

## Electromagnetic Flowmeter

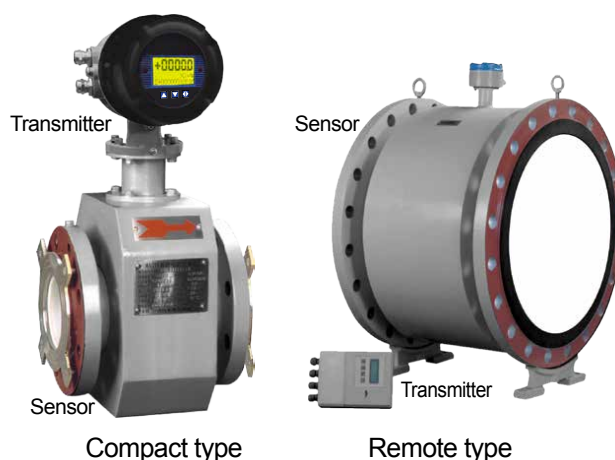


FEM06

High accuracy for a wide range of process conditions

## | Feature |

- Flow Velocity range : 0...12 m/s
- Be applicable sewage, wastewater, chemical plants, food factory application
- IP68 enclosure that can be used for underground applications
- FEP Liner suitable in vacuum tube
- High accuracy of  $\pm 0.5\%$  of reading
- Empty pipe, current excitation



Compact type

Remote type

## | Introduction |

**FEM06** Electromagnetic Flowmeter is a flange type electromagnetic flowmeter ideal for conductive liquids. It comes in sizes from 15 to 800mm flow tubes.

Electromagnetic Flowmeter is widely used for tap-water, waste water, food & beverage pulp & paper and many other applications.

Can be is a stand alone magmeter that could also be used with various configurations, such integral or remote and AC or DC power requirement. RS485 communications are available.



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Application :  
High viscous fluids / Corrosive and abrasive liquids process industry, waste water treatment, chemical industry, steel industry, mining, pulp & paper, irrigation, power generation.

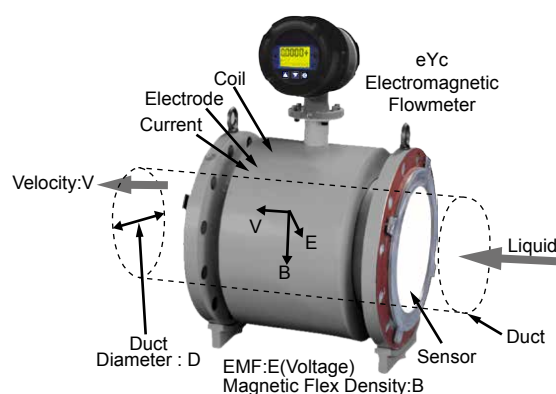
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## Electromagnetic Flowmeter

## | Specification |

Item	Function & Parameter
Diameter	15 ... 800 mm ( 1/2" to 32" )
Range	Velocity 0 ... 0.25m/s min. ; 0 ... 12m/s max.
Material	Measuring Tube : Stainless Steel 304
	Flange : Carbon Steel ( Standard ) ; Stainless Steel 304 ( Option ) Housing : Carbon Steel ( Standard ) ; Stainless Steel 304 ( Option )
Protection	IP67 for compact version ,and IP68 for remote version
Conductivity	To be more than 20 $\mu\text{S}/\text{cm}$
Power Supply	110 ... 240VAC or 24 VDC
Output	4...20mA / Pulse ; 4...20mA / Pulse & RS-485
Liner	Rubber ( 50 ... 800 mm )
	FEP ( 15 ... 250 mm ) ; FEP ( F46 ) ( 10 ... 250 mm ) ;
	PTFE ( 15 ... 800 mm ) ; PFA ( 10 ... 400 mm )
Electrode	SUS316L ; Hastelloy ; Titanium ; Tantalum
Process Connection	Flange
Flange type	ANSI 、 DIN 、 JIS
Grounding Resistance	< 10 $\Omega$
Ambient Temp.	- 25 ... + 65 $^{\circ}\text{C}$
Temperature	80 $^{\circ}\text{C}$ ( Rubber ) ; - 20 ... + 100 $^{\circ}\text{C}$ ( PTFE )
	- 40 ... + 150 $^{\circ}\text{C}$ ( FEP ) ( F46 ) ; - 20 ... + 120 $^{\circ}\text{C}$ ( PFA )
Accuracy ( Velocity $\geq 0.3$ ... 12 m/s )	$\pm 0.5\%$ of reading ( 15 ... 600 mm ) ; 0.25% option
	1 % of reading ( 700 ... 800 mm )
Working Pressure	4.0Mpa. : Max Pressure with flanges ( 10 ...150mm )
	2.5Mpa. : Max Pressure with flanges ( 200 ... 600mm )
	1.6Mpa. : Max Pressure with flanges ( 700 ... 800mm )

\*Please make sure the product and the device which connect with RS485 are on common ground, avoid damaged product.

