



Discontinue

Flow rate sensor / monitor

WM series

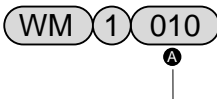


CAD DATA AVAILABLE.


Specifications

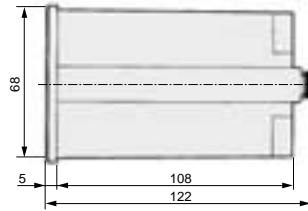
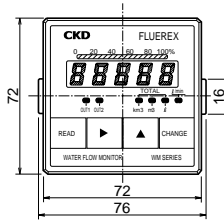
| Descriptions | | WM1010 | WM1025 | WM1050 | WM1100 | WM1200 |
|-------------------------|--|--|---|------------------------------|------------------------------|------------------------------|
| Specifications | Applicable sensor | WF1010, WF1010R WF5010, WF5010R WF6010, WF6010R WFK5008, WFK6008 | WF1025, WF1025R WF5025, WF5025R WF6025, WF6025R WFK5027, WFK6027 | WF7050 WF7050R WFK7050 | WF7100 WF7100R WFK7100 | WF7200 WF7200R WFK7200 |
| | Instantaneous flow rate display range | l/min | 2.5 to 25 | 5 to 50 | 10 to 100 | 20 to 200 |
| | Instantaneous flow rate display accuracy | | ± 2.5%F.S. ± 1dig (within instantaneous flow rate display range) | | | |
| Display | Integrating flow rate display max. value | km ³ | 9999.9 (separate display) | | | |
| | Indication method | Red 7 segment LED / character height 10A 5 digits | | | | |
| | Sampling rate | 4 cycle/sec. | | | | |
| Working temperature °C | | 1 to 50 (85%RH or less) | | | | |
| Input | | DC0 to 5V (compatible with analog output [blank] for WF1000, 5000, 6000, 7000, WFK5000, 6000 and 7000) | | | | |
| Output | Switch output | Relay contact (2ch) instantaneous / integrating possible. | | | | |
| | Switch output hysteresis | Optional (for instantaneous flow rate only) | | | | |
| | Switch output rated | AC220V, 0.5A, DC30V and 1A (COS = 1 dia.) | | | | |
| | Analog output | V | DC0 to 5 (linear output) | | | |
| | Accuracy | | ± 2.5%F.S (within instantaneous flow rate display range) | | | |
| | Response time | sec | Approximate 2 | | | |
| Power supply for sensor | | DC24V (astable) and Max. 30mA | | | | |
| Power supply | | AC100V/AC200V/DC24V common (Max. 10W) | | | | |
| Mass | | kg | | | | 0.6 |

How to order



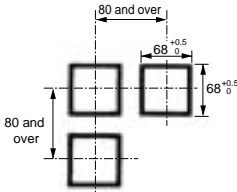
| A Flow rate range | |
|-------------------|------------------|
| 010 | 1.0 to 10 l/min. |
| 025 | 2.5 to 25 l/min. |
| 050 | 5 to 50 l/min. |
| 100 | 10 to 100 l/min. |
| 200 | 20 to 200 l/min. |

Dimensions  (File name: Page 1206 or Ending 31)



• Panel cut dimension

Standard panel cut dimension is as shown below.
(Note) Appropriate panel plate thickness is 1 to 4mm.



