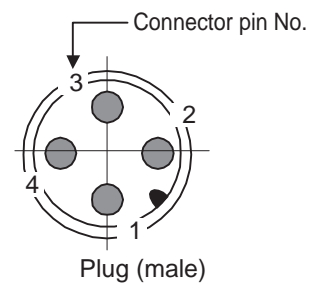


Wiring method

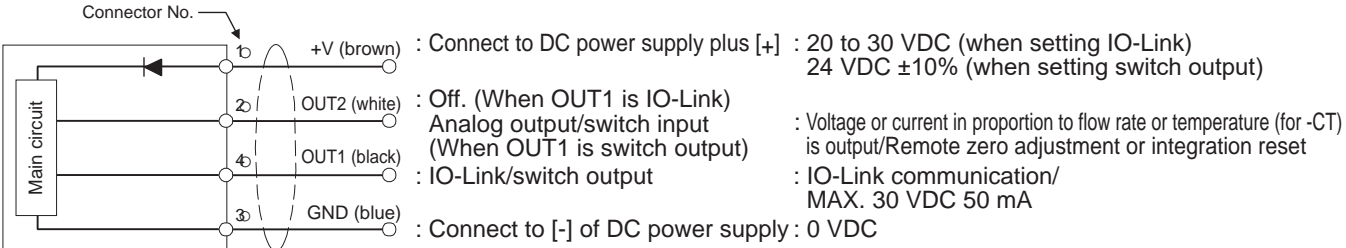
Always read the safety precautions before wiring.

*Keep the cable far away from power cords or other things that may cause noise. Noise can cause malfunctions.

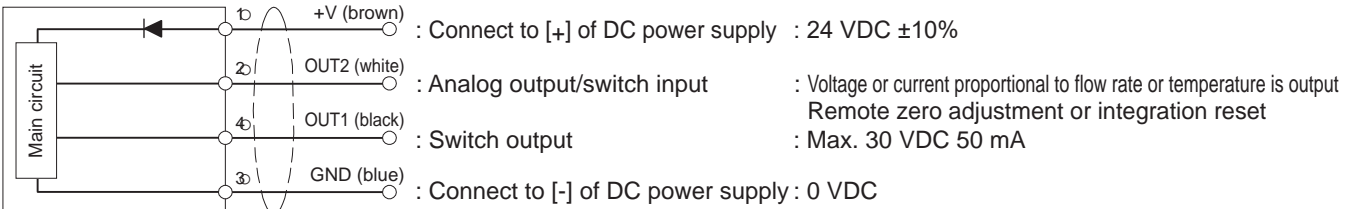
1) and 2) are used with the "Type with IO-Link and fluid temperature measurement function" wiring diagram, and 3) and 4) are used with the "Standard" wiring diagram.



