

# FC series Thermal Type Flow Switch

## Product features

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### Feature

- Two-color display, easy to detect the value.
- Intuitive integration, convenient and easy to operate.
- Lightweight and easy to install.



### Specification

Item	Model	FCS				FCM			FCH		
Flow rate	L/min	0.5	2	10	20	50	100	200	500	1000	
Port size	mm	Ø4, Ø6, Ø8, PT1/4, PT1/8				Ø6, Ø8, PT1/4, PT1/8			PT1/2		
Measure fluid		Air, nitrogen <sup>Note 2</sup>									
Flow unit <sup>Note 1</sup>	Display	2 color LCD									
	Displayable range	L/min	0~0.5	0~2	0~10	0~20	0~50	0~100	0~200	0~500	0~1000
	Min. display unit	L/min	0.001	0.01		0.1			1		
Accumulated pulse flow function	Displayable range	L	99999.99			999999.9			9999999		
	Min. display unit	L	0.001	0.01		0.1			1		
Power Type	Voltage	DC24V(±10%)									
Current consumption		50mA or below <sup>Note 5</sup>									
Response time		50ms or below									
Environment <sup>Note 2</sup>	Min. operating pressure	MPa	0.1								
	Max. operating pressure	MPa	0.7								
	Proof pressure	MPa	1								
	Ambient of fluid temperature and humidity		0~50°C, 90% RH or below								
	Operating temperature range		0~50°C								
Accuracy <sup>Note 3</sup>	Operating range		3~100%F.S.								
	Linearity		within ±3%F.S.(The secondary atmospheric release)								
	Pressure characteristics		within ±5%F.S.								
	Temperature characteristics		within ±0.2%F.S/°C (15~35°C, 25°C base)								
	Repeatability		within ±1%F.S.								
Output type	Analog output		Voltage output: 0.5~4.5V, Load Impedance: 50kΩ Voltage output: 4~20mA, Load Impedance: 600Ω <sup>Note 4</sup>								
	Switch output		2NPN open collector output 2PNP open collector output (Max. loading current: 50mA; Power supply voltage: DC24V)								
Wiring		Ø3.8AWG26 X 5Core									
Enclosure		IP40									
Circuit protection <sup>Note 6</sup>		Reverse power connect protection, Output reverse connection protection									
Weight	g	59							138		

Note: 1. Converted to volumetric flow at 20° C of 1 barometric pressure (101 kPa).

2. When applying compressed air, please use clean air that complies to JIS B 8392-1:2003 Class 1.1.1 to 1.6.2. Compressed air from the compressor contains drainage (water, oxidized oil, foreign matter, etc.). Install an air dryer (minimum pressure dew point: 10° C or colder), and oil mist filter (maximum oil concentration: 0.1 mg/m<sup>3</sup>) on the primary side of this product to maintain product functions.

3. Please collaborate the product within specification requested. The environment condition: 25±3° C, voltage output DC 24V +/- 0.1V. F.S. indicates the actual portion of flow rate.

4. Analog output is with load impedance 1kΩ. When the connection to load impedance is low, the output value differentiation will increase. Please do make sure the connection of load impedance difference before use.

5. Current for 24 VDC connection with no load connected. Consumed current varies with the load connection.

6. This product's protection circuit is effective only for specific misconnections and load short-circuits. It does not provide protection for all misconnections.

7. Please refer to P.1-4.88 for FC precautions.

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# FC series Thermal Type Flow Switch

## Model selection

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### Sequence 1 Flow range selection

#### Flow reference table

Flow	Measuring flow range	F.S. flow deviation
500mL	15mL~500mL	±15mL
2L	0.06L~2L	±0.06L
10L	0.3L~10L	±0.3L
20L	0.6L~20L	±0.6L
50L	1.5L~50L	±1.5L
100L	3L~100L	±3L
200L	6L~200L	±6L
500L	15L~500L	±15L
1000L	30L~1000L	±30L

