CYK TECHNOLOGY

FLUID MEASUREMENT

ELECTROMAGNETIC FLOWMETER

Datasheet

FLEM

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Introduction

CeYeKo FLEM series of electromagnetic flowmeter was developed on long-cultivated technology for flow measure. FLEM family has extended its application range with such model as integrated and remote. Through constant development and improvements, FLEM series electromagnetic flow meter has become more accurate and reliable and widely used in the industrial instrumental field. We provides wide range of electromagnetic flow meters, all fulfilling the highest demands in terms of accuracy and reliability in industries such as water and waste water, food and beverage, mining, pulp and paper.

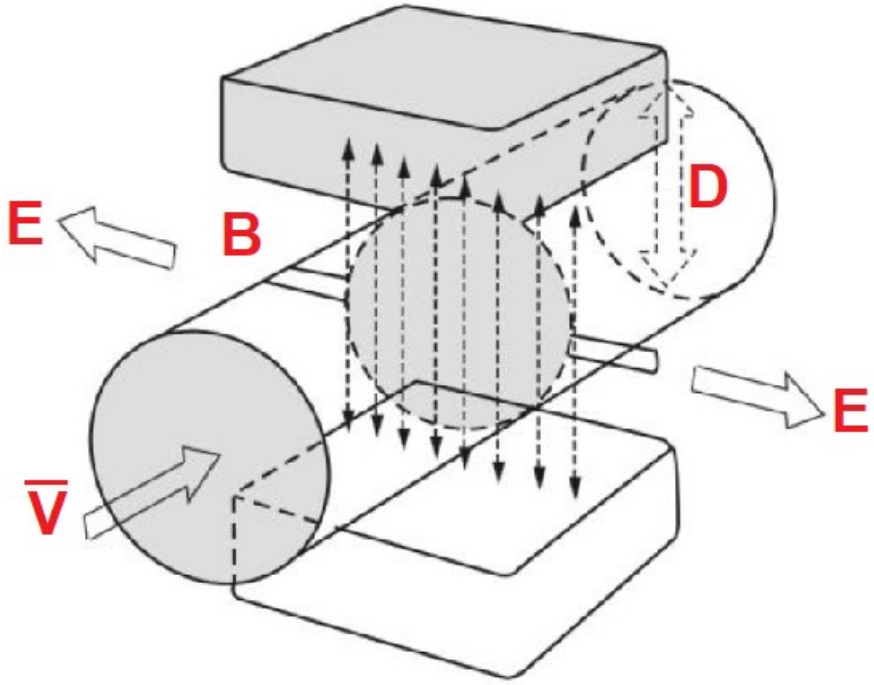
Please Note: Electromagnetic flow meter is only applicable to measure the flow of conductive liquid. The fresh supply of equipment is in factory setting condition, and only when manufacturers set the appropriate parameters, can it work well.

Features

- Excellent measurement repeatability and linearity
- Good reliability and anti-interference performance
- Good pressure resistance sealing ability
- Self diagnosis for empty pipe Detection
- Low pressure loss measurement tube
- Extremely simple operation
- High degree of accuracy
- High intelligentization
- Measurement is not affected by the variation of flow density, viscosity, temperature, pressure and conductivity. High accuracy measurement is guaranteed according to the linear measurement principle.
- No obstacle in the pipe, no pressure-loss and lower requirement for straight pipeline.
- DN 6 to DN2000 covers a wide range of pipe size. A variety of liners and electrodes are available to satisfy different flow characteristic.
- Programmable low frequency square wave field excitation, improving measurement stability and reducing power consumption.
- Implementing 16 bits MCU, providing high integration and accuracy; Full-digital processing, high noise resistance and reliable measurement; Flow measurement range up to 1500:1.
- High definition LCD display with backlight.
- RS485 or RS232 interface supports digital communication.
- Intelligent empty pipe detection and electrodes resistance measurement diagnosing empty pipe and electrodes contamination accurately.
- SMD component and surface mount technology (SMT) are implemented to improve the reliability.

