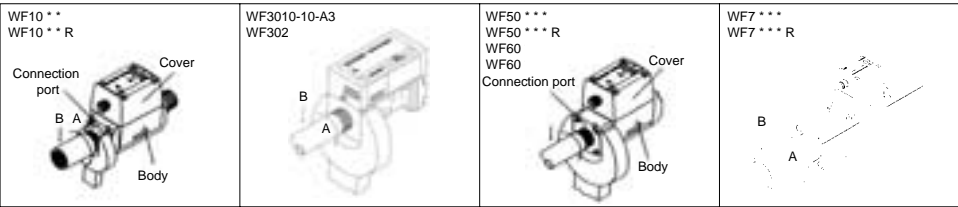
1 Piping

- This sensor can be installed vertically, horizontally, or in any other position.
 - Pipe so that fluids constantly fill pipes and flow.
 - When installing vertically, the effect of bubbles inside is reduced by sending the fluid from downstream to upstream.
 - When installing the sensor on piping, refer to the torque for each position shown in Fig. A so that excessive screw-in or load torque is not applied to the connection port.
 - Cavitations could form in pipe if it narrows just before the sensor or if the primary side is restricted with a valve, etc.
- This prevents correct measurement. Pipe to the sensor's secondary side in this case.
- Cavitation: Vapor bubbles form when static pressure at the back is smaller than water vapor pressure, such as with a boat screw. This may decrease efficiency or damage screws



	WF10**-15- WF10**R-15-*	WF30**-10-A3 WF30**R-10-A3	WF50**-10- WF50**R-10- WF60**-10- WF60**R-10-*	WF50**-15- WF50**R-15- WF60**-15- WF60**R-15-*	WF50**-20- WF50**R-20- WF60**-20- WF60**R-20-*
A. Max. screw-in torque N·m	12	40	40	50	60
B. Max. load torque N·m	20	40	40		

	WF7***-20- WF7***R-20-*	WF7***-25- WF7***R-25-*	WF7***-32- WF7***R-32-*	WF7***-40- WF7***R-40-*
A. Max. screw-in torque N·m	60	70	80	90
B. Max. load torque N·m	60			



Pressure SW
for coolant

Flow sensor
for air

Total air
system

Water
cooling
refrigerator

Flow sensor
for water

Flow sensor
Turbine type for water



Refrigeration unit (Device for water)

Discontinue

Safety Precautions

Read this before starting use.

Please refer to Intro 43 for general precautions.

Turbine type flow rate sensor WF Series

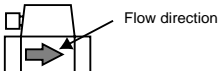


CAUTION

Installation, Piping & Wiring

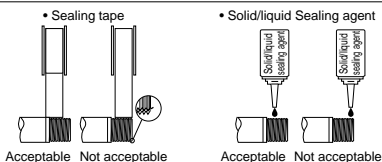
1 Piping

- Check that the fluid's direction matches the direction indicated on the body when piping. The flow rate is displayed as zero or lower than the actual value if connected in reverse.



- Flash pipes to remove any foreign substances or cutting chips, etc., before piping.
- Check that force is not applied to resin parts when piping.
- Check that sealing tape or adhesive does not get inside when piping.

When winding fluorine resin sealing tape around threads, wind sealing tape 1 to 2 times, leaving 2 to 3 threads open at the end of the screw. Press down on tape to stick it to threads. When using liquid sealing agent, leave 1 to 2 threads open from the end, and avoid applying too much. Check that the sealing agent does not get on the device's threads.



- Dew condenses in models with a metal body if the difference between ambient and fluid temperature is large. Operation could fail if this dew enters the electrical section. If dew could condense, install the flow sensor so it is horizontal and the display faces upward.

2 Wiring

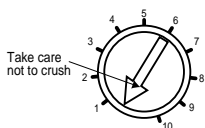
- Separate the cable from sources of noise such as power distribution wires.
- Failure to do so could result in malfunctions caused by noise.
- Check that wires not used do not contact other wires.
- Do not use this product for loads generating surge voltage. A Zener diode is inserted for surge protection. This diode could be damaged if surge is repeatedly applied. When directly driving a load that generates a surge, such as a relay or solenoid valve, use a sensor with integrated surge absorbing element. Similarly, use surge countermeasures if there is a source of surge in the power supply line.
- Do not repeatedly bend or tension to leads or wires could disconnect.



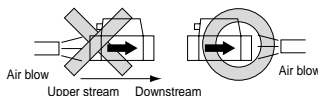
CAUTION

During use & Maintenance

- 1** If an error occurs during operation, immediately turn power OFF, stop use, and contact your dealer.
- 2** Correct output will not be made for 10 seconds after power is turned ON. If an interlock circuit is established with control devices using transistor output, an abnormal stop could occur. Mask output during this time.
- 3** When the output setting is changed, the control system devices could operate unintentionally. Stop devices before changing settings.
- 4** Do not apply excessive torque to the alarm setting trimmer. The stopper and arrow could be damaged if the trimmer is rotated with excessive force.



- 5** Regularly inspect and check that operation is correct.
- 6** Turn power OFF, check that water pressure is stopped and safety ensured before removing the device.
- 7** Do not disassemble or modify the sensor or problems could result.
- 8** Use a nonpolluting cleaning solution, such as a neutral detergent, for cleaning.
- 9** When blowing the air sensor with compressed air, blow from downstream. The turbine rotates at high speed and could be damaged if air is blown from upstream.



Refrigerating
type dryer

Desiccant
type dryer

High polymer
membrane
dryer

Air filter

Automatic
drain
other

F.R.L.
(Module)

F.R.L.
(Separate)

Small
F.R.

