

Capacitance electromagnetic flow sensor

# WFC Series

With IO-Link, fluid temperature measurement function

- Flow rate range: 0.5 to 15, 2.0 to 60 L/min



## Specifications

Descriptions		WFC-150	WFC-600		
Port size		Rc3/8, G3/8, 3/8NPT	Rc1/2, G1/2, 1/2NPT	Rc3/4, G3/4, 3/4NPT	
Applicable fluid		Fluids (conductive fluids) that do not corrode water/wetted part materials			
Available fluid conductivity		5 $\mu$ S/cm or more			
Detection		Capacitance			
Rated flow range		0.5 to 15 L/min	2.0 to 60 L/min		
Low flow cut flow rate *1		Measured range max. flow rate of 3%			
Working fluid temperature *8		0 to 85°C (no freezing)			
Display units		Instantaneous flow rate L/min Accumulated flow L, kL, ML Fluid temperature °C			
Flow rate	Repeatability *2	$\pm$ 2.0% F.S.			
	Ambient temperature characteristics *2	$\pm$ 5.0% F.S. (base temperature 25°C)			
	Fluid temperature characteristics *2	$\pm$ 5.0% F.S. (base temperature 25°C)			
Fluid temperature	Measurement range	0 to 85°C (operational range is -10 to 110°C)			
	Measurement accuracy	$\pm$ 2°C (less than 50°C) *The difference between the fluid temperature and the ambient temperature is within $\pm$ 5°C $\pm$ 5°C (50°C and over) *The difference between the fluid temperature and the ambient temperature is within -35°C			
Working pressure (according to the fluid temperature conditions) *8		0 to 1.0 MPa (0 to 85°C), 0 to 2.0 MPa (0 to 50°C)			
Proof pressure		3.0 MPa			
Response time *3		0.1 s/0.25 s/0.5 s/1 s/2 s/5 s (Initial value 1 s)			
Integrating flow range		0.0 to 99999999.9 L 0.1 L increments			
Pressure loss *9		0.02 MPa or less (at max. rated flow)			
Switch output		NPN or PNP MOS-FET output (switchable with settings)			
	Max. load current	50 mA			
	Max. applied voltage	30 VDC			
	Internal voltage drop	NPN: 2.0 V or less PNP: 2.4 V or less			
	Output protection	Overcurrent abnormal alarm, overcurrent protection			
	Output mode	Select from hysteresis mode, window comparator mode, integrated output mode, integrated pulse output mode, alarm output mode, and frequency pulse output mode			
Analog output	Voltage output	Voltage output: 1 to 5 V Load impedance: 50 k $\Omega$ or more			
	Current output	Current output: 4 to 20 mA Load impedance: 500 $\Omega$ or less			
Switch input	Input time	20 ms or more			
	Short-circuit current	Approx. 2 mA			
Display		2-screen display (main screen: green/red 2-color display, sub-screen: white) Screen flip possible Instantaneous flow rate: 3 digits, Liquid temperature: 2 digits, Integrating flow: 4 digits, Screen refresh rate: 5 times/sec			
Power supply voltage		When setting switch output: 24 VDC $\pm$ 10% (ripple P-P $\pm$ 10% or less) When setting IO-Link: 20 to 30 VDC (ripple P-P $\pm$ 10% or less)			
Current consumption		65 mA or less (with 24 VDC, 25°C)			
Environmental resistance	Degree of protection	IP65 equiv. *5			
	Operating ambient temperature range	0 to 50°C (no condensation)			
	Ambient humidity range	35 to 85% RH (no condensation)			
Mounting orientation		Unrestricted in vertical/horizontal direction			
Compliant standards		EC Directives (EMC Directive, RoHS Directive)			
Material of wetted parts		PPS, FKM, CAC804			
Weight	Body *4	Approx. 460 g	Approx. 490 g	Approx. 520 g	
	Cable	Cable	Approx. 170 g		
		L type cable	Approx. 180 g		
		Two-sided connector cable	Approx. 100 g		
		L type two-sided connector cable	Approx. 30 g		
	Bracket	Approx. 30 g			

\*1: Flow rate less than the low flow cut flow rate displays 0 L/min.

