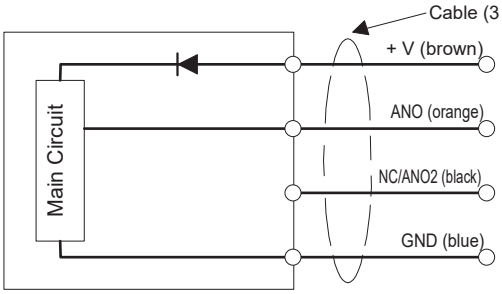
Flow rate sensor wiring method

- Always read the safety precautions before wiring.
- 4-conductor cabtyre cable 0.2 mm^2 is used.
- Option

Sensor (Analog output)	Switch (Switch output)
-A0; (0 to 5 [V])	-N0; (NPN a-contact, 2 points)
-A1; (4 to 20 [mA])	-N1; (NPN b-contact, 2 points)
-A2; (1 to 5 [V])	-P0; (PNP a-contact, 2 points)
-A3; (0 to 10 [V])	-P1; (PNP b-contact, 2 points)

*There is one alarm output point for the sensor/switch type.

● WFK3 □□□ S (sensor voltage output: -A0/-A2/-A3)

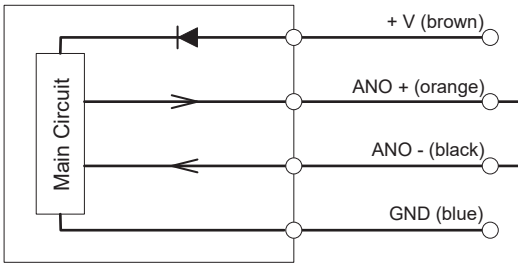


...Connect to DC power supply plus [+] : 12 to 24 VDC±10%
(15 to 24 VDC±10% for option A3)

...Analog output : Voltage in proportion to flow rate is output

...Standard: NC

... Connect to DC power supply minus (-) : 0 VDC



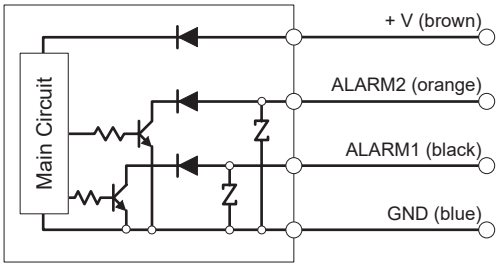
...Connect to DC power supply plus [+] : 12 to 24 VDC ±10%

...Connect to 4-20 mA input device

... Connect to DC power supply minus (-) : 0 VDC

* When connecting two or more flow rate sensors to the upper-level input circuit (receiver), carefully prevent signal interference.

● WFK3 □□□ M (Switch NPN output: -N0/-N1)



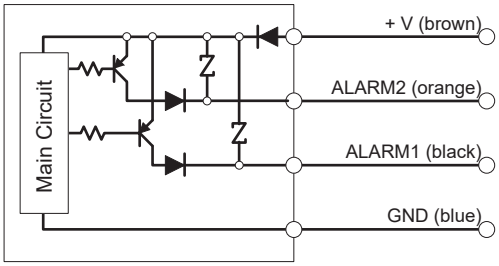
...Connect toDC power supply [+] : 12 to 24 VDC ±10%

...Switch 2 (OUT2) output : MAX. 30 VDC/50 mA

...Switch 1 (OUT1) output : MAX. 30 VDC/50 mA

...Connect to [-] of DC power supply : 0 VDC

● WFK3 □□□ M (Switch PNP output: -P0/-P1)



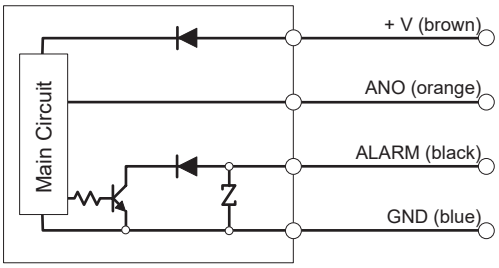
...Connect toDC power supply [+] : 12 to 24 VDC ±10%

...Switch 2 (OUT2) output : MAX. 50 mA

...Switch 1 (OUT1) output : MAX. 50 mA

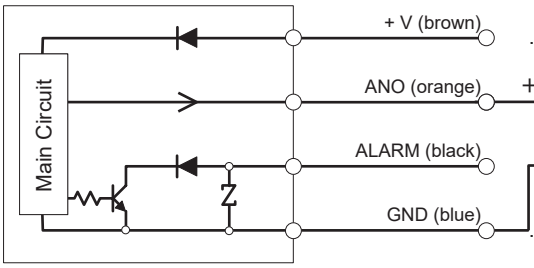
...Connect toDC power supply [-] : 0 VDC