- F.S. flow deviation (allowable error ±3%)  
ex: 10L (1000mL) flowmeter 1000mL\*±3% accuracy error is equal to error value of ±300ml. If the target flow rate is 300ml, its 0-600ml is within the allowable range. If the error value is required to ±60ml, 2L is recommended Specification flowmeter. (The the flow rate is larger , the allowable error range is larger )
- Before selecting a flow meter, you need to determine the flow range you used.  
ex: Flow meter is 30L, 50L can be selected; 150L can be 200L
- Pay attention to the Min. flow range for the flowmeter  
ex: 1000L is at least 30L, so the flow rate below 30L will be inaccurate
- If the rate is higher than F.S. 3%, the flowmeter will display H.  
ex: The maximum allowable error value of 1000L is 1060L, if it is higher than 1060L, H will be displayed

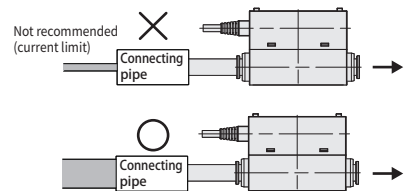
### Sequence 2 Port size selection

- Confirm whether the connection diameter of the product can meet your requirements also the specifications on the catalog.  
(EX: 500 type connection caliber only Ø6 and Ø8 specifications can be used directly)
- It is recommended that the pipeline before the inlet and outlet ports be greater than or equal to the diameter of the connecting pipe. If it is lower than the pipe diameter, it may cause flow restriction.

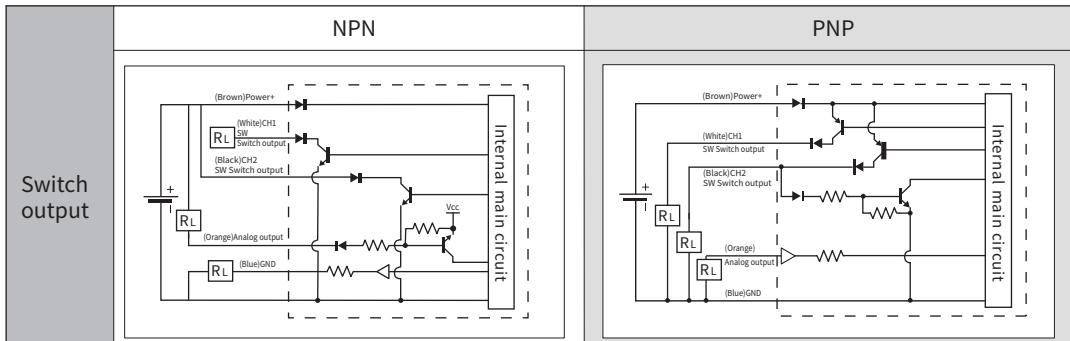
### Sequence 3 Analog output and switch output is option

- The output signal has voltage and current options, please confirm the output signal and choose.

Output signal	Voltage type	DC0.5-4.5V
	Current type	DC4-20mA
Output impedance	Voltage type	50kΩ
	Current type	300Ω



- Confirm the switch signal NPN or PNP type.



# FC series Thermal Type Flow Switch

Code of order

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## Code of order -Thermal type flow switch

**FC S - 020 - C04 - V - N - B - 3**



1

Mark	Type
S	Small flow rate
M	Medium flow rate
H	Large flow rate

2

Type	Mark	Flow(L/min)
FCS	005	500mL
	020	2
	100	10
	200	20
FCM	500	50
	101	100
	201	200
FCH	501	500
	102	1000

3

Mark	Port Size	FCS				FCM			FCH	
		005	020	100	200	500	101	201	501	102
C04	Ø4	●	●	●	—	—	—	—	—	—
C06	Ø6	●	●	●	●	●	—	—	—	—
C08	Ø8	—	—	—	—	●	●	●	—	—
P01	PT1/8	●	●	●	●	●	—	—	—	—
P02	PT1/4	—	—	—	●	●	●	●	—	—
P04	PT1/2	—	—	—	—	—	—	—	●	●