Working Principle

The measurement principle of magnetic flowmeters can be described as follows: when the liquid goes through the pipe at the flow rate of v with a diameter D, within which a magnetic flux density of B is created by an exciting coil, the following electromotive E is generated in proportion to flow speed v:



$$E=K*B*V*D$$

E : Induced Voltage

K : Constant

B : Magnetic Induction (Magnetic Field)

V : Volume Flow

D : Pipe Size

Technical Specifications

Model	FLEM
Flow Direction	Right to Left; Left to Right, Bidirectional
Accuracy	0.5% (0.2% Optional)
Reliability	0.2%
Nominal width Range	DN 10 to DN2000 (⅜" to 80”)
Maximum Flow Speed	15m/s
Housing Material	Carbon Steel, Stainless Steel
Process Connection	Flange, Tri Clamp
Nominal Pressure	4.0MPa(DN0-150) 1.6MPa(DN200-600) 1.0MPa(DN700-1200) 0.6MPa(DN400-2000) Or other specified by order
Response Time	0.02s
Lining Material	Rubber, F46, PTFE, PU, PFA
Electrodes	Stainless Steel Containing Mo Stainless Steel Coated with Carbonized Tungsten, Hastelloy B Hastelloy C Titanium Tantalum Platinum-iridium Alloy.
Process Connection Material	Stainless Steel
Flange Material	Carbon steel

Technical Specifications

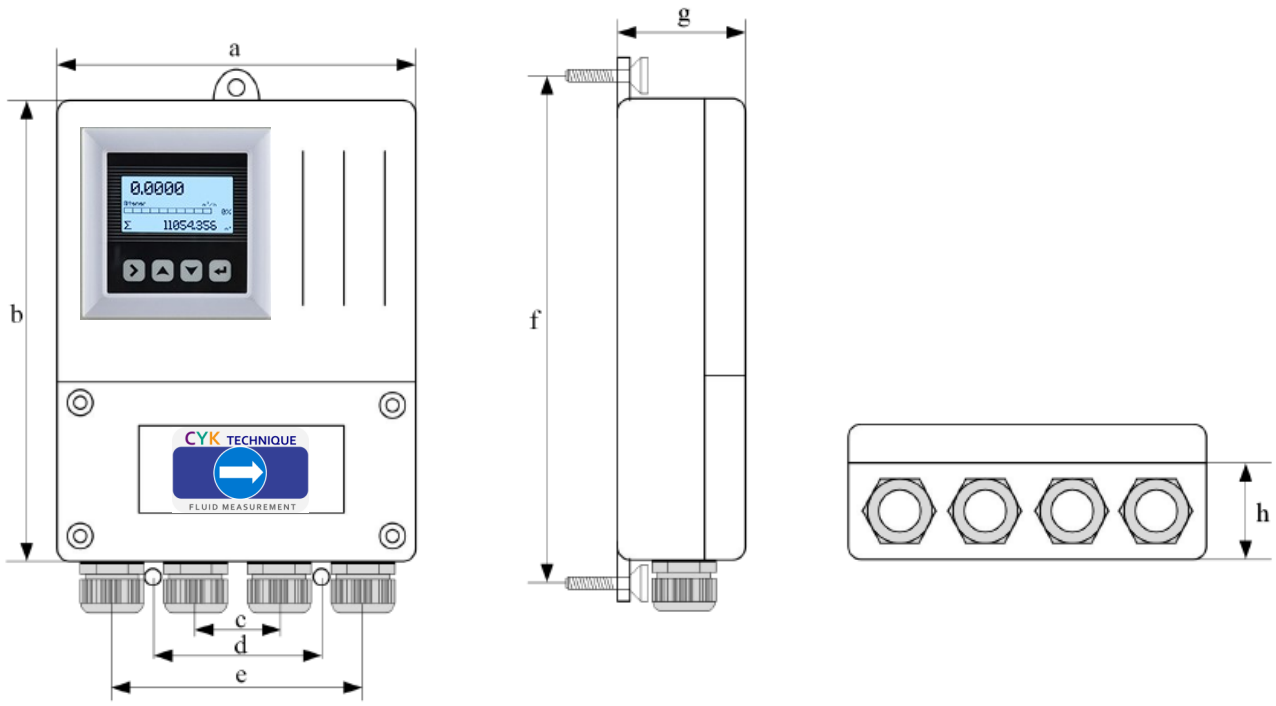
Protection Type	IP65 (Compact Version), IP68 (Remote Version)
Grounding Ring	Stainless Steel
Inlet Protection Ring	Carbon steel, Stainless Steel
Display	Graphical Display
Unit	L, m^3, Kg, t/s, min, h
Medium Temperature	Rubber (80°C) F46 (150°C) PTFE(120°C) PU (60°C) PFA (180°C)
Cable Gland	M10 (Standard)
Power Supply	100-240VAC / 24VDC
Transmitter	4-20mA, Pulse, RS485, Hart Protocol
Conductivity	> 5 μS/cm, (20 μS/cm for Demineralized Water)
Ambient Temperature	Sensor: -25°C to + 60°C; Converter: -25°C to + 60°C
Relative Humidity	5% to 90%
ATEX	NO