● WFK3 □□□ C (sensor voltage output: -A0/-A2/-A3, Switch NPN output: N0/N1)



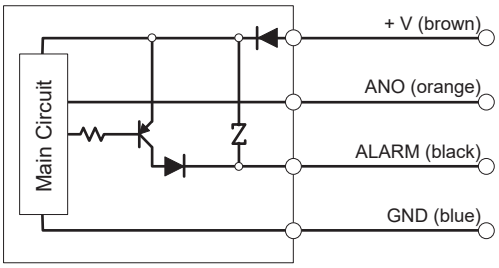
...Connect toDC power supply [+] : 12 to 24 VDC±10%
(15 to 24 VDC±10% for option A3)
...Analog output : Voltage in proportion to flow rate is output
...Switch (OUT) output : MAX. 30 VDC/50 mA
...Connect toDC power supply [-] : 0 VDC

● WFK3 □□□ C (sensor current output: -A1, Switch NPM output: N0,N1)



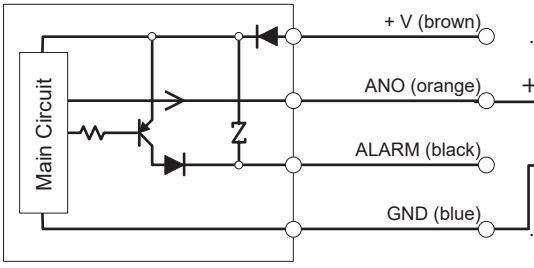
...Connect toDC power supply [+] : 12 to 24 VDC ±10%
...Connect to 4-20mA input device
...Switch (OUT) output
: MAX 30 VDC/50 mA
...Connect toDC power supply [-] : 0 VDC

● WFK3 □□□ C (sensor voltage output: -A0/-A2/-A3, Switch PNP output: P0,P1)



...Connect toDC power supply [+] : 12 to 24 VDC±10%
(15 to 24 VDC±10% for option A3)
...Analog output : Voltage in proportion to flow rate is output
...Switch (OUT) output : MAX 30 VDC/50 mA
...Connect toDC power supply [-] : 0 VDC

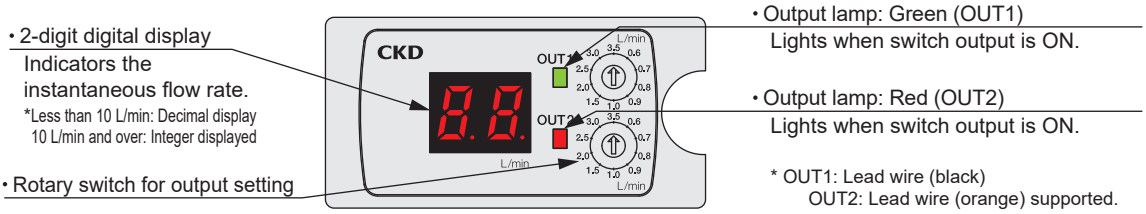
● WFK3 □□□ C (sensor current output: -A1, Switch PNP output: P0,P1)

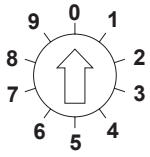


...Connect toDC power supply [+] : 12 to 24 VDC ±10%
...Connect to 4-20mA input device
...Switch (OUT) output
: MAX 30 VDC/50 mA
...Connect toDC power supply [-] : 0 VDC

Functions

●Switch (WFK30□ □M)

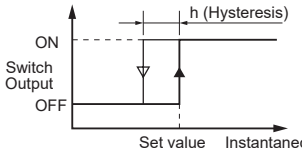




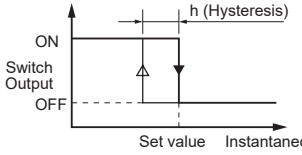
Allows you to set the switch output setting in 10 steps.
- Use a precision screwdriver, etc., to set the rotary switch. Be extremely careful, since applying excessive force to the rotating part may result in contact failure.
- Use the cylinder by making sure that the arrow aligns with the scale. If it is forcibly set at an intermediate point, the output may become unstable.
- Turn power OFF before setting switch outputs.
- After setting switch output, close the cover to display the set flow rate.