4

Mark	Display Output
V	Voltage type 0.5-4.5V
A	Current type 4-20mA

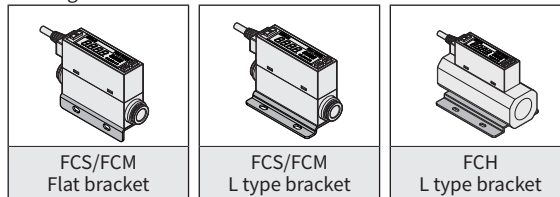
5

Mark	Switch Output
N	NPN Output
P	PNP Output

6

Mark	Bracket	FCS	FCM	FCH
None	—	No bracket		
B	Flat bracket	●	●	—
L	L type bracket	●	●	●

● Image



7

Mark	Cable Connector
None	Without cable
1	1m
3	3m

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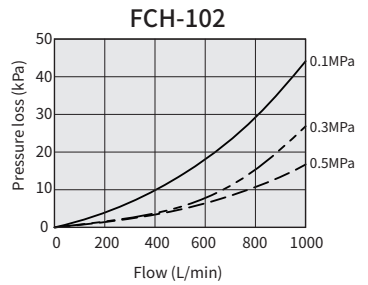
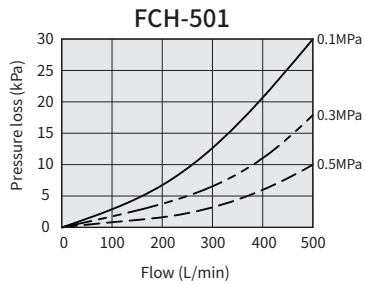
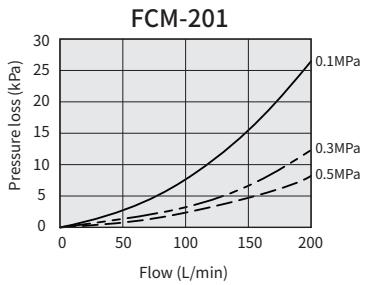
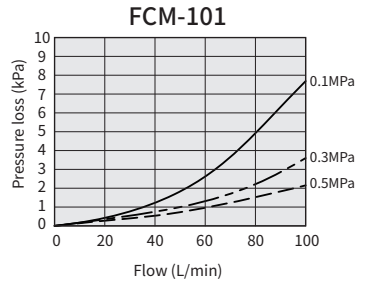
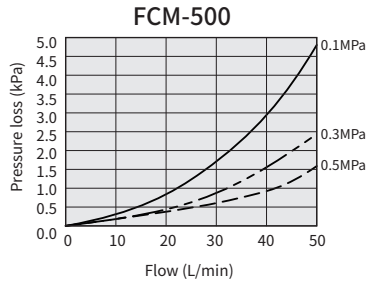
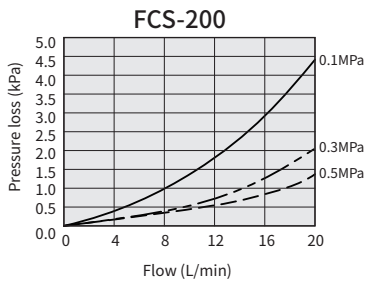
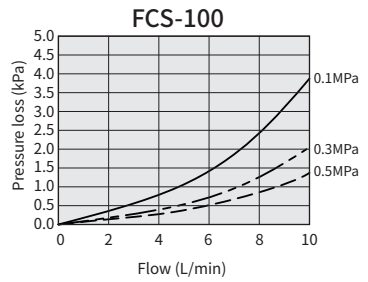
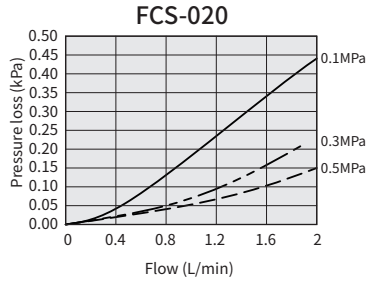
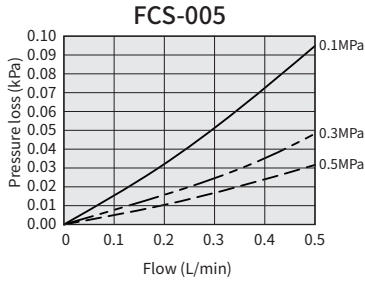
FC-R