\*2: Characteristics when the response time is 1 s.

\*3: The response time to reach 63% of the value in relation to the step input.

\*4: When using options, add the weight of optional parts.

\*5: Degree of protection is when the cable option is mounted.

\*6: Contact CKD when installing in parallel at intervals of less than 50 mm.

\*7: Piping port and body metal part are grounded to DC (-)/blue wire. This product cannot be used in (+) ground power supply. Contact CKD if using in (+) ground power supply.

\*8: The fluid temperature when the working pressure is 0 to 1.0 MPa. When working pressure is 0 to 2.0 MPa, use with a fluid temperature of 0 to 50°C. (Refer to the graph on the following page for the usable range.)

\*9: Depends on JIS B 8570-1.

\*10: Refer to the instruction manual for IO-Link Parameter specifications. IODD files can be downloaded from the CKD website. (<https://www.ckd.co.jp>)

## How to order

**WFC** - **150** - **10A** - **CT** - **C3**

**A** Flow rate range

**B** Port size

**C** IO-Link fluid temperature measurement

**D** Option (Included)

Code	Content		
<b>A Flow rate range</b>			
<b>150</b>	0.5 to 15 L/min		
<b>600</b>	2.0 to 60 L/min		
<b>B Port size</b>			
	Flow rate range	150	600
<b>10*</b>	3/8	●	
<b>15*</b>	1/2		●
<b>20*</b>	3/4		●
<b>* Thread</b>			
<b>A</b>	Rc Thread		
<b>G</b>	G Thread		
<b>N</b>	NPT Thread		
<b>C IO-Link fluid temperature measurement *1</b>			
<b>C</b>	IO-Link compatible		
<b>CT</b>	With IO-Link compatible, fluid temperature measurement function		
<b>T</b>	With fluid temperature measurement function		
<b>D Option (Included) *2</b>			
<b>Blank</b>	None		
<b>C3</b>	Cable (M12/4-conductor/3 m) included		
<b>L3</b>	L type cable (M12/4-conductor/3 m) included		
<b>B3</b>	Two-sided connector cable (M12/4-conductor/3 m) included		
<b>G3</b>	L type two-sided connector cable (M12/4-conductor/3 m) included		
<b>B</b>	Bracket included		

[Example of model No.]

**WFC-150-10A-CT-C3B**

- A** Flow rate range : 0.5 to 15 L/min
- B** Port size : Rc3/8
- C** IO-Link/fluid temperature : With IO-Link compatible, fluid temperature measurement measurement function
- D** Option : Cable, bracket attached

● Discrete option (cable, bracket) model No.

**WFC - C3**

**D** Option

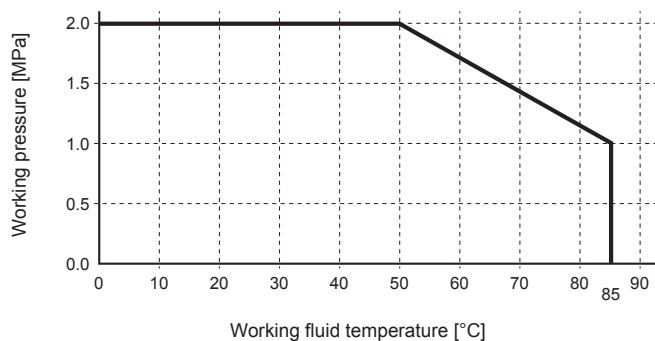
\*1 Analog/switch output configurations are also possible. Refer to page 7 for details.

\*2 Codes of attachments are not indicated in the product body model No. display section.

For example, in the case of WFC-150-10A-CT-C3B  
 Product body (display) : "WFC-150-10A-CT"  
 Cable (packaging display) : "WFC-C3"  
 Bracket (packaging display) : "WFC-B"

Of these three sets, "WFC-150-10A-CT-C3B" is displayed on the bag or box containing the entire package.