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

Seating / close
contact conf.
SW

Pressure SW
for coolant

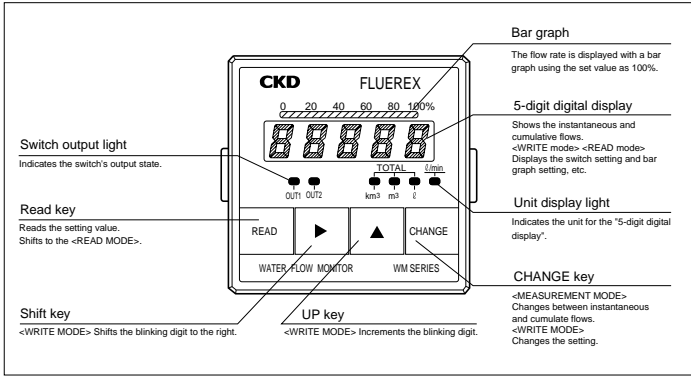
Flow sensor
for air

Total air
system

Water
cooling
refrigerator

Flow sensor
for water

Flow sensor
Flow rate monitor for water

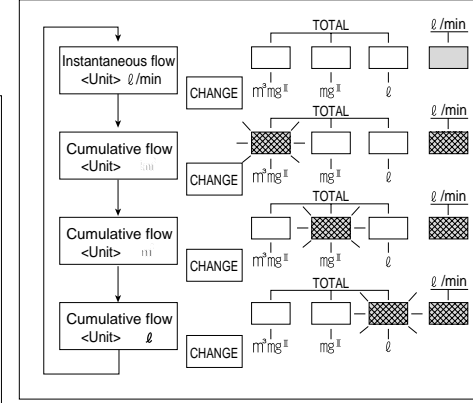


Note 1: The first display in third mode is setting 1 "Switch parameter display."
Note 2: When not using setting 1 or 2, set the switch parameter to P0000, the switch LOW display to L000.0, and the switch High display to H000.0. The switch output light and switch output do not function.
Note 3: The initial display is setting 1.

<MEASUREMENT MODE>

The normal flow is measured and displayed.
Switch operation : Operating state
Analog output : Operating state

Flow display changeover



Changing the flow temporarily

Use this to show cumulative flow rate for a short time, while show the instantaneous flow normally.

- 1) The display shown at left is displayed when the [CHANGE] key is pressed.
Note that only the unit matching the current cumulative flow is displayed when this display is opened first.
- 2) The unit light blinks when the temporary value is displayed.
- 3) The original display is returned to after 10 seconds.

Changing the normally displayed flow

Use this to select the flow to be displayed at all times.

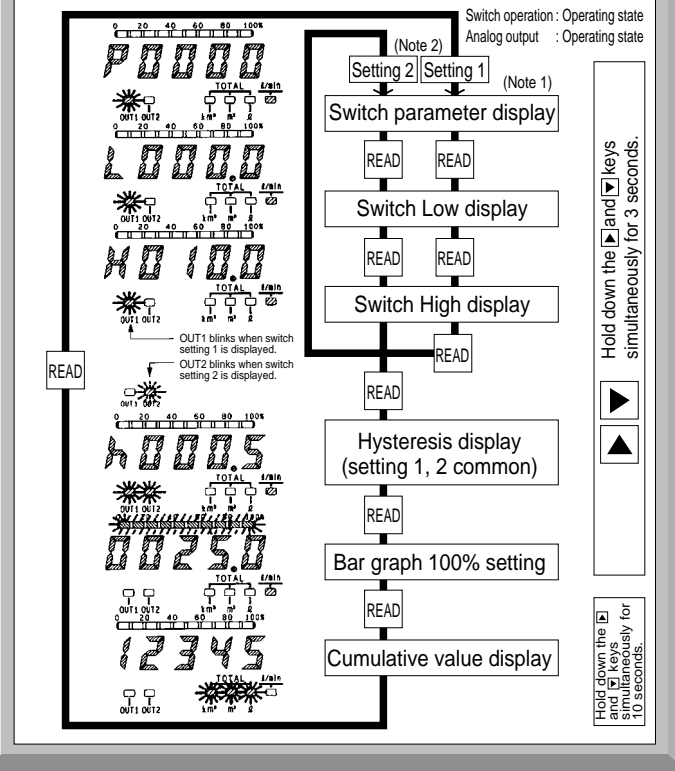
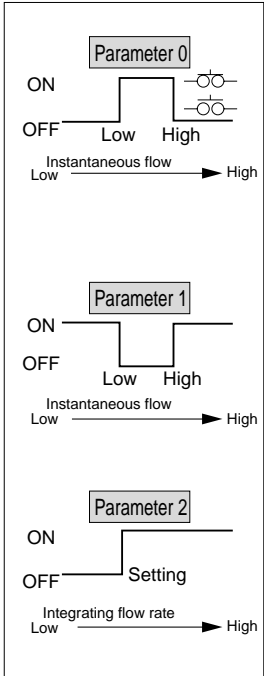
- 1) Press the [CHANGE] key. When the required display is displayed, hold down the [CHANGE] key for 5 seconds.
- 2) The changeover is completed when the unit light changes from blinking to continuously lit.
- 3) The instantaneous flow is displayed at shipment.

<READ MODE>

The switch setting, bar graph setting, etc., are read out.