1) -C,-CT

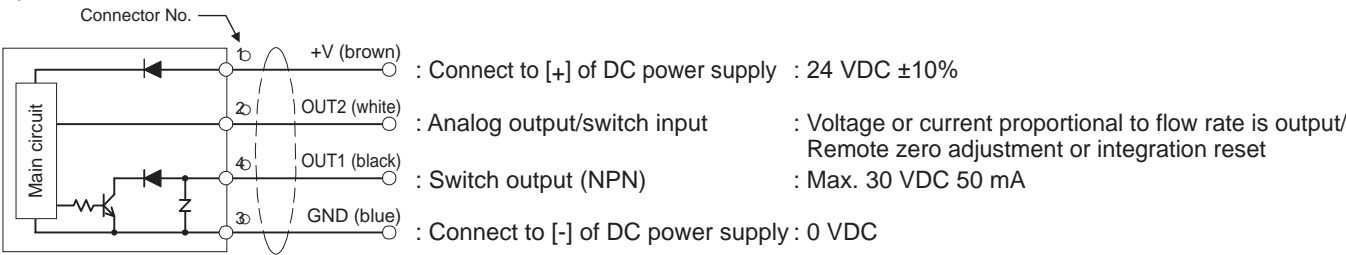


2) -T

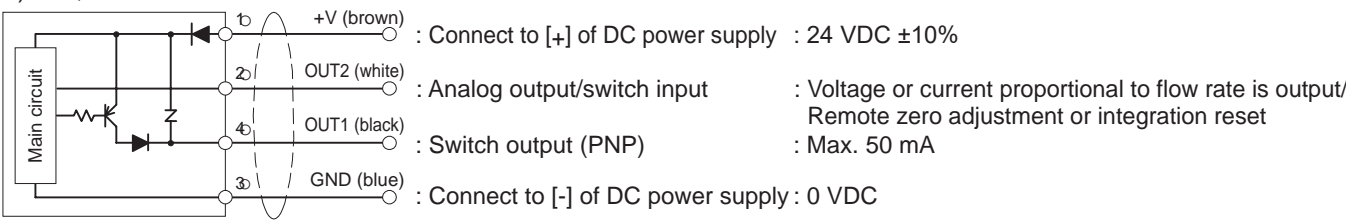


*With -C, -CT, and -T, the NPN/PNP of switch output can be switched from settings. The voltage/current of analog output can also be switched from settings.

3) -NV,-NA



4) -PV, -PA



*Wiring when cable option is mounted.

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

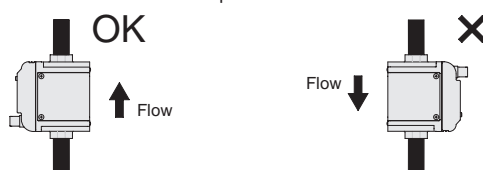
Piping method

[Piping]

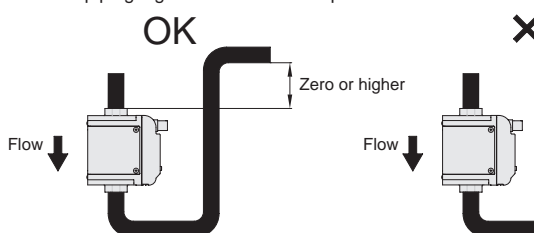
- Perform piping so that the flow path of the product is always full of water. If it is not full of water, a flow rate may be displayed even if the flow is halted.
- Perform zero adjustment operation after confirming that the flow path of the product is full of water and the flow is stationary.
- Do not allow gas to enter the piping.
- Though mounting orientation is unrestricted, display surface horizontal to the ground is recommended in lateral pull piping so as to be less susceptible to the influence of air bubbles.
- Set the flow direction for piping and flow rate sensor correctly.
- Provide flow rate adjusting valve, etc. on the downstream side of the sensor.

[Piping method]

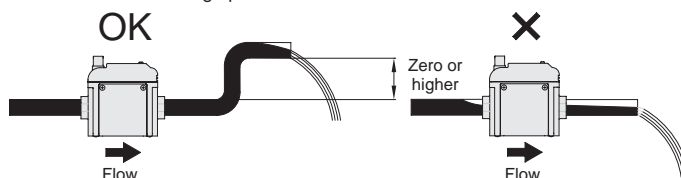
Install with the flow direction from bottom to top



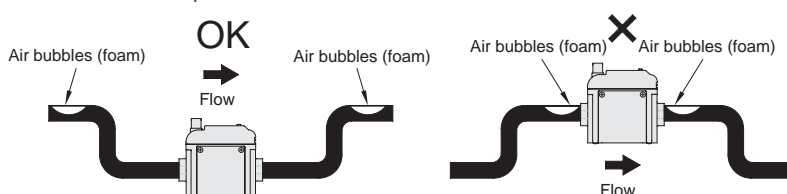
When the flow is from top to bottom
Route the downstream piping higher than the sensor position