## Operating ambient temperature range





Capacitance electromagnetic flow sensor

# WFC Series

Standard

- Flow rate range: 0.5 to 15, 2.0 to 60 L/min



## Specifications

Descriptions		WFC-150	WFC-600	
Port size		Rc3/8, G3/8, 3/8NPT	Rc1/2, G1/2, 1/2NPT	Rc3/4, G3/4, 3/4NPT
Applicable fluid		Fluids (conductive fluids) that do not corrode water/wetted part materials		
Available fluid conductivity		5 $\mu$ S/cm or more		
Detection		Capacitance		
Rated flow range		0.5 to 15 L/min	2.0 to 60 L/min	
Low flow cut flow rate *1		Measured range max. flow rate of 3%		
Working fluid temperature *8		0 to 85°C (no freezing)		
Display units		Instantaneous flow rate L/min Accumulated flow L, kL, ML		
Repeatability *2		$\pm$ 2.0% F.S.		
Temperature characteristics	Ambient temperature characteristics *2	$\pm$ 5.0% F.S. (base temperature 25°C)		
	Fluid temperature characteristics *2	$\pm$ 5.0% F.S. (base temperature 25°C)		
Working pressure (according to the fluid temperature conditions) *8		0 to 1.0 MPa (0 to 85°C), 0 to 2.0 MPa (0 to 50°C)		
Proof pressure		3.0 MPa		
Response time *3		0.25 s/0.5 s/1 s/2 s/5 s (Initial value 1 s)		
Integrating flow range		0.0 to 99999999.9 L		
		0.1 L increments		
Pressure loss *9		0.02 MPa or less (at max. rated flow)		
Switch output		NPN or PNP transistor output		
	Max. load current	50 mA		
	Max. applied voltage	30 VDC		
	Internal voltage drop	NPN: 2.0 V or less PNP: 2.4 V or less		
	Output protection	Overcurrent abnormal alarm, overcurrent protection		
	Output mode	Select from hysteresis mode, window comparator mode, integrated output mode, integrated pulse output mode, alarm output mode		
Analog output	Voltage output	Voltage output: 1 to 5 V Load impedance: 50 k $\Omega$ or more		
	Current output	Current output: 4 to 20 mA Load impedance: 500 $\Omega$ or less		
Switch input	Input time	20 ms or more		
	Short-circuit current	Approx. 2 mA		
Display		2-screen display (main screen: green/red 2-color display, sub-screen: white) Screen flip possible Instantaneous flow rate: 3 digits, Integrating flow: 4 digits, Screen refresh rate: 5 times/sec		
Power supply voltage		24 VDC $\pm$ 10% (ripple P-P $\pm$ 10% or less)		
Current consumption		65 mA or less		
Environmental resistance	Degree of protection	IP65 equiv. *5		
	Operating ambient temperature range	0 to 50°C (no condensation)		
	Ambient humidity range	35 to 85% RH (no condensation)		
Mounting orientation		Unrestricted in vertical/horizontal direction		
Compliant standards		EC Directives (EMC Directive, RoHS Directive)		
Material of wetted parts		PPS, FKM, CAC804		
Weight	Body *4	Approx. 460 g	Approx. 490 g	Approx. 520 g
	Cable	Cable	Approx. 170 g	
		L type cable		
	Bracket	Approx. 30 g		

\*1: Flow rate less than the low flow cut flow rate displays 0 L/min.

\*3: The response time to reach 63% of the value in relation to the step input.

\*5: Degree of protection is when the cable option is mounted.

\*7: Piping port and body metal part are grounded to DC (-)/blue wire. This product cannot be used in (+) ground power supply. Contact CKD if using in (+) ground power supply.

\*8: The fluid temperature when the working pressure is 0 to 1.0 MPa. When working pressure is 0 to 2.0 MPa, use with a fluid temperature of 0 to 50°C. (Refer to the graph on the following page for the usable range.)

\*9: Depends on JIS B 8570-1.

\*2: Characteristics when the response time is 1 s.

\*4: When using options, add the weight of optional parts.

\*6: Contact CKD when installing in parallel at intervals of less than 50 mm.

