

Capacitive Electromagnetic Flowsensor

CX

Resistant to
foreign
substances

Resistant to
deposits

Straight
piping is not
required



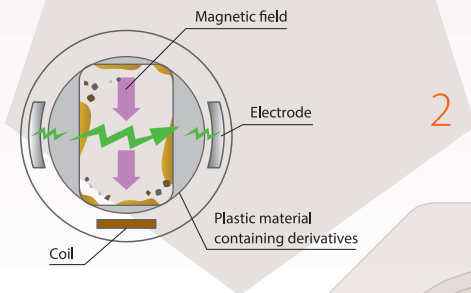
Five "No"s and Five "Can"s

CX offers **five "No"s** for easy operations!



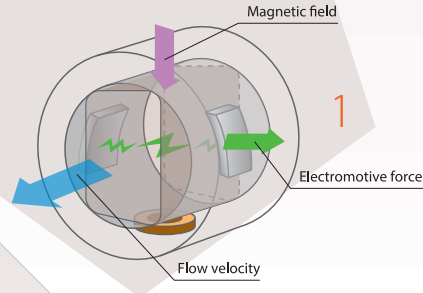
"No" electrodes are exposed to fluids.

The plastic material containing derivatives is used in the flow channel to prevent the electrodes from being exposed to fluids. This made CX strong against foreign substances and deposits.



"No" moving parts

CX uses the law of electromagnetic induction in its measurement principle. With its no-obstruct structure with no moving parts in the flow channel, it has only little pressure loss with high durability.



"No" straight piping required

The rectangle structure is adapted to the flow channel in order to stabilize flows and eliminate straight piping.

The rectangular structure is the key!



"No" need of power supply noise prevention

No need of power supply noise prevention even if an inexpensive switching power supply device is used. It conforms to the EC Directive and obtained the CE mark.



"No" need to have a large installation space

The device can be installed in a small space due to the compact body size without straight piping.



Applications

For die-casting machines, injection molding machines and welding machines

Die-casting machine

Welding machine

Burrs and shrinkage often cause quality defects.

Weld defects

The flow amount of cooling water is the root cause of such defects!

Monitoring the flow amount of cooling water stabilizes the quality.

Only CX can offer **five "Can"s!**



1. Abnormal flow-rates **can** be identified at a glance.

By setting a level-judgment value to determine abnormal flow-rates, CX indicates normal flow rates in the green LED light while it automatically changes to indicate abnormal flow rates in the red LED light. Just by looking at the LED indicator, the status of flow-rate monitoring can be checked.

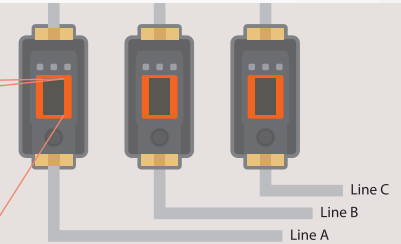


* In these examples, the value to determine abnormal flow rates is set at 12.0 L/min.

2. Identification **can** be done easily even in case of multiple unit installation.

Use characters A to Z, 0 to 9, and symbols to set up arbitrary names and numbers.

Up to six characters can be set to name a unit. It is useful to identify the cooling system.



3. The meters **can** be controlled by external input.

When using the functions of trip flow volume accumulation or zero point adjustment, resetting the accumulated value of trip flow volume or adjusting the zero point by external input signals can be performed.



Trip accumulated flow volume

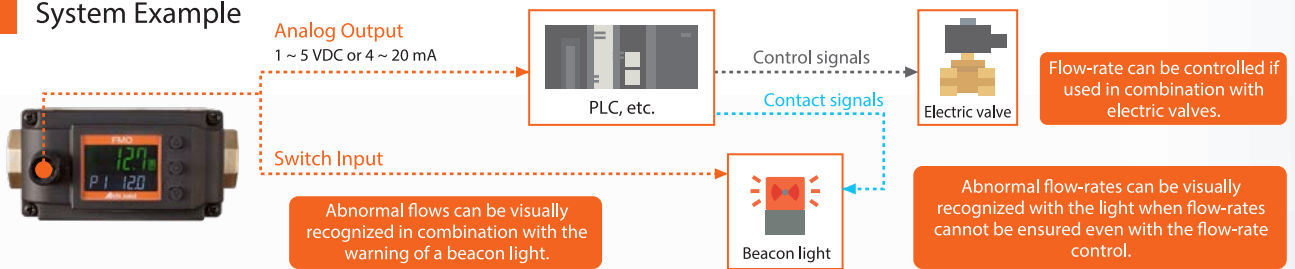
4. The flow displays **can** be switched over.

The values of the main and sub displays can be switched over.

5. The flow direction **can** be changed.

With a simple setting change, the direction of measuring can be reversed.

System Example



For cutting machines and grinding machines



The flow amount of the coolant is the root cause of such defects!

Monitoring the flow-rate of the coolant stabilizes the quality.