Precise
R.

Electro
pneumatic R.

Auxiliary

Flow control
valve

Silencer

Check valve
/ others

Joint
/ tube

Vacuum
F.

Vacuum
R.

Vacuum
generator

Vacuum
auxiliary
/ pad

Mechanical
pressure
SW

Electronic
pressure SW

Electronic
dif. pres.
SW

Sealing / close
contact conf.
SW

Pressure SW
for coolant

Flow sensor
for air

Total air
system

Water
cooling
refrigerator

Flow sensor
for water



CAUTION

During use & Maintenance

10 Applicable fluid

Observe the following precautions for the applicable fluid to be measured.
If the following water quality standards are not met, performance may deteriorate.

The quality of applicable fluid must meet the water quality standards in "Refrigerating and Air Conditioning Device Water Quality Guidelines" (water quality standards: Cooling water system - circulation - circulating water) established by the Japan Society of Refrigerating and Air Conditioning Engineers.

Item	Chemical formula	Unit	Water quality standards
ph	—	pH (25°C)	6.5 to 8.2
Electric conductivity	—	mS/m (25°C)	0.2 to 80 *1
Chloride ion	Cl ⁻	mg/ ℓ (ppm)	200 or less
Sulfate ion	SO ₄ ²⁻	mg/ ℓ (ppm)	200 or less
Acid consumption (pH4.8)	CaCO ₃	mg/ ℓ (ppm)	100 or less
Total hardness	CaCO ₃	mg/ ℓ (ppm)	200 or less
Calcium hardness	CaCO ₃	mg/ ℓ (ppm)	150 or less
Ionic silica	SiO ₂	mg/ ℓ (ppm)	50 or less
Iron	Fe	mg/ ℓ (ppm)	1.0 or less
Copper	Cu	mg/ ℓ (ppm)	0.3 or less
Sulfide ion	S ²⁻	mg/ ℓ (ppm)	Not detected
Ammonium ion	NH ₄ ⁺	mg/ ℓ (ppm)	1.0 or less
Residual chloride	Cl	mg/ ℓ (ppm)	0.3 or less
Free carbon	CO ₂	mg/ ℓ (ppm)	4.0 or less
Stability index	—	—	6.0 to 7.0

*1 Electrical conductivity must be 0.2 [mS/m] and over.
Consult with CKD for use in the 0.05 to 0.2 [mS/m] range.
Levels below 0.05 [mS/m] qualify as ultra pure water and must not be used.


Discontinue

Flow rate sensor / sensor

WF1000 Series

Direct alarm and analog outputs

Light weight resin type

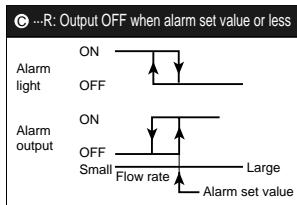
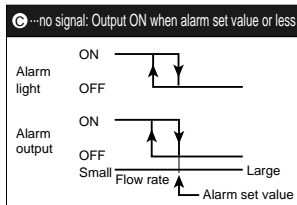
Flow rate range: 1.0 to 10, 2.5 to 25ℓ/min  CAD DATA AVAILABLE.



Specifications

Descriptions		WF1010-15 WF1010R-15	WF1025-15 WF1025R-15
Specifications	Flow rate range	1.0 to 10 ℓ/min	2.5 to 25 ℓ/min
	Port size	R1/2 (male thread)	
	Terminal area material	Resin: POM	
	Pressure loss	0.015MPa (at 10 ℓ/min.)	0.015MPa (at 25 ℓ/min.)
Working conditions	Working fluid	Clean water	
	Max. working pressure	1.0MPa	
	Fluid temperature	1 to 40°C	
	Ambient temperature	0 to 50°C (85%RH or less)	
Output	Alarm output No.	1 point (transistor open collector)	
	Alarm output rated	Max. DC30V 50mA	
	Alarm output inside voltage drop	Max. 0.5V (at 50mA)	
	Analog output	DC0 to 5V (linear output) standard	
	Accuracy	± 2.5%F.S.	
	Response time	Approx. 2sec.	
	Power supply	DC24V ± 10%(Max. 30mA)	
Installation	Cable	Auxiliary (3m connector / conductor 0.5mm ²)	
	Installation attitude	Both vertical / lateral	
	Strait piping section	Not required	
	Protective structure	Main body (IP54), connector area (IP64)	
	Wet area material	POM / PPO / SUS304 / NBR, etc.	
Mass		240g	

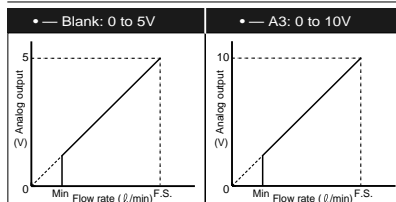
Alarm output type



*When disconnection detection function is used, select R.

Model no.	WF1010	WF1025
Hysteresis width (ℓ)	0.5	1.0

Analog output

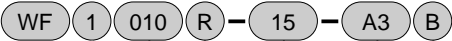


Model no.	WF1010	WF1025
Flow rate	Min 1.0 (ℓ/min)	2.5 (ℓ/min)
F.S.	10 (ℓ/min)	25 (ℓ/min)

Note 1: If min. flow rate or less, analog output is not outputted properly.

Note 2: F.S. shows max. flow rate.