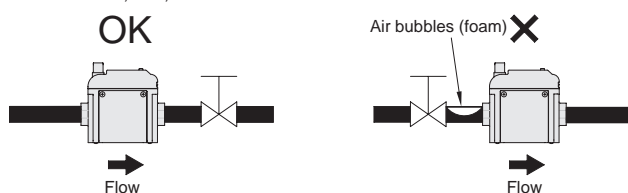
When the sensor downstream side is open to the atmosphere
Install the sensor below the discharge port



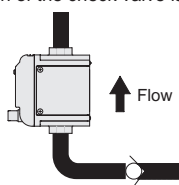
Mount the sensor in a position where air bubbles will not accumulate



Install a flow control valve, etc., downstream of the sensor



If the flow path may become empty due to reverse flow caused by water head pressure when water is stopped, installation of the check valve is recommended.



Use CKD's CCH Series check valve.

F.R.L.
F.R.
F (Filtr)
R (Reg)
L (Lub)
Drain Separ
Mech Press SW
Res press exh valve
SlowStart
Anti-bac/Bac-remove Filtr
Film Resist FR
Oil-ProhR
Med Press FR
No Cu/ PTFE FRL
Outdrs FRL
Adapter Joiner Press Gauge
CompFRL
LgFRL
PrecsR
VacF/R
Clean FR
ElecPneuR
AirBoost
Speed Ctrl
Silncr
CheckV/ other
Fit/Tube
Nozzle
Air Unit
PresCompn
Electro Press SW
ContactSW
AirSens
PresSW Cool
Air Flo Sens/Ctrl
WaterRtSens
TotAirSys (Total Air)
TotAirSys (Gamma)
Gas generator
RefrDry
DesicDry
HiPolymDry
MainFiltr
Dischrg etc
Ending

F.R.L.
F.R.
F (Filtr)
R (Reg)
L (Lub)
Drain
Separ
Mech
Press SW
Res press
exh valve
SlowStart
Anti-bac/Bac-
remove Filtr
Film
Resist FR
Oil-ProhR
Med
Press FR
No Cu/
PTFE FRL
Outdrs FRL
Adapter
Joiner
Press
Gauge
CompFRL
LgFRL
PrecsR
VacF/R
Clean FR
ElecPneR
AirBoost
Speed Ctrl
Silncr
CheckV/
other
Fit/Tube
Nozzle
Air Unit
PrecsCompn
Electro
Press SW
ContactSW
AirSens
PresSW
Cool
Air Flo
Sens/Ctrl
WaterRtSens
TotAirSys
(Total Air)
TotAirSys
(Gamma)
Gas
generator
RefrDry
DesicDry
HiPolymDry
MainFiltr
Dischrg
etc
Ending

IO-Link parameter specifications

1. General

Item	Details
Communication protocol	IO-Link
Communication protocol version	V1.1
Transmission bit rate	COM2 (38.4 kbps)
Port	M12 Class A
Process data (input)	4-byte
Process data (output)	0-byte
Min. cycle time	5 ms
Data storage	1 kbyte
SIO mode support	None

2. Process data

Bit	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
Data name	MSB															LSB
	Instantaneous flow rate															
Data range	Refer to Table 1															
Format	UInteger16															

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Data name	Error	WARNING	-	-	-	-	Switch output		MSB							LSB
							2	1								
Data range	True/False								-10 to 110°C							
Format	Boolean								Integer8							

Data range (Table 1)