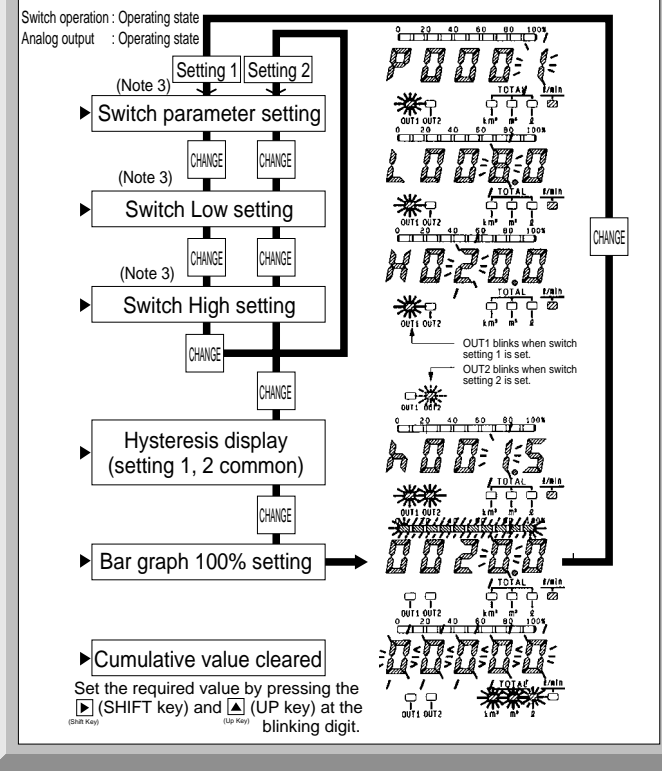
Switch parameters

Three types of parameters are selected based on the application.



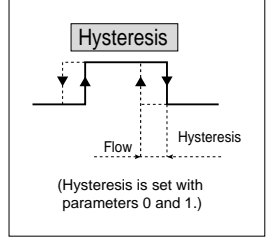
<WRITE MODE>

The switch setting, bar graph setting value, etc., are set or changed.



Hysteresis

A wide setting can be made randomly.



Bar graph 100% setting

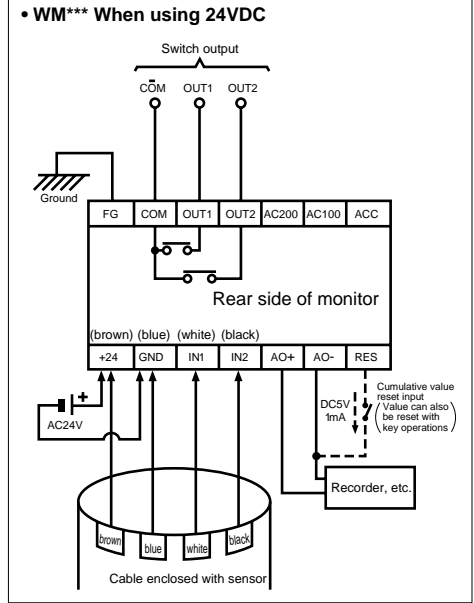
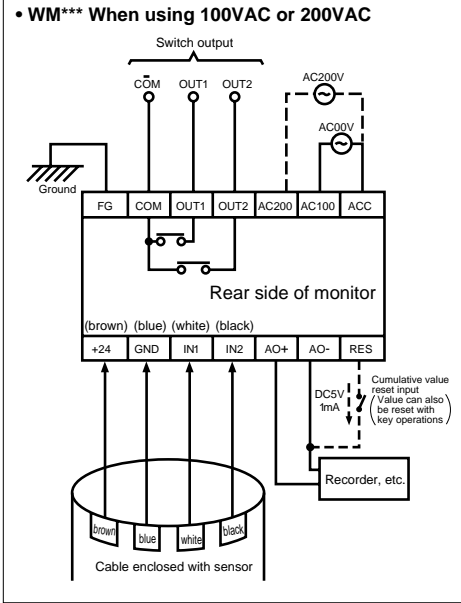
The load factor is displayed on the bar graph when the 100% flow rate is set.

Displaying and clearing the cumulative value

The cumulative flow from the value at shipment is displayed. To clear the value, hold down the [CHANGE] and [UP] keys simultaneously for 10 seconds, then change to MEASUREMENT MODE. Data is cleared.

- 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 rate monitor for water

Electrical wiring



Precautions for use Read before starting

Monitor: WM Series

Working environment

- **Corrosive environment**
Do not use this product in an environment containing corrosive gases such as sulphur dioxide.
- **Ambient temperature**
Use within an ambient temperature range 0 to 50°C.
- **Vibration and impact**
Avoid using with vibration exceeding 49m/s² or impact exceeding 294m/s². These levels could result in malfunction or damage.
- **Ambient environment**
The monitor is not drip-proof so check installation position and atmosphere.