How to order



A Port shape material

B Flow rate range

C Alarm output type

D Port size

E Analog output
Note 1

F Bracket
Note 2

Symbol	Descriptions
A Port shape / material	
1	Shape: Male thread Material: Resin (POM)
B Flow rate range	
010	1.0 to 10 ℓ/min
025	2.5 to 25 ℓ/min
C Alarm output type	
Blank	Output ON when alarm set value or less
R	Output OFF when alarm set value or less
D Port size	
15	R 1/2
E Analog output	
Blank	DC0 to 5V
A3	DC0 to 10V
A4	Without analog output
F Bracket	
Blank	None
B	With bracket

⚠ Note on model No. selection

Note 1: If CKD monitor (WM series refer to page 1200) is connected, select "E" analog output DC0 to 5V.

Note 2: For B type, a bracket and set screw are attached.

When ordering a bracket only, indicate Part name: Bracket assembly and Model no.: WF-FL-249969.

[Example of model number]

WF1010R-15-A3B

Model: Flow rate sensor resin type

- A Port shape / material : Shape: Male thread Material: Resin
- B Flow rate range : 1.0 to 10 ℓ/min
- C Alarm output type : Output OFF when alarm set value or less
- D Port size : R 1/2
- E Analog output : DC 0 to 10V
- F Bracket : With bracket

Refrigerating
type dryer

Desiccant
type dryer
High polymer
membrane
dryer

Air filter

Automatic
drain
other

F.R.L.L
(Module)

F.R.L.L
(Separate)

Small
F.R.

Precise
R.

Electro
pneumatic R.

Auxiliary

Flow control
valve

Silencer

Check valve
/ others

Joint
/ tube

Vacuum
F.

Vacuum
R.

Vacuum
generator

Vacuum
auxiliary
/ pad

Mechanical
pressure SW

Electronic
pressure SW

Electronic
dif. pres.
SW

Sealing / close
contact conf.
SW

Pressure SW
for coolant

Flow sensor
for air

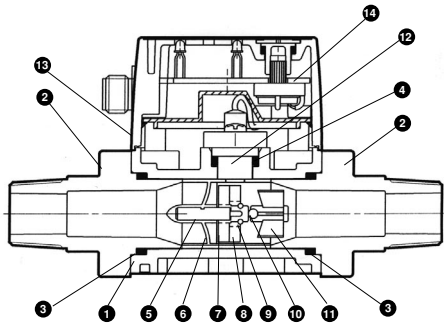
Total air
system

Water
cooling
refrigerator

Flow sensor
for water

Flow sensor
Turbine type for water

Internal structure and parts list



No.	Parts name	Material		Quantity	No.	Parts name	Material		Quantity
1	Body	POM	Acetar resin	1	8	Magnet	—	Ferrite system plastic magnet	1
2	Attachment	POM	Acetar resin	2	9	O ring	NBR	Nitrile rubber	1
3	O ring	NBR	Nitrile rubber	2	10	Steel ball	SUS304	Stainless steel	1
4	O ring	NBR	Nitrile rubber	1	11	Stopper	PPO	Polyphenylen oxide	1
5	Shaft	SUS301	Stainless steel	1	12	Sensor assembly	PPS (wetted areas)	Polyphenylen sulfite	1
6	Stator blade	PPO	Polyphenylen oxide	1	13	Cover	ABS	ABS resin	1
7	Rotor blade	PPS	Polyphenylen sulfite	1	14	Electric part assy	—	—	1


Discontinue

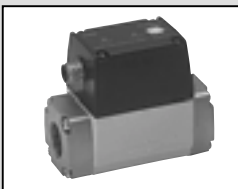
Flow rate sensor/sensor

WF5000 Series

Direct alarm and analog outputs

Standard type meeting divers application needs.

Flow rate range: 1.0 to 10, 2.5 to 25 ℓ/min  CAD DATA AVAILABLE.

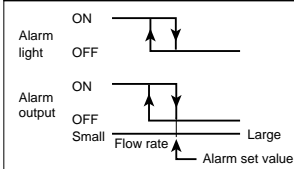


Specifications

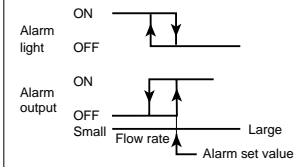
Descriptions		WF5010-10 WF5010R-10	WF5010-15 WF5010R-15	WF5010-20 WF5010R-20	WF5025-10 WF5025R-10	WF5025-15 WF5025R-15	WF5025-20 WF5025R-20
Specifications	Flow rate range	1.0 to 10 ℓ/min.			2.5 to 25 ℓ/min.		
	Port size	Rc3/8 (female thread)	Rc1/2 (female thread)	Rc3/4 (female thread)	Rc3/8 (female thread)	Rc1/2 (female thread)	Rc3/4 (female thread)
	Terminal area material	Stainless steel: SCS13					
	Pressure loss	0.015MPa (at 10 ℓ/min.)			0.015MPa (at 25 ℓ/min.)		
Working conditions	Working fluid	Clean water					
	Max. working pressure	1.0MPa					
	Fluid temperature	1 to 40 °C					
	Ambient temperature	0 to 50 °C (85%RH or less)					
Output	Alarm output No.	1 point (transistor open collector)					
	Alarm output rated	Max. DC30V 50mA					
	Alarm output inside voltage drop	Max. 0.5V (at 50mA)					
	Analog output	DC0 to 5V (linear output) standard					
	Accuracy	± 2.5%F.S.					
	Response time	Approx. 2sec.					
Installation	Power supply	DC24V ± 10%(Max. 30mA)					
	Cable	Auxiliary (3m connector / conductor 0.5)					
	Installation attitude	Both vertical / lateral					
	Strait piping section	Not required					
	Protective structure	Main body (IP54), connector area (IP64)					
	Wet area material	POM / PPO / SUS304 / NBR, etc.					
Mass		490g	460g	510g	490g	460g	510g

Alarm output type

Ⓒ ... blank: Output ON when alarm set value or less



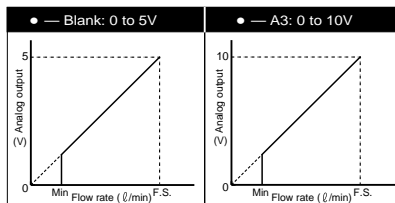
Ⓒ ... R: Output OFF when alarm set value or less



Model no.	WF5010	WF5025
Hysteresis width (ℓ)	0.5	1.0

*When disconnection detection function is used, select R.