Switch output operation

[Output option: NO/PO]



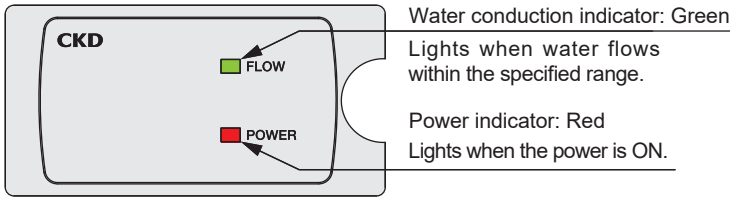
[Output option: N1/P1]



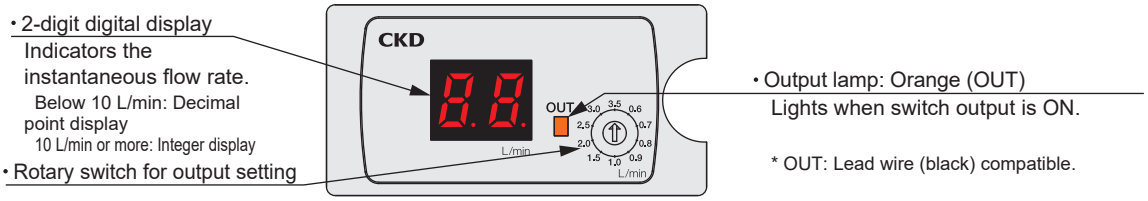
Switch output setting value [L/min]

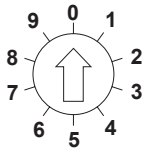
Rotary switch Contact number	Model		
	WFK3004M	WFK3012M	WFK3032M
1	0.6	2.0	5.0
2	0.7	3.0	9.0
3	0.8	4.0	12
4	0.9	5.0	14
5	1.0	6.0	16
6	1.5	7.0	18
7	2.0	8.0	21
8	2.5	9.0	24
9	3.0	10	27
0	3.5	11	30
Hysteresis	0.1	0.5	1.0

●Sensor (WFK30□ □S)



●Sensor/switch (WFK30□ □C)

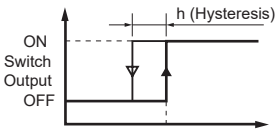




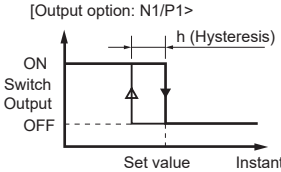
Allows you to set the switch output setting in 10 steps.
- Use a precision screwdriver, etc., to set the rotary switch. Be extremely careful, since applying excessive force to the rotating part may result in contact failure.
- Use the cylinder by making sure that the arrow aligns with the scale. If it is forcibly set at an intermediate point, the output may become unstable.
- Turn power OFF before setting switch outputs.
- After setting switch output, close the cover to display the set flow rate.

Switch output operation

[Output option: NO/PO>



[Output option: N1/P1>



Switch output set value [L/min]

Rotary switch Contact number	Model		
	WFK3004C	WFK3012C	WFK3032C
1	0.6	2.0	5.0
2	0.7	3.0	9.0
3	0.8	4.0	12
4	0.9	5.0	14
5	1.0	6.0	16
6	1.5	7.0	18
7	2.0	8.0	21
8	2.5	9.0	24
9	3.0	10	27
0	3.5	11	30
Hysteresis	0.1	0.5	1.0

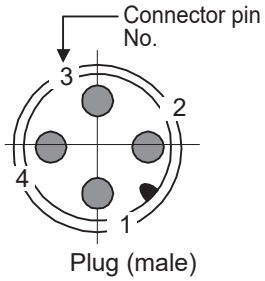
■ Specifications of WFC flow sensor part

Item			150 (WFC-150)	600 (WFC-600)
Rated flow range			0.5 to 15 L/min	2.0 to 60 L/min
Available fluid conductivity			5 μS/cm or more	
Repeatability *1			±6.0% F.S	
Response time *2			0.25 s/0.5 s/1 s/2 s/5 s (default 1 s)	
Switch Output			NPN or PNP transistor output	
	Max. load current		50 mA	
	Max. applied voltage		30 VDC	
	Internal Voltage Drop		NPN: 2.0V or less PNP: 2.4 V	
Analog Output		Voltage output	Voltage output: 1 to 5 V load impedance: 50 kΩ or more	
		Current output	Current output: 4 to 20mA, load impedance: 500 Ω or less	
Indicator			Dual screen display (top: 4-digit 7 segment green/red, bottom: 6-digit 11 segment white)	
Power Supply Voltage			24 VDC ±10% (ripple P-P ±10% or less)	
Current Consumption			65 mA or less	

*1: Characteristics when the response time is 5 s.
*2: The response time to reach 63% of the value in relation to the step input.
*3: Piping port and body metal part are grounded to DC (-)/blue wire. This product cannot be used in (+) ground power supply.