Capacitive Electromagnetic Flowsensor CX Specifications

Model		CX		
Nominal Diameters		10mm	15mm	20mm
Accuracy-Guaranteed Flow Range		0.5 ~ 15 L/min	2.0 ~ 60 L/min	
Instantaneous flow indication ※1		0.0 ~ 18 L/min	0.0 ~ 72 L/min	
Low-Flow Cut-Off (3% of maximum flow range)		0.45 L/min	1.8 L/min	
Repeatability		±2% F.S. ※2 (No need of straight piping)		
Temperature Characteristics	Ambient Temperature	±5% F.S. ※2 (Relative error for ambient temperature 10°C or 50°C on the bases of the standard ambient temperature 25°C)		
	Fluid Temperature	±5% F.S. ※2 (Relative error for fluid temperature 1°C or 85°C on the bases of the standard fluid temperature 25°C)		
Piping Connection		Rc3/8	Rc1/2	Rc3/4
Fluid Temperature Range		0 ~ +85°C (No freezing)		
Conductivity Range		5μS/cm ~ 3mS/cm		
Measurable Fluids		Water, fluid which does not corrode material of wetted portion.		
Working Pressure		0 to 1.0 MPa (0 to +85°C), 0 to 2.0 MPa (0 to +50°C)		
Pressure Resistance		3.0 MPa		
Pressure loss (@accuracy guaranteed maximum flow)		20kPa or less		
Responsiveness (damping time)		0.25s / 0.5s / 1s / 2s / 5s (Default Value: 1s) 63% Response		
Working Ambient Temperature/Working Ambient Humidity		0 ~ +50°C / 35 ~ 85%RH (Non-condensing)		
LED Display		Main Display: 4 digits and 7 segments (Two-color display in green and red) Sub Display: 6 digits and 11 segments (White)		
LED Display	Main Display	Displays either instantaneous flow-rate or accumulated flow volume		
	Sub Display	Output mode or input mode, flow direction, arbitrary characters (Selectable)		
Display Unit		Instantaneous flow-rate: L/min; Accumulated flow volume: L, kl or ML (Selectable)		
Switch Output		NPN or PNP transistor output *Please select when ordering.		
Switch Output	Maximum Load Voltage/Current	30 VDC / 50 mA DC or less		
	Output Modes	Level judgment mode/ Window judgment mode/ Trip accumulated flow volume output mode/ Accumulated flow volume pulse output mode/ Alarm output mode (Selectable) (Accumulated flow volume pulse output mode: Nominal Diameter 10: Pulse unit: 10 ± 5 ms; Nominal Diameter 15 and 20: Pulse unit 0.1 L/P, ON-time: 50 ± 5 ms)		
Analog Output ※3	Voltage/ Current	1 to 5 V DC load impedance: 50 kΩ or higher/4 to 20 mA load impedance: 500 Ω or less * Please select when ordering.		
Switch Input ※3	Input Time	20 ms or longer		
	Short-Circuit Current	Approximately 2 mA DC		
Protection Class		Indoor use (Equivalent to IP65 when using the body-connection connector cable)		
Current Consumption		65 mA or less		
Power Supply		24 VDC ± 10% P-P Ripple within ± 10% or less ※4		
Installation Position		Free (Air intrusion shall be avoided)		
Weight		Approx. 460 g	Approx. 490 g	Approx. 520 g
Wetted-Parts Materials		PPS / FKM / Bronze (CAC804)		
Accessory		Body-connection connector cable: 3 m		
Optional Parts		Installation bracket		

Note 1. Please read and understand the product specifications before using the product.

※1: Lighting ... 110% or less of 0.0L/min ~ maximum value of accuracy guaranteed flow range.

Flashing ... 110% or above, 120% or less of maximum value of accuracy guaranteed flow range.

Excessive flow abnormality indication (E007) ... 120% or above of maximum value of accuracy guaranteed flow range.

※2 : Accuracy is guaranteed value of average value accumulated for 240s.

※3 : Please select either analog output or switch input.

※4 : Using isolated power supply and connecting 1 piece of such power supply device to 1 piece of CX flowsensor are recommended.

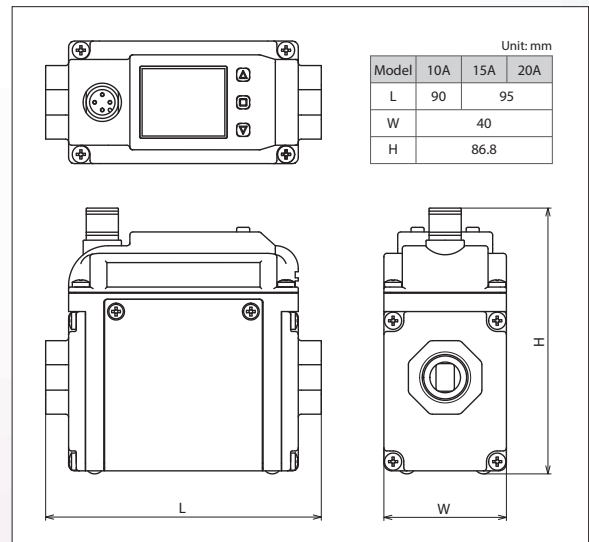
Pin assignment for the exclusive body-connection connector cable

Connector Pin Numbers on the Flowsensor Side	Body-connection connector portion Pin arrangement	Connection Cable (4 cores)	Contents
1		Brown	Power (+)
2		White	OUT 2: Analog output (Voltage or Current)
3		Blue	GND
4		Black	Out 1: Switch output

Model Codes

Basic Model	Nominal Diameters	Connection Shape	Switch Output	Analog Output	Accessory Cable	Option Bracket	Contents
CX							CX
	10						Flow-Rate Range: 0.5 ~ 15 L/min
	15						Flow-Rate Range: 2.0 ~ 60 L/min
	20						Nominal Diameter 10: Rc 3/8; Nominal Diameter 15: Rc 1/2; Nominal Diameter 20: Rc 3/4
		A					NPN transistor
			N				PNP transistor
				V			1 ~ 5 VDC
				A			4 ~ 20 mADC
					3		Body-connection connector cable: 3 m (standard)
					N		None
						B	Installation bracket
						N	None (standard)

External Dimensions



Technical specifications in this catalog are up-to-date as of July 2020.

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To Our Customers

Please understand that product specifications may be changed without notice in order to improve performance. We are always happy to provide the latest catalogs and brochures, and respond to inquiries made to our offices.

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