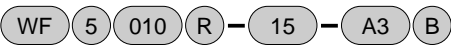
Analog output



Model no.	WF5010	WF5025
Flow rate	Min 1.0 (ℓ/min)	2.5 (ℓ/min)
	F.S. 10 (ℓ/min)	25 (ℓ/min)

Note 1: If min. flow rate or less, analog output is not outputted properly.
Note 2: F.S. shows max. flow rate.

How to order



Ⓐ Port shape material

Ⓑ Flow rate range

Ⓒ Alarm output type

Ⓓ Port size

Ⓔ Analog output
Note 1

Ⓕ Bracket
Note 2

Symbol	Descriptions	
A Port shape / material		
5	Shape: Female thread Material: Stainless steel (SCS13)	
B Flow rate range		
010	1.0 to 10 ℓ/min	
025	2.5 to 25 ℓ/min	
C Alarm output type		
Blank	Output ON when alarm set value or less	
R	Output OFF when alarm set value or less	
D Port size		
10	Rc3/8	
15	Rc1/2	
20	Rc3/4	
E Analog output		
Blank	DC0 to 5V	
A3	DC0 to 10V	
A4	Without analog output	
F Bracket		
Blank	None	
B	With bracket	

⚠ Note on model No. selection

Note 1: If CKD monitor (WM series refer to page 1200) is connected, select "E" analog output DC0 to 5V.

Note 2: For B type, a bracket and set screw are attached.

When ordering a bracket only, indicate Part name: Bracket assembly and Model no.: WF-FL-249969.

[Example of model number]

WF5010R-15-A3B

Model: Flow rate sensor, standard type

- Ⓐ Port shape / material : Shape: Female thread material: Stainless steel
- Ⓑ Flow rate range : 1.0 to 10 ℓ/min
- Ⓒ Alarm output type : Output OFF when alarm set value or less
- Ⓓ Port size : Rc1/2
- Ⓔ Analog output : DC0 to 10V
- Ⓕ Bracket : With bracket

Refrigerating type dryer
Desiccant type dryer
High polymer membrane dryer

Air filter
Automatic drain other

F.R.L. (Module)

F.R.L. (Separate)

Small F.R.

Precise R.

Electro pneumatic R.

Auxiliary

Flow control valve

Silencer

Check valve / others

Joint / tube

Vacuum F.

Vacuum R.

Vacuum generator

Vacuum auxiliary / pad

Mechanical pressure SW

Electronic pressure SW

Electronic dif. pres. SW

Sealing / close contact conf. SW

Pressure SW for coolant

Flow sensor for air

Total air system

Water cooling refrigerator

Flow sensor for water

Flow sensor

Turbine type for water

Flow sensor

Turbine type for water

Flow sensor

Turbine type for water

Flow sensor

Turbine type for water

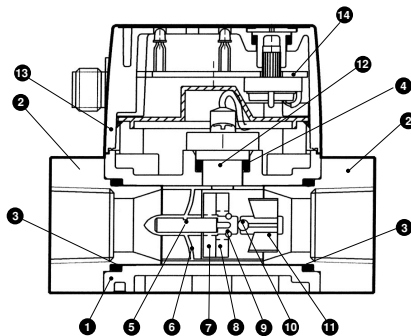
Flow sensor

Turbine type for water

Flow sensor

Turbine type for water

Internal structure and parts list

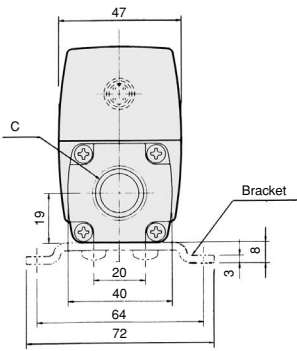
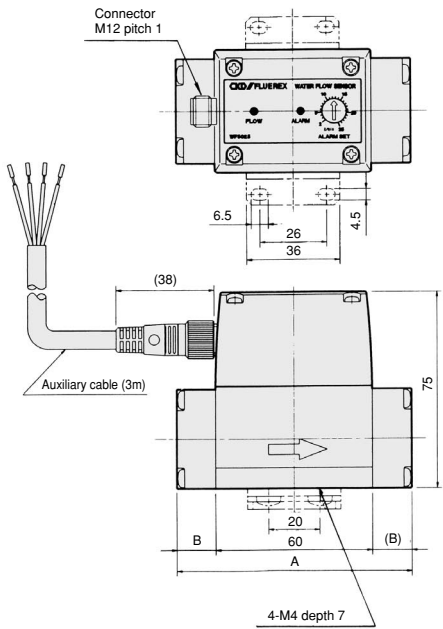