Flow rate range	150	600
Data range	0.0 to 18.0 L/min	0.0 to 72.0 L/min

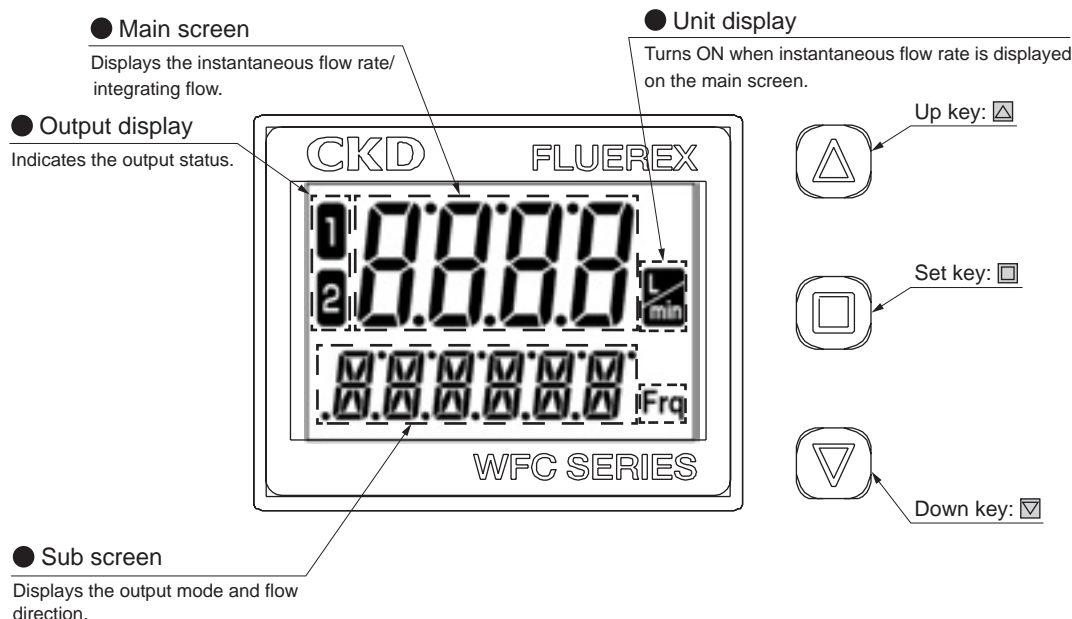
* IODD file can be downloaded from the CKD website. (<https://www.ckd.co.jp/en/>)

● Explanation of functions

Item	Explanation
Instantaneous flow rate	Instantaneous flow rate is sent to the master as cycle data.
Fluid temperature	Fluid temperature is sent to the master as cycle data.
Switch output function	The switch output operation function can be set. (Instantaneous flow rate, integrating flow, temperature)
Error notification	Errors and error details can be confirmed.
Peak hold function	The peak values of instantaneous flow rate and fluid temperature can be confirmed and reset.
Integrating flow	Integrating flow can be confirmed and reset.
Power ON time	Total power ON time can be confirmed. (Power ON time cannot be reset.)
Display setting	The display contents, colors, and vertical inversion of the main screen and sub screen can be changed.
Key lock	Button operations can be locked and unlocked.
Flow direction	Flow direction can be changed.
Integrating flow unit	Integrating flow unit can be changed.
Eco mode	ECO mode can be set to ON and OFF.
Parallel mode	Parallel mode can be set to ON and OFF.
Response time	Response time can be changed.
Optional characters	The optional characters to be displayed on the sub screen can be changed.
Low flow cut	The threshold at which the flow rate value becomes 0 can be set.
Zero adjustment	The zero point of flow rate can be set.
Reset function	The product can be returned to factory settings.
Data storage function	Set values can be uploaded to and downloaded from the master.
Unit identification function	Manufacturer, model No., serial No., and other information can be confirmed.

*Refer to the instruction manual for details on IO-Link parameter specifications.