Flow Chart

Nominal Diameter (mm)	Flow Range (m³/h)			Calibration Range
10	0.02827-0.25	0.3-1.6	2.0-3.3924	0.15 ~ 1.5
15	0.0636-0.6	0.8-3.0	4.0-7.632	0.3 ~ 3
20	0.131-1.0	1.2-5.0	6.0-13.6	0.5 ~ 5
25	0.176-1.6	2.0-8.0	10 - 21	0.8 ~ 8
32	0.2895-2.5	3.0-12	16-35	1.5 ~ 15
40	0.4524-4.0	5.0-20	25-45	2.2 ~ 22
50	0.707-6.0	8.0-40	50-85	3.5 ~ 35
65	1.195-10	12 - 60	80-143	6 ~ 60
80	1.81-16	20-120	160-217	9 ~ 90
100	2.83-25	30-160	200-339	14 ~ 140
125	4.42-40	50-250	300-530	22 ~ 220
150	6.36-60	80-400	500-763	31.8 ~ 318
200	11.3-100	120-600	800-1,357	56 ~ 560
250	17.7-160	200-800	1,000-2,120	88 ~ 880
300	25.45-250	300-1,200	1,600-3,054	127 ~ 1,270
350	34.6-300	400-1,600	2,000-4,157	173.1 ~ 1,731
400	45.2-400	500-2,000	2,500-5,429	226.1 ~ 2,261
450	57.3-500	600-2,500	3,000-6,871	229 ~ 2,290
500	70.7-600	800-3,000	4,000-8,482	282.7 ~ 2,827
600	102-800	1,000-4,000	5,000-12,216	407.1 ~ 4,071
700	139-1,200	1,600-5,000	6,000-16,620	554.1 ~ 5,541
800	181-1,600	2,000-6,000	8,000-21,720	723.8 ~ 7,238
900	229-1,600	2,000-8,000	10,000-27,480	916 ~ 9,160
1000	283-2,000	2,500-10,000	12,000-33,924	1,130.9 ~ 11,309
1200	407-2,500	3,000-12,000	16,000-48,833	1,628.6 ~ 16,286