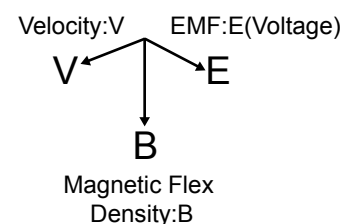


## Principle of electromagnetic flowmeter

The electromagnetic Flowmeter uses Faraday's Law of electromagnetic induction to measure the process flow. When an electrically conductive fluid flows in the pipe, an electrode voltage E is induced between a pair of electrodes placed at right angles to the direction of the magnetic field. The electrode voltage E is directly proportional to the average fluid velocity V.

$$E = K \times B \times V \times D$$

$K$  = Instrument constant  
 $V$  = Average fluid velocity across the duct  
 $B$  = Magnetic flux density  
 $D$  = Diameter of measurement duct



# Electromagnetic Flowmeter

## | Flow Range |

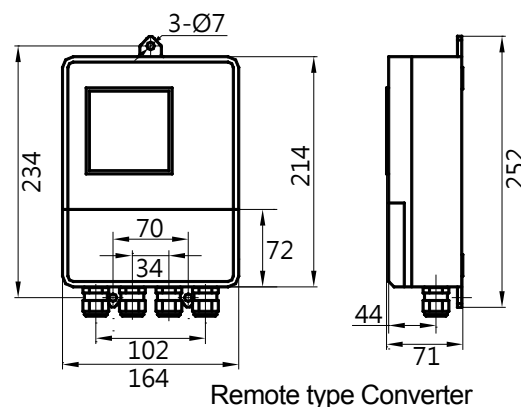
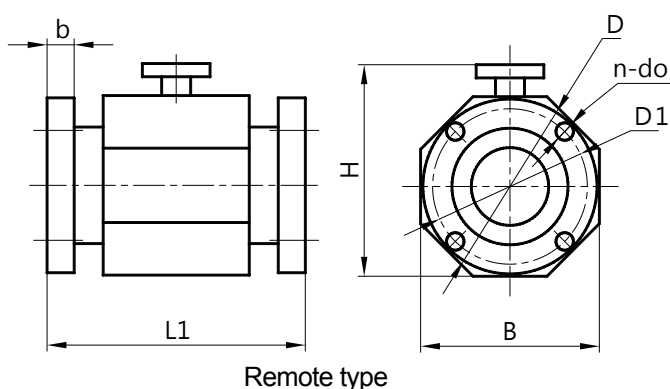
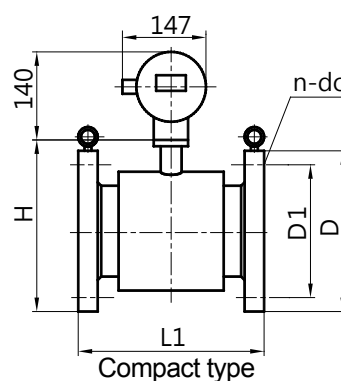
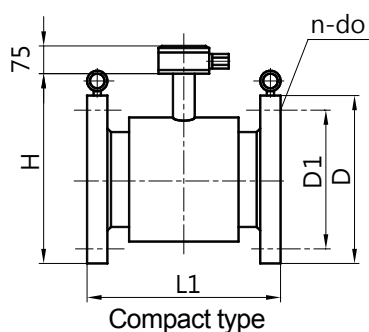
Nominal Diameter (mm)	Flow Range (m <sup>3</sup> /h)	
	Flow rate (0.3...1.0)m/s	Flow rate (1.0...10)m/s
15	0.19 ... 0.64	0.64 ... 6.4
20	0.34 ... 1.33	1.13 ... 11.3
25	0.53 ... 1.77	1.77 ... 17.7
32	0.87 ... 2.89	2.89 ... 28.9
40	1.35 ... 4.50	4.50 ... 45.0
50	2.13 ... 7.10	7.10 ... 71.0
65	3.57 ... 11.9	11.9 ... 119
80	5.43 ... 18.1	18.1 ... 181
100	8.49 ... 28.3	28.3 ... 283
125	13.3 ... 44.2	44.2 ... 442
150	19.1 ... 63.6	63.6 ... 636
200	33.9 ... 113	133 ... 1130
250	53.1 ... 177	177 ... 1770
300	76.2 ... 254	254 ... 2540
350	104 ... 346	346 ... 3460
400	136 ... 452	452 ... 4520
450	172 ... 572	572 ... 5720
500	212 ... 707	707 ... 7070
600	306 ... 1020	1020 ... 10200
700	416 ... 1385	1385 ... 13850
800	543 ... 1810	1810 ... 18100