# FC series Thermal Type Flow Switch

## Characteristics graph

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### Pressure loss characteristics

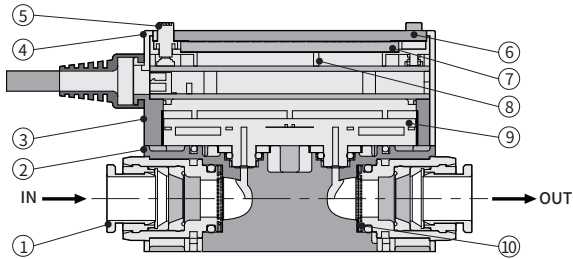


# FC series Thermal Type Flow Switch

## Product features

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### FCS



### Components and Material list

No.	Item	Material
1	Fitting assembly	Aluminum material
2	Main body	Nylon fiber
3	Cover of sensor module	Nylon
4	Cover	ABS resin
5	Bottom	Silicone
6	Acrylic display frame	Acrylic
7	LCD	-
8	LCD support bracket	Polycarbonate
9	Flow sensor module	PCB
10	Fairing board	Stainless steel

CVTR

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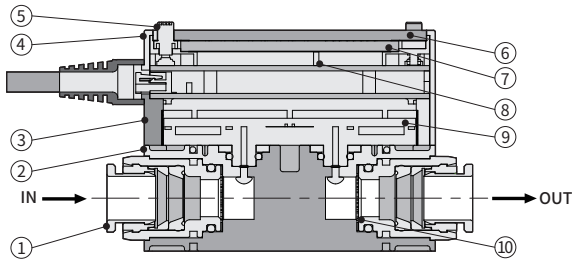
CVFR

CMT

CMA

FPF

### FCM



### Components and Material list

No.	Item	Material
1	Fitting assembly	Aluminum material
2	Main body	Nylon fiber
3	Cover of sensor module	Nylon
4	Cover	ABS resin
5	Bottom	Silicone
6	Acrylic display frame	Acrylic
7	LCD	-
8	LCD support bracket	Polycarbonate
9	Flow sensor module	PCB
10	Fairing board	Stainless steel

FP

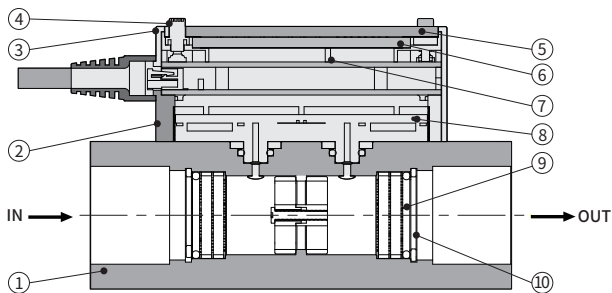
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FC-R

### FCH



### Components and Material list

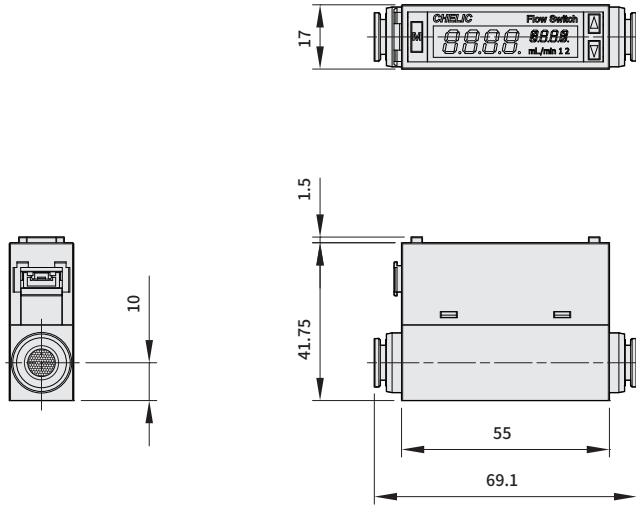
No.	Item	Material
1	Main body	Aluminum material
2	Cover of sensor module	Nylon
3	Cover	ABS resin
4	Bottom	Silicone
5	Acrylic display frame	Acrylic
6	LCD	-
7	LCD support bracket	Polycarbonate
8	Flow sensor module	PCB
9	Fairing board	Stainless steel
10	O-ring	Stainless steel