### How to order

**WFC - 150 - 10A - N V - C3**

Ⓐ Flow rate range

Ⓑ Port size

Ⓒ Switch output

Ⓓ Analog output

Ⓔ Option (attachment)

Code	Content		
<b>Ⓐ Flow rate range</b>			
150	0.5 to 15 L/min		
600	2.0 to 60 L/min		
<b>Ⓑ Port size</b>			
	Flow rate range	150	600
10*	3/8	●	
15*	1/2		●
20*	3/4		●
<b>* Thread</b>			
A	Rc thread		
G	G thread		
N	NPT thread		
<b>Ⓒ Switch output</b>			
N	NPN transistor output		
P	PNP transistor output		
<b>Ⓓ Analog output</b>			
V	Voltage output (1 to 5 V)		
A	Current output (4 to 20 mA)		
<b>Ⓔ Option (attachment)</b>			
Blank	None		
C3	Cable (M12/4-conductor/3 m attached)		
L3	L type cable (M12/4-conductor/3 m) attached		
B	Bracket attached		

[Example of model No.]

**WFC-150-10A-NV-C3B**

- Ⓐ Flow rate range : 0.5 to 15 L/min
- Ⓑ Port size : Rc3/8
- Ⓒ Switch output : NPN transistor output
- Ⓓ Analog output : Voltage output (1 to 5 V)
- Ⓔ Option : Cable, bracket attached

(Note) Codes of attachments are not indicated in the product body model No. display section.

For example, in the case of WFC-150-10A-NV-C3B  
 Product body (display) : "WFC-150-10A-NV"  
 Cable (packaging display) : "WFC-C3"  
 Bracket (packaging display) : "WFC-B"

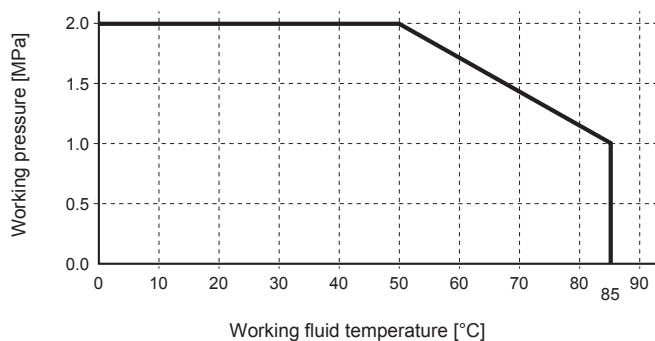
Of these three sets, "WFC-150-10A-NV-C3B" is displayed on the bag or box containing the entire package.

- Discrete option (cable, bracket) model No.