No.	Parts name	Material		Qty	No.	Parts name	Material		Qty
1	Body	POM	Acetar resin	1	8	Magnet	—	Ferrite plastic magnet	1
2	Attachment	SCS13	Stainless steel die casting	2	9	O ring	NBR	Nitrile rubber	1
3	O ring	NBR	Nitrile rubber	2	10	Steel ball	SUS304	Stainless steel	1
4	O ring	NBR	Nitrile rubber	1	11	Stopper	PPO	Polyphenylen oxide	1
5	Shaft	SUS301	Stainless steel	1	12	Sensor assembly	PPS (wetted areas)	Polyphenylen sulfite	1
6	Stator blade	PPO	Polyphenylen oxide	1	13	Cover	ABS	ABS resin	1
7	Rotor blade	PPS	Polyphenylen sulfite	1	14	Electric part assy	—	—	1

Dimensions



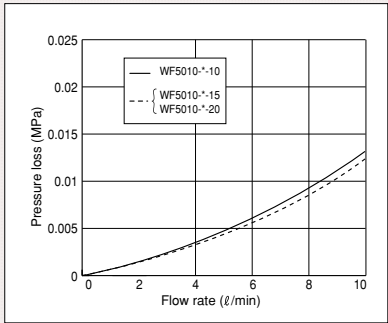
(File name: Page 1173 or Ending 30)



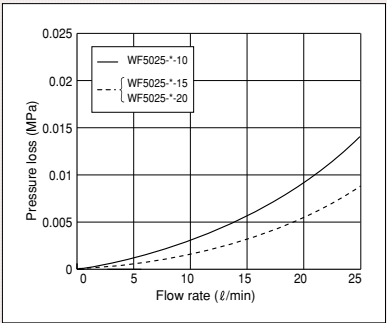
Model no.	A	B	C
WF50**-10	90	15	Rc3/8
WF50**R-10			
WF50**-15	90	15	Rc1/2
WF50**R-15			
WF50**-20	105	22.5	Rc3/4
WF50**R-20			

Pressure loss

WF5010 **



WF5025 **



Refrigerating type dryer

Desiccant type dryer

High polymer membrane dryer

Air filter

Automatic drain other

F.R.L (Module)

F.R.L (Separate)

Small F.R.

Precise R.

Electro pneumatic R.

Auxiliary

Flow control valve

Silencer

Check valve / others

Joint / tube

Vacuum F.

Vacuum R.

Vacuum generator

Vacuum auxiliary / pad

Mechanical pressure SW

Electronic pressure SW

Electronic dif. pres. SW

Sealing / close contact conf. SW

Pressure SW for coolant

Flow sensor for air

Total air system

Water cooling refrigerator

Flow sensor for water

Flow sensor

Turbine type for water

Flow sensor

Turbine type for water

Flow sensor

Turbine type for water

Flow sensor

Turbine type for water

Flow sensor

Turbine type for water


Discontinue

Flow rate sensor/sensor

WF6000 Series

Direct alarm and analog outputs

Maintenance oriented modular design type

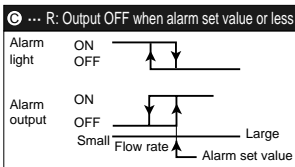
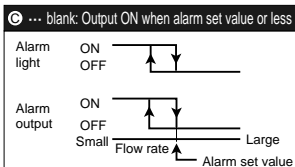
Flow rate range: 1.0 to 10, 2.5 to 25 ℓ/min  CAD DATA AVAILABLE.



Specifications

Descriptions		WF6010-10 WF6010R-10	WF6010-15 WF6010R-15	WF6010-20 WF6010R-20	WF6025-10 WF6025R-10	WF6025-15 WF6025R-15	WF6025-20 WF6025R-20
Specifications	Flow rate range	1.0 to 10ℓ/min.			2.5 to 25ℓ/min.		
	Port size	Rc3/8 (female thread)	Rc1/2 (female thread)	Rc3/4 (female thread)	Rc3/8 (female thread)	Rc1/2 (female thread)	Rc3/4 (female thread)
	Terminal area material	Stainless steel: SCS13					
	Pressure loss	0.015MPa (at 10ℓ/min.)			0.015MPa (at 25ℓ/min.)		
Working conditions	Working fluid	Clean water					
	Max. working pressure	1.0MPa					
	Fluid temperature	1 to 40°C					
	Ambient temperature	0 to 50°C (85%RH or less)					
Output	Alarm output No.	1 point (transistor open collector)					
	Alarm output rated	Max. DC30V 50mA					
	Alarm output inside voltage drop	Max. 0.5V (at 50mA)					
	Analog output	DC0 to 5V (linear output) standard					
	Accuracy	± 2.5%F.S.					
	Response time	Approx. 2sec.					
	Power supply	DC24V ± 10%(Max. 30mA)					
	Cable	Auxiliary (3m connector / conductor 0.5mm ²)					
Installation	Installation attitude	Both vertical / lateral					
	Strait piping section	Not required					
	Protective structure	Main body (IP54), connector area (IP64)					
	Wet area material	POM / PPO / SUS304 / NBR, etc.					
Mass		690g	670g	710g	690g	670g	710g

Alarm output type



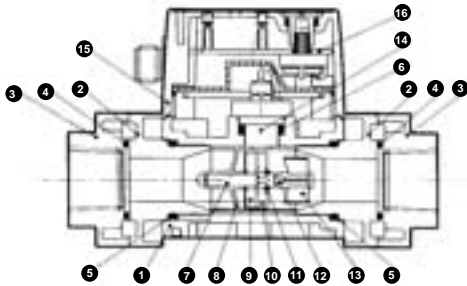
*When disconnection detection function is used, select R.