# FC series Thermal Type Flow Switch

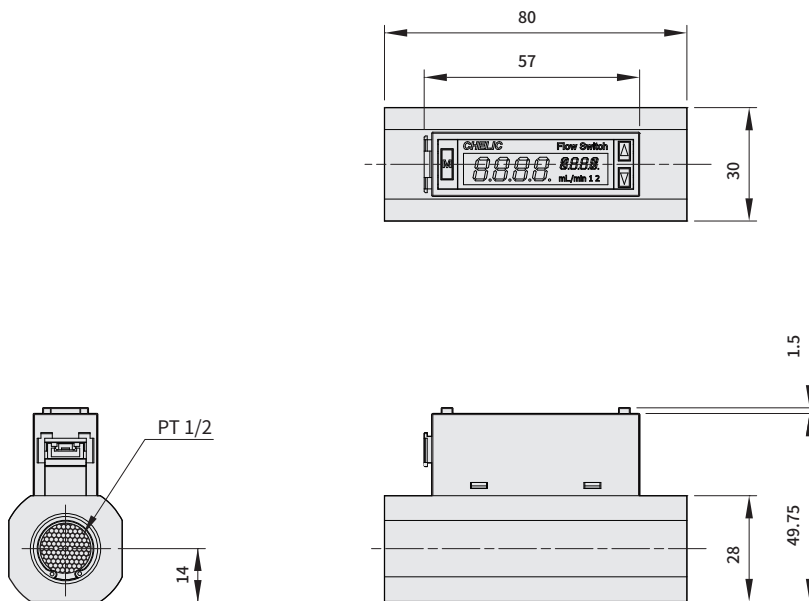
## Dimensions

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### FCS/ FCM



### FCH



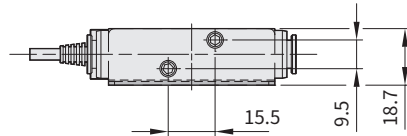
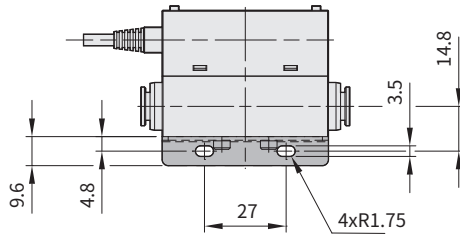
# FC series Thermal Type Flow Switch

## Dimensions

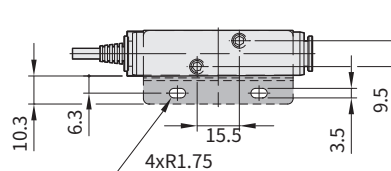
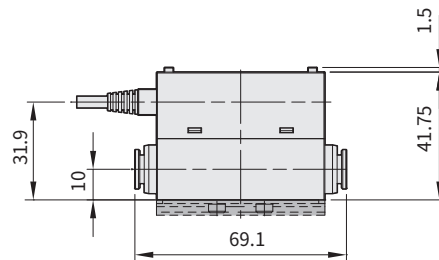
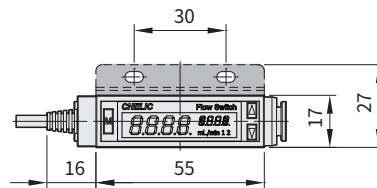
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### FCs/ FCM Bracket