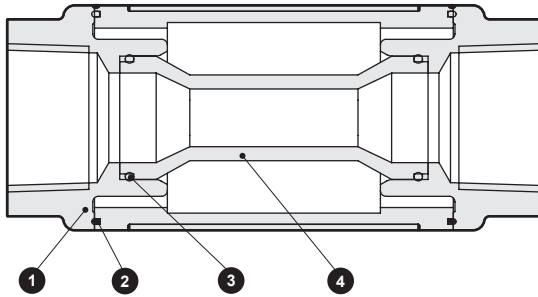
**WFC - C3**

Ⓔ Option

### Operating ambient temperature range



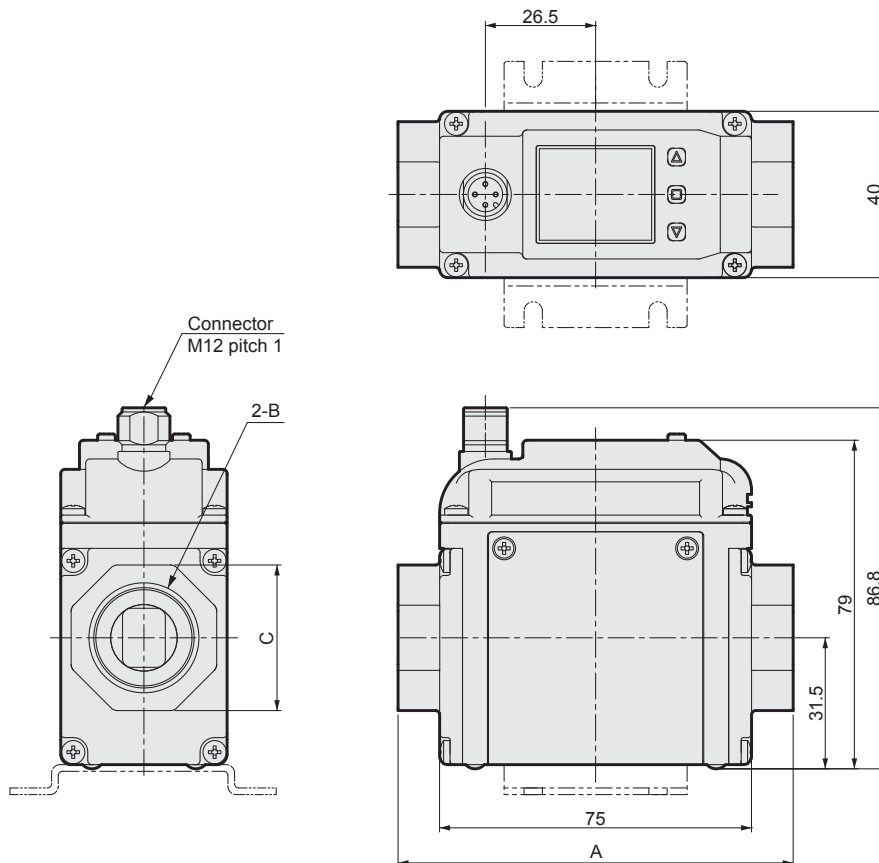
## Internal structure and parts list



\* Shows the internal structure when the display screen is in front.

No.	Part name	Material	Quantity
1	Socket	CAC804 Copper alloy	2
2	Packing	FKM Fluoro rubber	2
3	O-ring	FKM Fluoro rubber	2
4	Measuring tube	PPS Resin	1

## Dimensions

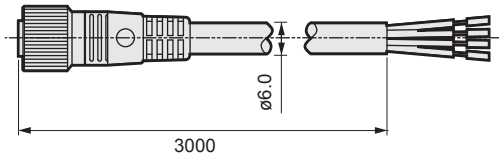


Model No.	A	B	C
WFC-150-10A	90	Rc3/8	24
WFC-150-10G		G3/8	
WFC-150-10N		3/8NPT	
WFC-600-15A	95	Rc1/2	28
WFC-600-15G		G1/2	
WFC-600-15N		1/2NPT	
WFC-600-20A	95	Rc3/4	35
WFC-600-20G		G3/4	
WFC-600-20N		3/4NPT	

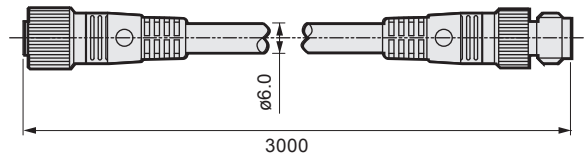
Optional dimensions

● Cable option

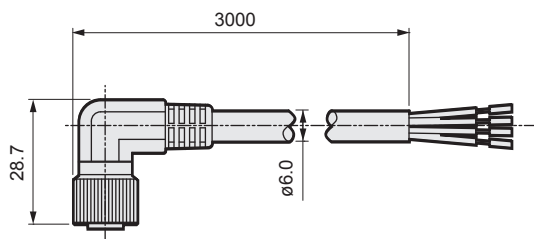
Discrete option model No.: **WFC-C3**



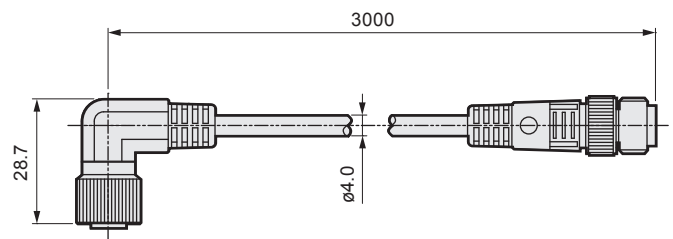
Discrete option model No.: **WFC-B3**



Discrete option model No.: **WFC-L3**



Discrete option model No.: **WFC-G3**



● Bracket option

Discrete option model No.: **WFC-B**