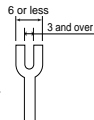
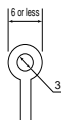
Vibration of ~~49~~ m/s² and over
Impact of ~~294~~ m/s² and over



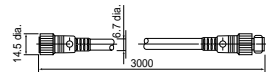
Electrical wiring

- Ground the FG terminal with Class 3 grounding (100 Ω or less). Do not use a common ground with the power distribution system.
- Use a wire with the same or higher performance than the 600 V vinyl wire (ISC3307) for the AC power supply. Insert a noise filter if required.
- Separate the cable from sources of noise such as power distribution wires. Failure to do so could result in malfunctions caused by noise.
- Separate the monitor from high voltage wires, high voltage devices, and powered devices such as motors.
- Check that there are no cutting chips or wire scraps on the monitor's gland.
- Keep wiring to the cumulative value reset input and recorder, etc., to within 3 m.
- Use a crimp terminal for wiring.

Crimp terminal

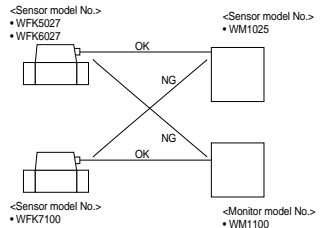


- Use cable enclosed with the sensor when wiring the monitor and sensor. When extending the cable, use the model No.: WF-FL-280742 (length 3 m) extension cable. The maximum total length is 10 m.



Electrical wiring

- Ground sensors and monitors having the same flow rate range.



Switch output contact

- Observe the following precautions when using the switch output contact:

Contact section specifications

| Load Descriptions | Resistance load (COSφ = 1) | Inductive load (COSφ = 0.4, L/R=7ms) |
|-------------------------------|----------------------------|--------------------------------------|
| Rated load | AC220V 0.5A DC30V 1A | AC220V 0.2A DC30V 0.5A |
| Rated energizing current | 1A | |
| Maximum contact voltage value | AC250V, DC60V | |
| Maximum contact current value | 1A | |
| Maximum contact capacitance | 110VA, 30W | 60VA, 15W |

- If these ratings are exceeded, turn the load ON and OFF with an auxiliary relay.
- When using an inductive load such as an auxiliary relay for relay contact output, use a CR filter as the arc suppression filter (when using AC), or protect the contact with a diode, etc. (Refer to the following table:)

Contact specifications

| Circuit example | Application | | Features and other items | Selecting the element |
|-----------------------|-------------|----|--------------------------|--|
| | AC | DC | | |
| CR | | △ | ○ | <p>The guide for C and R is: C: 1 to 0.5 (μF) of the contact current 1 A R: 0.5 to 1 (Ω) of the contact voltage 1 V. These may not necessarily match due to dispersion in load characteristics, etc. Test the state while considering that C is affected by discharge suppression when the contact is opened, and R plays a role in suppressing current when power is turned ON next. Generally, C should have a withstand voltage between 200 and 300 V. When an AC circuit is involved, use an AC capacitor (no polarity).</p> |
| | | ○ | ○ | |
| Diode | | × | ○ | <p>Energy accumulated in coils is passed as current by the parallel diode, and consumed as Joule heating by inductive load resistance. Recovery for this takes even longer than for CR.</p> <p>Use a diode with a reverse withstand voltage that is 10-fold and over than circuit voltage and for which forward current is larger than load current. If circuit voltage is not that high for the electronic circuit, a diode with a reverse withstand voltage 2 to 3 times larger than the power voltage can be used.</p> |
| Diode and Zener diode | | × | ○ | <p>This is effective when recovery of the diode is too slow.</p> <p>The Zener voltage of the Zener diode is approximately the same as the power voltage.</p> |
| Variable resistor | | ○ | ○ | <p>This uses the constant voltage of the variable resistor to prevent very high voltage from being applied across contacts. Recovery is also slower with this method. Connect the circuit between loads when using a 24 to 48 V power voltage and across contacts for a 100 to 200 V power voltage for maximum effect.</p> <p>Select cut voltage Vc to satisfy the following condition: When using alternating current, voltage must be multiplied by 2. Maximum contact voltage > Vc > Power voltage</p> |

* Avoid using the following arc suppressors:

| | | | |
|--|--|--|---|
| | These are extremely effective for extinguishing arcs at cut off, but capacity is accumulated in C when the contact is opened. C's short-circuit current flows when the contact is tripped and causes the contact to melt easily. | | This is extremely effective for extinguishing arcs at cutoff, but charged current flows to C when the contact is tripped, causing the contact to melt easily. |
|--|--|--|---|

- It is usually more difficult to switch a DC induction load than to a resistance load, so performance can be increased to the same level as the resistance load by using an appropriate arc suppressor.
- Keep wiring short to prevent effects from noise. Separate wire from sources of noise such as power distribution cables.

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 for water