Diemensions

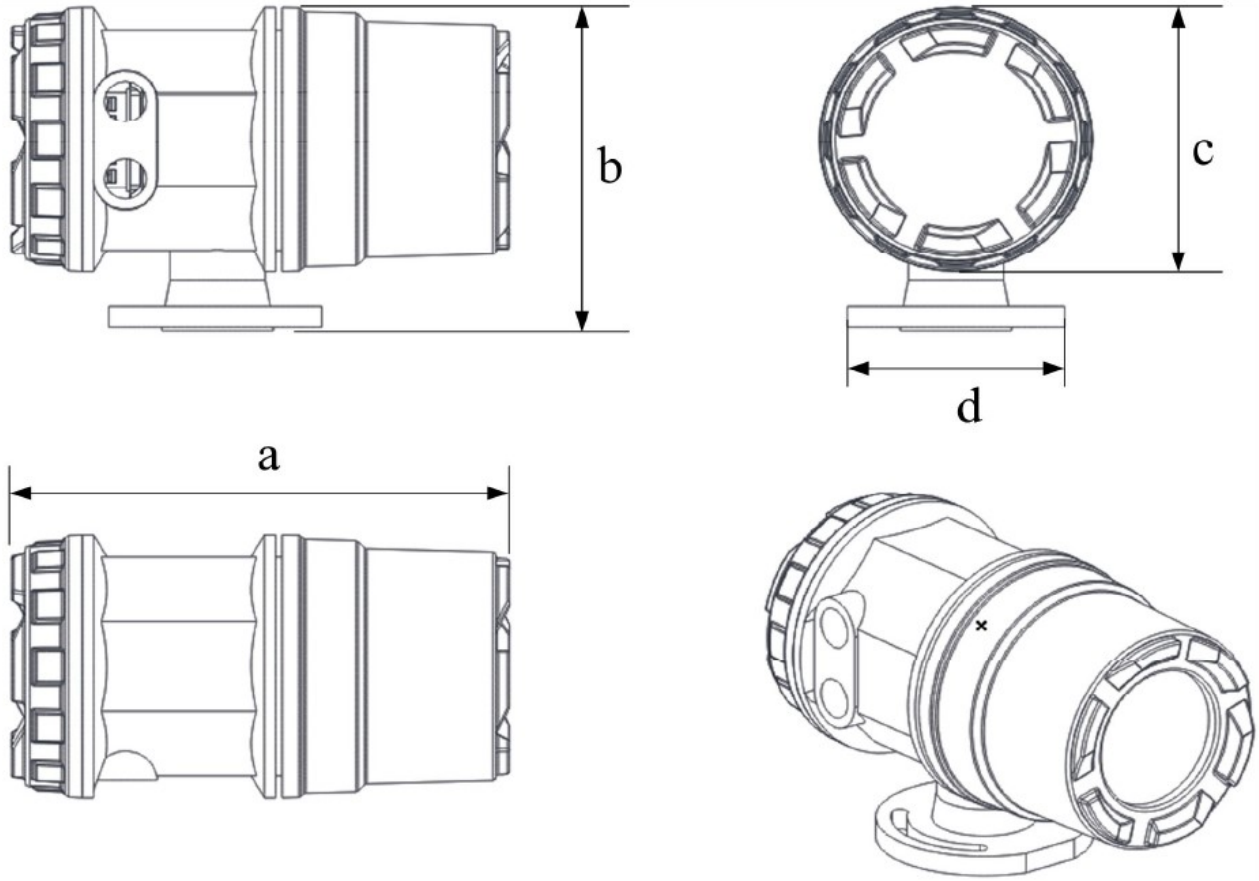
Remote Type Converter



a	b	c	d	e	f	g	h	Weight
mm	mm	mm	mm	mm	mm	mm	mm	kg
164.0	124.5	37.0	70.0	102.0	233.5	69.7	45.7	0.6

Diemensions

Compact Type Converter



a	b	c	d	Weight
mm	mm	mm	mm	kg
219.0	147.0	120.0	90.0	0.6

Installation

- The measuring pipe must always be full.
- The flow direction must match the identification marking →
- Install the devices without any mechanical tension (torsion, bending).
- Use a flange seal made from a material that is compatible with the medium and the medium temperature.
- Seals should not extend into the flow area, since any turbulence affects the device accuracy.
- The pipeline must not exert any inadmissible forces or torque on the device.
- Install remote mount transmitters at a location that is largely free of vibration.
- Do not expose the transmitter to direct sunlight; provide sun protection if necessary.