Model no.	WF6010	WF6025
Hysteresis width (ℓ)	0.5	1.0

Analog output

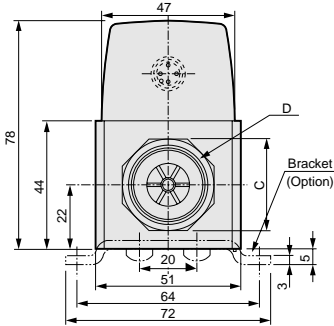
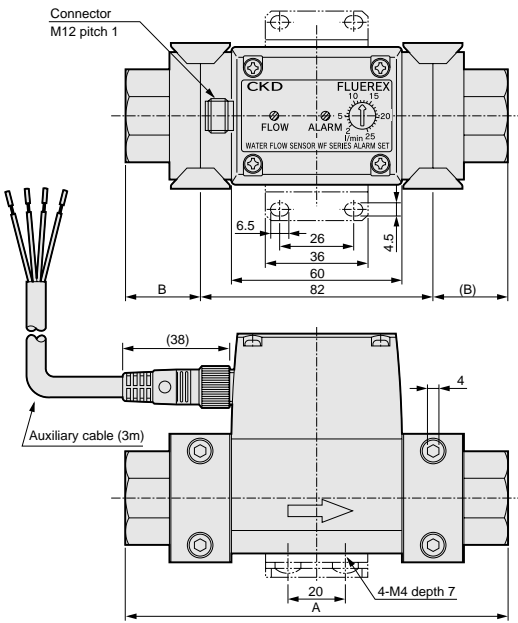
Common with WF5000 series. Refer to Page 1160 WF5000 series.

Internal structure and parts list



No.	Parts name	Material		Qty	No.	Parts name	Material		Qty
1	Body	POM	Acetar resin	1	9	Rotor blade	PPS	Polyphenylen sulfite	1
2	Attachment	SCS13	Stainless steel die casting	2	10	Magnet	—	Ferrite system plastic magnet	1
3	Attachment K	SUS13	Stainless steel die casting	2	11	O ring	NBR	Nitrile rubber	1
4	O ring	NBR	Nitrile rubber	2	12	Steel ball	SUS304	Stainless steel	1
5	O ring	NBR	Nitrile rubber	2	13	Stopper	PPO	Polyphenylen oxide	1
6	O ring	NBR	Nitrile rubber	1	14	Sensor assembly	PPS (wetted areas)	Polyphenylen sulfite	1
7	Shaft	SUS301	Stainless steel	1	15	Cover	ABS	ABS resin	1
8	Stator blade	PPO	Polyphenylen oxide	1	16	Electric part assy	—	—	1

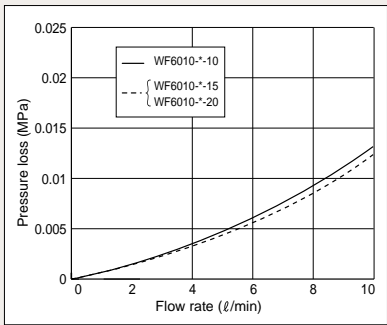
Dimensions



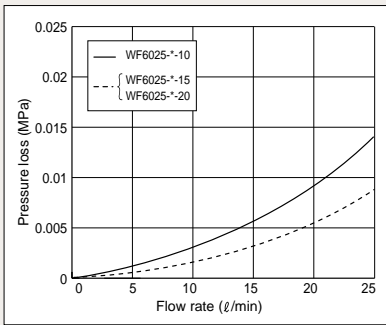
Model no.	A	B	C	D
WF60**-10	122	20	24 (hexagon head)	Rc3/8
WF60**-15	122	20	27 (hexagon head)	Rc1/2
WF60**-20	134	26	32 (octagonal head)	Rc3/4

Pressure loss

WF6010 *-**-



WF6025 *-**-



- Refrigerating type dryer
- Desiccant type dryer
- High polymer membrane dryer
- Air filter
- Automatic drain other
- F.R.L. (Module)
- F.R.L. (Separate)
- Small F.R.
- Precise R.
- Electro pneumatic R.
- Auxiliary
- Flow control valve
- Silencer
- Check valve / others
- Joint / tube
- Vacuum F.
- Vacuum R.
- Vacuum generator
- Vacuum auxiliary / pad
- Mechanical pressure SW
- Electronic pressure SW
- Electronic dif. pres. SW
- Sealing / close contact conf. SW
- Pressure SW for coolant
- Flow sensor for air
- Total air system

- Water cooling refrigerator
- Flow sensor for water
- Flow sensor Turbine type for water

Discontinue

Flow rate sensor/sensor

WF7000 Series

Direct alarm and analog outputs

Stainless steel body large flow rate type

Flow rate range: 5 to 50, 10 to 100, 20 to 200 ℓ/min

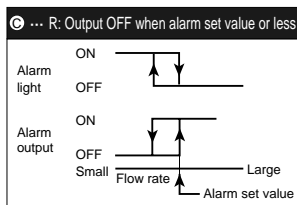
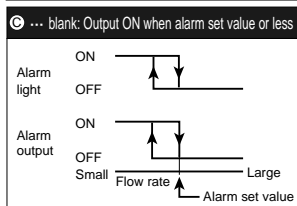