#### Flat bracket- B



#### L type bracket- L



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FP

FPX

FC

FC-D

FC-R

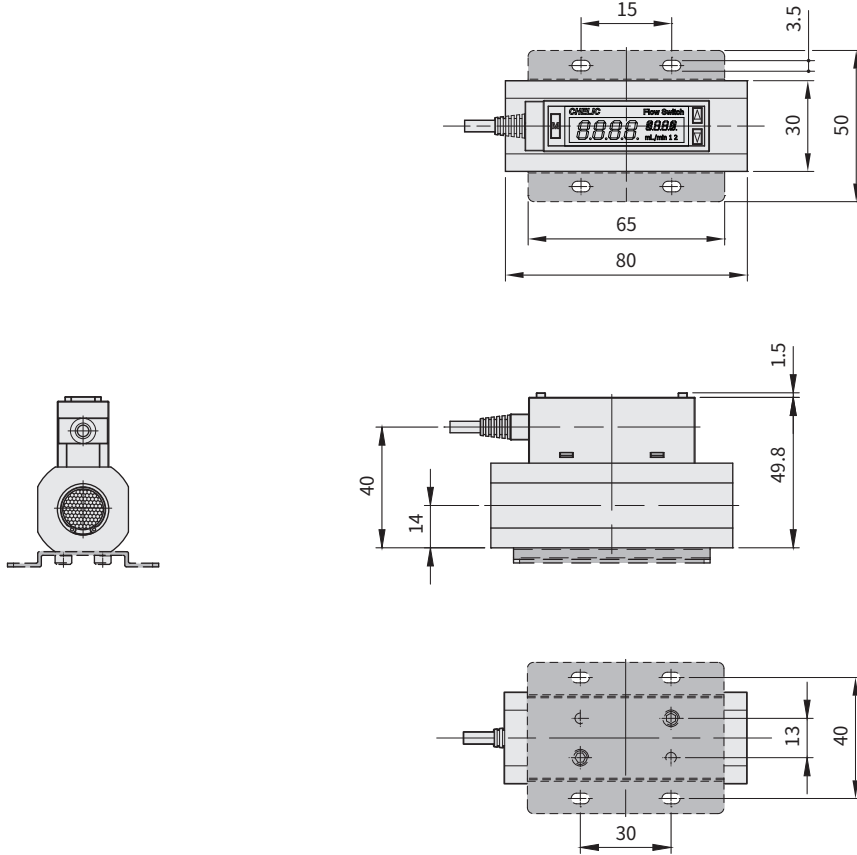
# FC series Thermal Type Flow Switch

Dimensions/ Wire connector

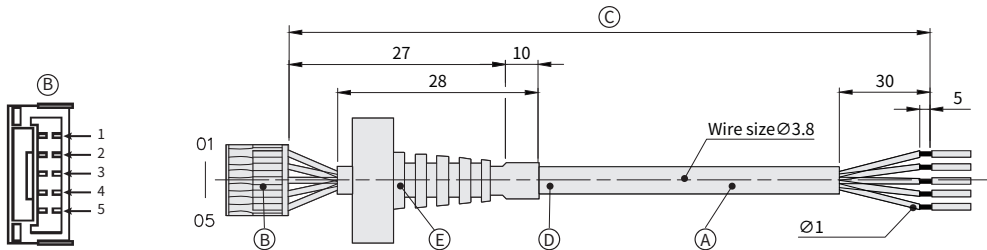
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## FCH Bracket

### L type bracket- L



## FC series wire connector



PIN	Wire color	Specification
01	Brown	Power+ (24V)
02	White	CH1 (switch output 1: max: 50mA)
03	Black	CH2 (switch output 2: max: 50mA)
04	Orange	Voltage output: 0.5-4.5V Current output: 4-20mA
05	Blue	Power-(GND)

NO.	Specification
(A)	Wire: Inside (AWG26/ 5 line); cover: white
(B)	5 PIN connector
(C)	Wire length: L = 1000mm ± 50 or L = 3000mm ± 50 (depend on part number)
(D)	Heat shrink tubing (black)
(E)	FC-D/ FC-R series electronic connector anti-folding sleeve