Functions



Measurement mode

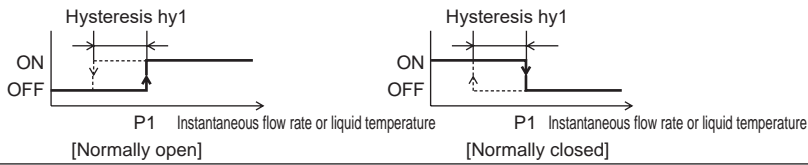
[Normal screen]

Instantaneous flow rate display	Hysteresis mode 	Window comparator mode 	Integrated output mode 	Integrated pulse output mode
	Analog output (flow rate) 	Analog output (fluid temperature) 	Switch input: remote zero adjustment 	Digital input: Integration reset
	Alarm output mode 	Fluid temperature 	Frequency pulse output mode 	IO-Link communication mode
	Flow direction 		Select any character 	No sub-screen display
Total integrating flow display	 Integrated unit can be switched to "L", "kL", "ML" with up key: ▲ and down key: ▼.			

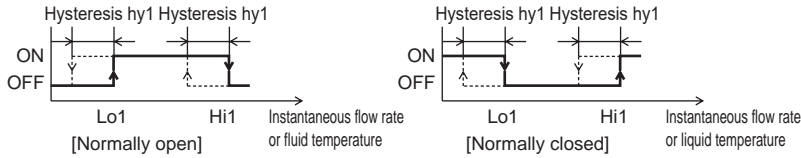
F.R.L.
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F (Filtr)
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Drain Separ
Mech Press SW
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Anti-bac/Bac- remove Filtr
Film Resist FR
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Med Press FR
No Cu/ PTFE FRL
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Adapter Joiner Press Gauge
CompFRL
LgFRL
PrecsR
VacF/R
Clean FR
ElecPneuR
AirBoost
Speed Ctrl
Silncr
CheckV/ other
Fit/Tube
Nozzle
Air Unit
PrecsCompn
Electro Press SW
ContactSW
AirSens
PresSW Cool
Air Flo Sens/Ctrl
WaterRtSens
TotAirSys (Total Air)
TotAirSys (Gamma)
Gas generator
RefrDry
DesicDry
HiPolymDry
MainFiltr
Dischrg etc
Ending