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Specifications

Descriptions		WF7050-20 WF7050R-20	WF7050-25 WF7050R-25	WF7100-25 WF7100R-25	WF7100-32 WF7100R-32	WF7200-32 WF7200R-32	WF7200-40 WF7200R-40
Specifications	Flow rate range	5 to 50 ℓ/min.		10 to 100 ℓ/min.		20 to 200 ℓ/min.	
	Port size	Rc3/4 (female thread)	Rc1 (female thread)	Rc1 (female thread)	Rc1¼ (female thread)	Rc1¼ (female thread)	Rc1½ (female thread)
	Terminal area material	Stainless steel: SCS13					
	Pressure loss	0.015MPa (at 50 ℓ/min.)		0.015MPa (at 100 ℓ/min.)		0.020MPa (at 200 ℓ/min.)	
Working conditions	Working fluid	Clean water					
	Max. working pressure	1.0MPa					
	Fluid temperature	1 to 40°C					
	Ambient temperature	0 to 50°C (85%RH or less)					
Output	Alarm output No.	1 point (transistor open collector)					
	Alarm output rated	Max. DC30V 50mA					
	Alarm output inside voltage drop	Max. 0.5V (at 50mA)					
	Analog output	DC0 to 5V (linear output) standard					
	Accuracy	± 2.5%F.S.					
	Response time	Approx. 2sec.					
Installation	Power supply	DC24V ± 10%(Max. 30mA)					
	Cable	Auxiliary (3m connector / conductor 0.5mm²)					
	Installation attitude	Both vertical / lateral					
	Strait piping section	Not required					
	Protective structure	Main body (IP54), connector area (IP64)					
	Wet area material	POM / PPO / SUS304 / NBR, etc.					
Mass		4100g	4000g	3800g		3600g	

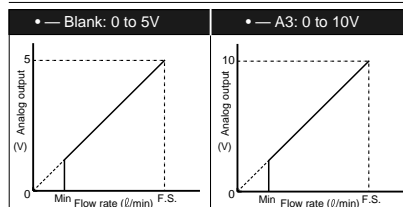
Alarm output type



Model no.	WF7050	WF7100	WF7200
Hysteresis width (ℓ)	2	4	8

*When disconnection detection function is used, select R.

Analog output

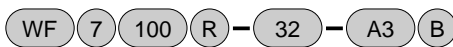


Model no.	WF7050	WF7100	WF7200
Flow rate	Min 5(ℓ/min)	10(ℓ/min)	20(ℓ/min)
range	F.S. 50(ℓ/min)	100(ℓ/min)	200(ℓ/min)

Note 1: If min. flow rate or less, analog output is not outputted properly.

Note 2: F.S. shows max. flow rate.

How to order



Symbol	Descriptions
A Port shape / material	
7	Shape: Female thread Material: Stainless steel (SCS13)
B Flow rate range	
050	5 to 50 ℓ/min.
100	10 to 100 ℓ/min.
200	20 to 200 ℓ/min.
C Alarm output type	
Blank	Output ON when alarm set value or less
R	Output OFF when alarm set value or less
D Port size	
	Port size 050 100 200
20	Rc3/4 ● — —
25	Rc1 ● ● —
32	Rc1 1/4 — ● ●
40	Rc1 1/2 — — ●
E Analog output	
Blank	DC0 to 5V
A3	DC0 to 10V
A4	Without analog output
F Bracket	
Blank	None
B	With bracket

Note 1

Note 2

⚠ Note on model No. selection

Note 1: If CKD monitor (WM, refer to page 1200) is connected, select "D" analog output DC0 to 5V.

Note 2: For B type, a bracket and set screw are attached.

When ordering a bracket only, indicate Part name: Bracket assembly and model no.: WF-FL-251256.

[Example of model number]

WF7100R-32-A3B

Model: Flow rate sensor, large flow rate type

- A** Port shape / material : Shape: Female thread material: Stainless steel
B Flow rate range : 10 to 100 ℓ/min.
C Alarm output type : Output OFF when alarm set value or less
D Port size : Rc1 1/4
E Analog output : DC0 to 10V
F Bracket : With bracket

Refrigerating type dryer

Desiccant type dryer

High polymer membrane dryer

Air filter

Automatic drain other

F.R.L. (Module)

F.R.L. (Separate)

Small F.R.

Precise R.

Electro pneumatic R.

Auxiliary

Flow control valve

Silencer

Check valve / others

Joint / tube

Vacuum F.

Vacuum R.

Vacuum generator

Vacuum auxiliary / pad

Mechanical pressure SW

Electronic pressure SW

Electronic dif. pres. SW

Sealing / close contact conf. SW

Pressure SW for coolant

Flow sensor for air

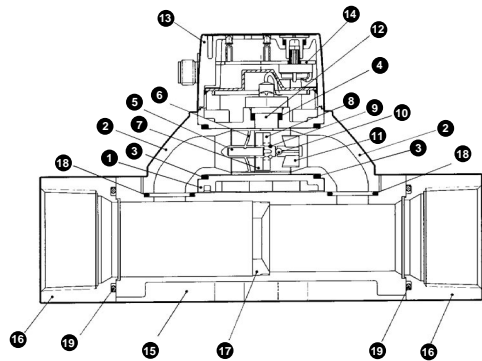
Total air system

Water cooling refrigerator

Flow sensor for water

Flow sensor
Turbine type for water

Internal structure and parts list

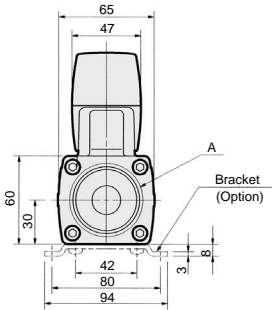
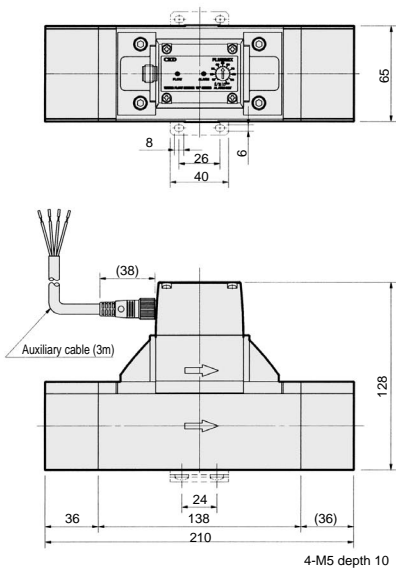