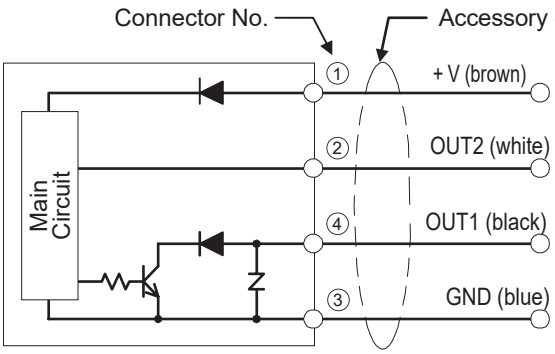
Wiring method

· Always read the safety precautions before wiring.
Connectors used are VA connectors (model No.: TM-4DSX3HG4) made by Correns Corporation. Specifications: For DC, 4-conductor 0.5 mm^2
Cable model No.: TM-4DSX3HG4
L-type cable model No.: VA-4DLX3HG4



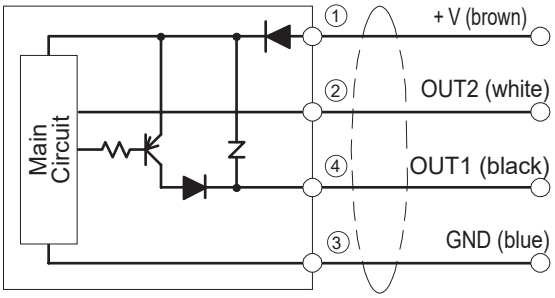
	Switch output	Analog Output
-NV	NPN transistor output	1 to 5 [V]
-NA		4 to 20 [mA]
-PV	PNP transistor output	1 to 5 [V]
-PA		4 to 20 [mA]

1) -NV, -NA



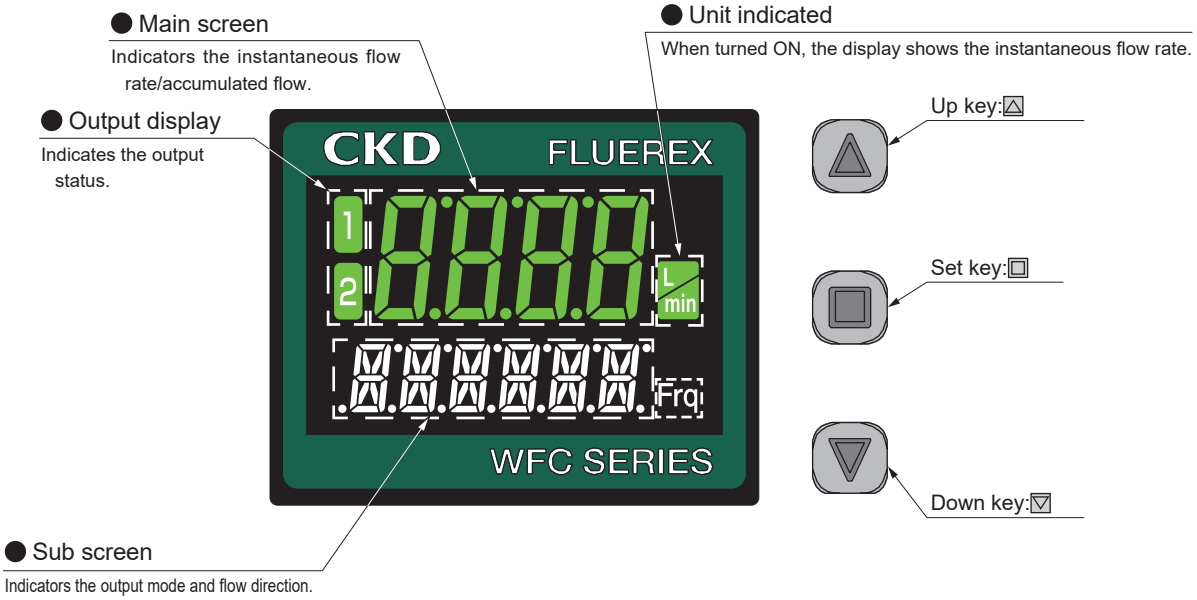
...Connectto DC power supply plus [+]: 24 VDC ±10%
: Analog output/switch input — : Voltage outputs current in proportion to flow rate /Remote zero adjustment or accumulation reset
...Switch output (NPN) — : MAX.30 VDC 50 mA
— Connect to [-] of DC power supply: 0 VDC