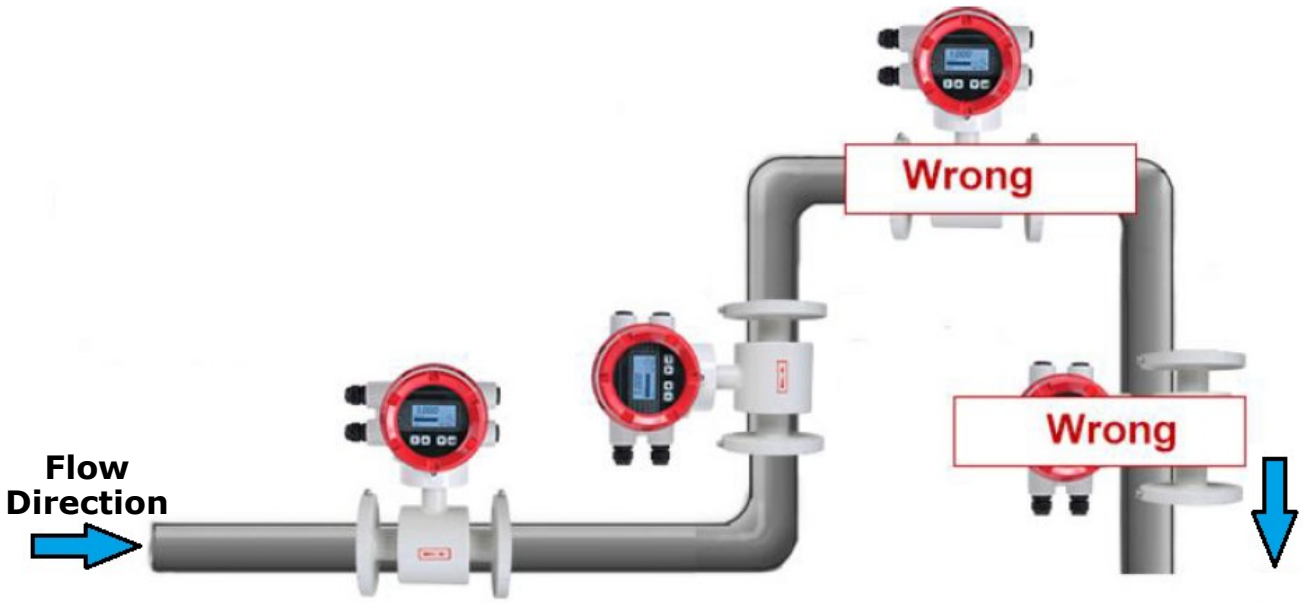


Figure: Correct ve Wrong Installation Samples

Product Selection

Electromagnetic Flowmeter														
ORDERING CODE	**FL**	**EM**	**-**	**C**	**D**	**200**	**-**	**5**	**S**	**R**	**A**	**L**	**T**	**C**
TYPE	FL													
MODEL		EM												
SENSOR TYPE	Compact			C										
	Remote			R										
INSTALLATION	DIN Flange				D									
	Clamp				C									
DIAMETER	DN10 … DN2000					200								
ACCURACY	0.50%							5						
OUTPUT	Pulse								P					
	4-20mA								C					
	4-20mA + Pulse								S					
COMMUNICA-TION	None									N				
	RS485									R				
	RS232									P				
	Modbus									M				
	HART									H				
POWER SUPPLY	220VAC										A			
	24VDC										D			
	Battery Powered										B			
ELECTRODE	316L Stainless Steel											L		
	Titanium											T		
	Tantalum											A		
	Hastelloy B											B		
	Hastelloy C											C		
	Platinum											P		
	Tungsten Carbide											K		
LINING MATE-RIAL	Neoprene (CR)												N	
	Polyurethane (PU)												P	
	PTFE												T	
	F46												F	
BODY MATE-RIAL	Carbon Steel													C
	304 Stainless Steel													S

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