No.	Parts name	Material		Qty	No.	Parts name	Material		Qty
1	Body	POM	Acetar resin	1	11	Stopper	PPO	Polyphenylen oxide	1
2	Sub attachment	SCS13	Stainless steel die casting	2	12	Sensor assembly	PPS	Polyphenylen sulfite	1
3	O ring	NBR	Nitrile rubber	2	13	Cover	ABS	ABS resin	1
4	O ring	NBR	Nitrile rubber	1	14	Electric part assy	—	—	1
5	Shaft	SUS301	Stainless steel	1	15	Main body	SCS13	Stainless steel	1
6	Stator blade	PPO	Polyphenylen oxide	1	16	Main attachment	SCS13	Stainless steel	1
7	Rotor blade	PPS	Polyphenylen sulfite	1	17	Orifice	SUS304	Stainless steel	1
8	Magnet	—	Ferrite system plastic magnet	1	18	O ring	NBR	Nitrile rubber	2
9	O ring	NBR	Nitrile rubber	1	19	O ring	NBR	Nitrile rubber	2
10	Steel ball	SUS304	Stainless steel	1					

Dimensions



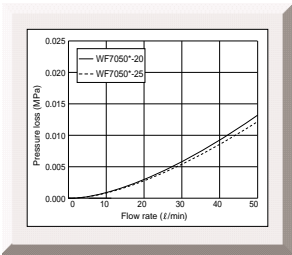
(File name: Page 1173 or Ending 30)



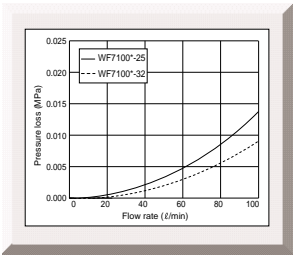
Model no.	A
WF7050(R)-20	Rc3/4
WF7050(R)-25	Rc1
WF7100(R)-25	Rc1
WF7100(R)-32	Rc1 1/4
WF7200(R)-32	Rc1 1/4
WF7200(R)-40	Rc1 1/2

Pressure loss

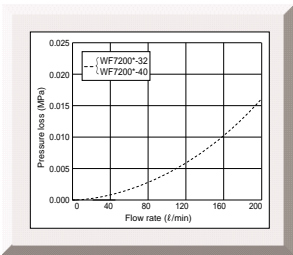
WF7050 *-**



WF7100 *-**



WF7200 *-**



- Refrigerating type dryer
- Desiccant type dryer
- High polymer membrane dryer
- Air filter
- Automatic drain other
- F.R.L (Module)
- F.R.L (Separate)
- Small F.R.
- Precise R.
- Electro pneumatic R.
- Auxiliary
- Flow control valve
- Silencer
- Check valve / others
- Joint / tube
- Vacuum F.
- Vacuum R.
- Vacuum generator
- Vacuum auxiliary / pad
- Mechanical pressure SW
- Electronic pressure SW
- Electronic dif. pres. SW
- Sealing / close contact conf. SW

- Pressure SW for coolant
- Flow sensor for air
- Total air system

- Water cooling refrigerator
- Flow sensor for water

- Flow sensor Turbine type for water

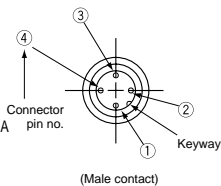
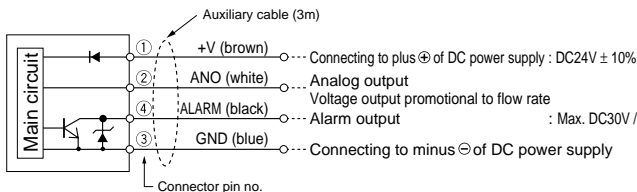
Electric wiring

[WF1000/WF5000/WF6000/WF7000 series]

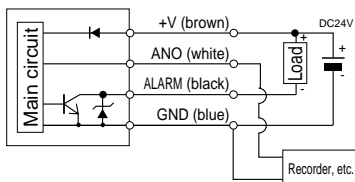
Note) Following connector can be used other than auxiliary connector.

- CORRENS VA connector 4-conductor for DC
- OMRON FA connector M12 4-conductor for DC

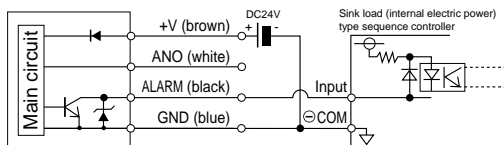
- Analog output - *for blank and A3



- Example of connection between relay and resistance load

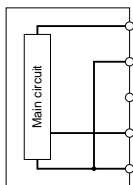


- Example of connection to sequence controller



[WF3000 series]

Connector no.



- (1) DC12V Connecting to plus (+) of DC power supply : DC12V ±10%
- (2) GND Connecting to plus [-] of DC power supply : DC 0V
- (3) NC Not connected.
- (4) ANO Connecting to plus [+] of analog output : Voltage output promotional to flow rate
- (5) GND Connecting to minus [-] of analog output.

Connector model no.: IL-G-5P-S3L2-E Japan Aviation Electronics Industry, Limited.

Note) A connector on cable side shall be prepared by customer.

Socket : IL-G-5S-S3C2 Japan Aviation Electronics Industry, Limited.
Crimping socket contact : IL-G-C2-SC Japan Aviation Electronics Industry, Limited.

- 1) Example of connection to recorder