2) -PV, -PA

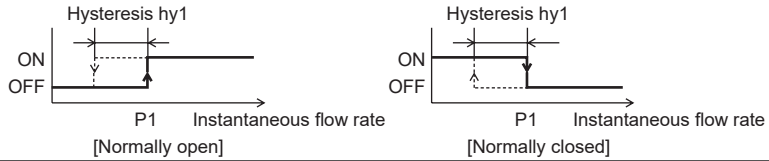
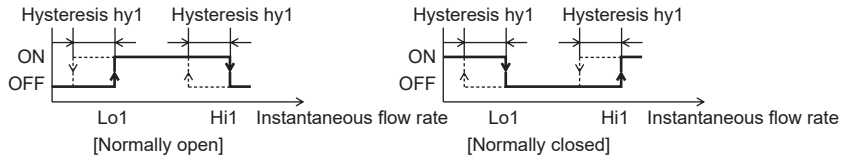
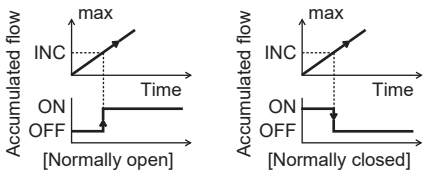
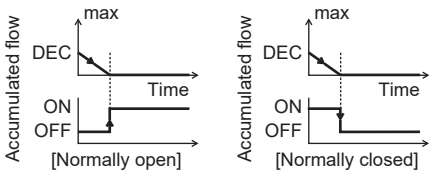
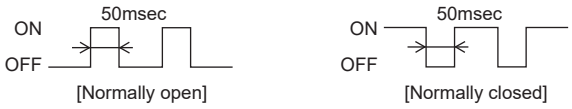
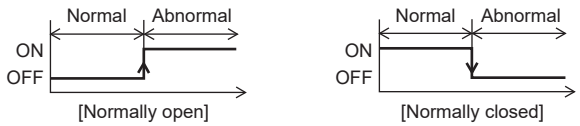
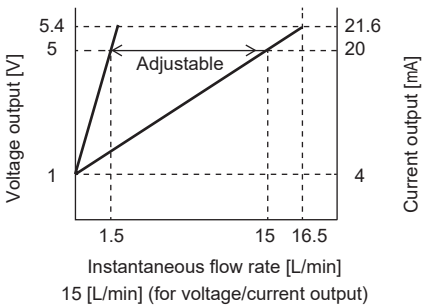


...Connect to DC power supply plus [+]: 24 VDC ±10%
: Analog output/switch input — : Voltage outputs current in proportion to flow rate /Remote zero adjustment or accumulation reset
...Switch output (PNP) — : MAX.50 mA
— Connect to [-] of DC power supply: 0 VDC

Functions

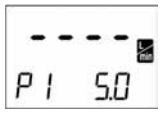


Output mode and output operation

①Hysteresis mode	
②Window comparator mode	
③Accumulated output mode	●Increment mode  ●Decrement mode 
④Integrated pulse output	
⑤Alarm output mode	
⑥Analog output mode	

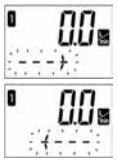
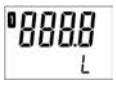
Measurement mode

[Normal screen]

Instantaneous Flow Rate Display	Hysteresis mode 	Window comparator mode 	Accumulated output mode 	Integrated pulse output mode 
	Analog Output 	Digital input: Remote zero adjustment 	Digital input: Accumulation reset 	Alarm output mode 
	Flow Direction  		Select any character 	No sub-screen display 
Total accumulated flow display		Up key: ▲, Down key: Accumulated units can be switched to "L", "kL", "ML" with ▼.		

Easy setting (shortcut mode)

By shortcut operation, settings with high frequency of use can be moved from the normal screen to the settable state.

Main screen	Normal screen ⇄ (□ Current screen blinks) ⇄ □  △ or ▽"Instantaneous value display", "total integrated value display" are selected and confirmed with □ .
Hysteresis mode	 △ or ▽ ⇄ □  △ Judgment value is set with △ or ▽ and confirmed with □ .
Accumulated output mode	 □ + ▽ ⇄ □  □ Integrated value is reset with .
Analog output mode	 △ or ▽ ⇄ □  △ F.S. is changed with △ or ▽ and confirmed with □ .
Flow Direction	 △ or ▽ ⇄ □  △ Flow direction is changed with △ or ▽ and confirmed with □ .
Total integrated value reset	 □ + ▽ ⇄  □ Reset by . △ can be canceled by △ or ▽.
Setting key lock	Normal screen ⇄ △ + ▽ (Hold down for 2 seconds or more) ⇄ 1 second after setting  △ changed in △ or ▽ and confirmed □ with .