Output mode and output operation

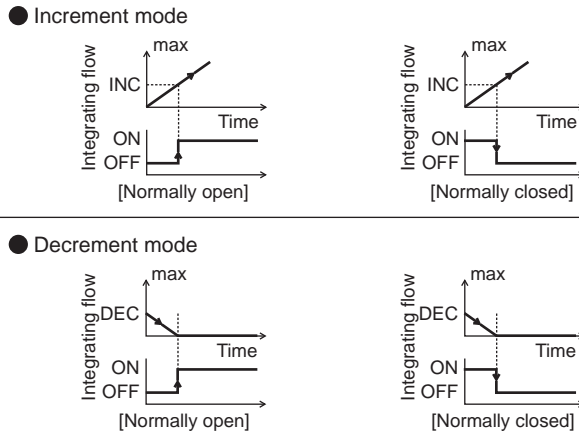
(1) Hysteresis mode



(2) Window comparator mode



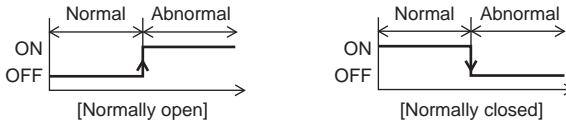
(3) Integrated output mode



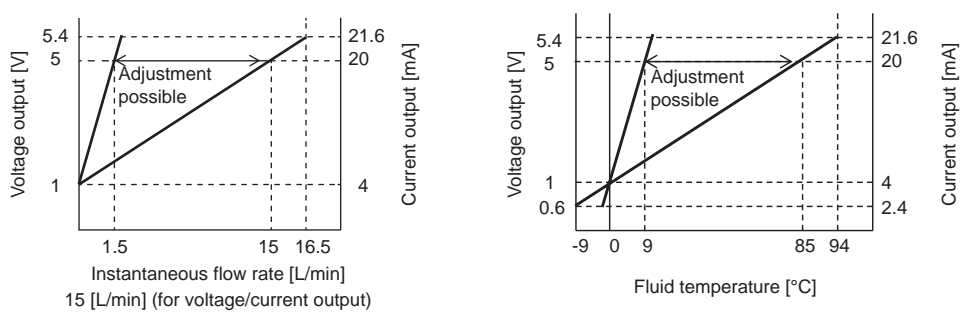
(4) Integrated pulse output



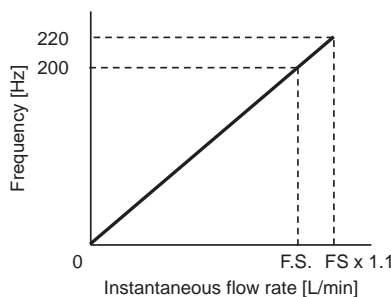
(5) Alarm output mode



(6) Analog output mode

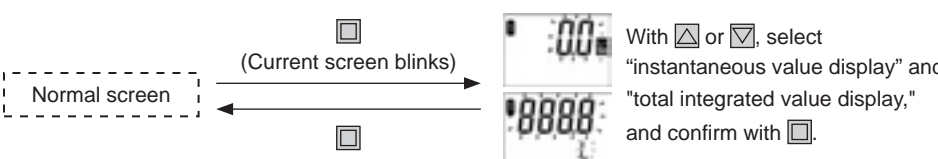
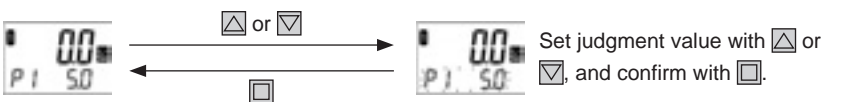

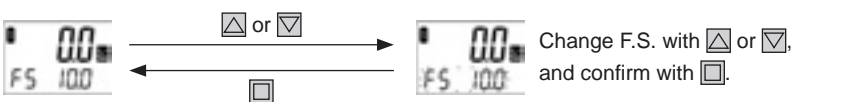


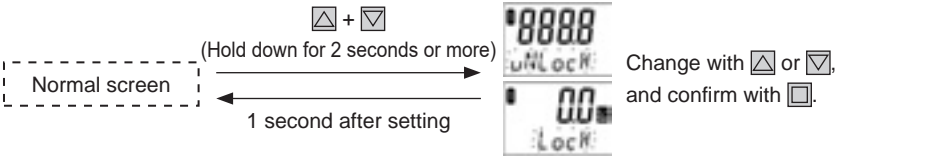


(7) Frequency pulse output mode



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	 <p>With or , select "instantaneous value display" and "total integrated value display," and confirm with .</p>
Hysteresis mode	 <p>Set judgment value with or , and confirm with .</p>
Integrated output mode	 <p>Integrated value is reset with .</p>
Analog output mode	 <p>Change F.S. with or , and confirm with .</p>
Flow direction	 <p>Change flow direction with or , and confirm with .</p>
Total integrated value reset	 <p>Reset with . Cancel with or .</p>
Setting key lock	 <p>Change with or , and confirm with .</p>

F.R.L.
F.R.
F (Filtr)
R (Reg)
L (Lub)
Drain Separ
Mech Press SW
Res press exh valve
SlowStart
Anti-bac/Bac-remove Filtr
Film Resist FR
Oil-ProhR
Med Press FR
No Cu/PTFE FRL
Outdrs FRL
Adapter Joiner Press Gauge
CompFRL
LgFRL
PrecsR
VacF/R
Clean FR
ElecPneuR
AirBoost
Speed Ctrl
Silncr
CheckV/other
Fit/Tube
Nozzle
Air Unit
PrecsCompn
Electro Press SW
ContactSW
AirSens
PresSW Cool
Air Flo Sens/Ctrl
WaterRtSens
TotAirSys (Total Air)
TotAirSys (Gamma)
Gas generator
RefrDry
DesicDry
HiPolymDry
MainFiltr
Dischrg etc
Ending