## | Flowmeter dimensions |

Nominal Diameter (mm)	Transmitter size (mm)		
	L	B	H
4Mpa			
DN15	200	142	243
DN20	200	142	243
DN25	200	142	243
DN32	200	142	243
DN40	200	158	266
DN50	200	170	272
DN65	200	183	285
DN80	200	200	296
DN100	200	235	285.5
DN125	200	270	318
DN150	300	300	347
2.5Mpa			
DN200	350	360	398
DN250	450	425	458
DN300	500	485	515.5
DN350	500	555	579
DN400	600	620	635.5
PN2.5Mpa			
DN450	600	640	690
DN500	600	715	760
DN600	600	840	880
PN1.6Mpa			
DN700	700	895	970
DN800	800	1015	1080

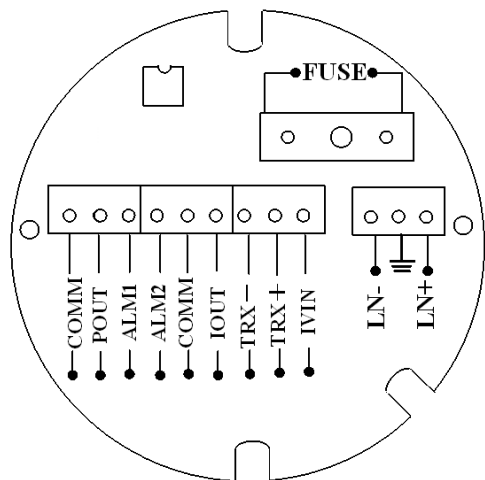
## | Dimension |

Unit : mm



# Electromagnetic Flowmeter

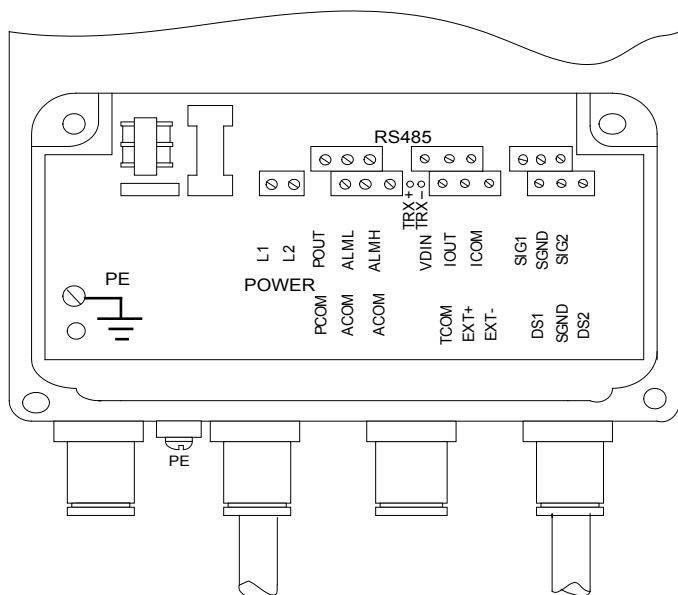
## | Compact transmitter wiring |



Compact transmitter Wiring Definition

COMM	Frequency, Pulse, Current common(ground)
POUT	Two-way flow frequency pulse output
ALM 1	High line alarm
ALM 2	Low line alarm
COMM	Frequency, Pulse, Current common(ground)
IOUT	Flow current output / 2-Wire current output
TRX +	Communication(RS485-A)
TRX -	Communication(RS485-B)
IVIN	Voltage input 2-wire 24V
LN+	Power input 220VDC
LN-	Power input 220VDC

## | Converter wiring diagram |



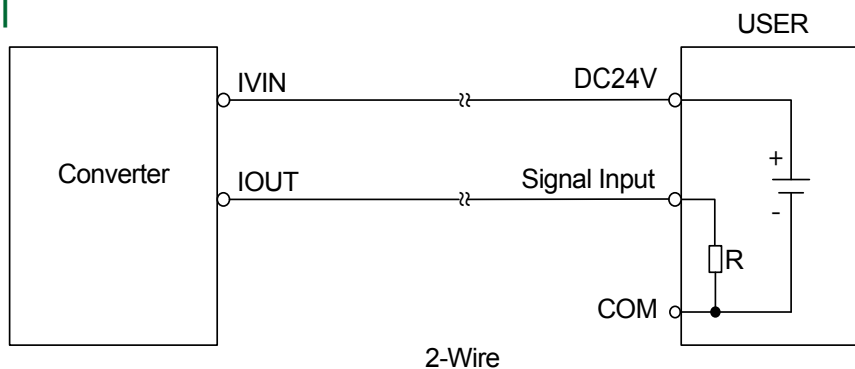
EXT + : Exciting currency output +  
 EXT - : Exciting currency output -

Each Terminals Mark

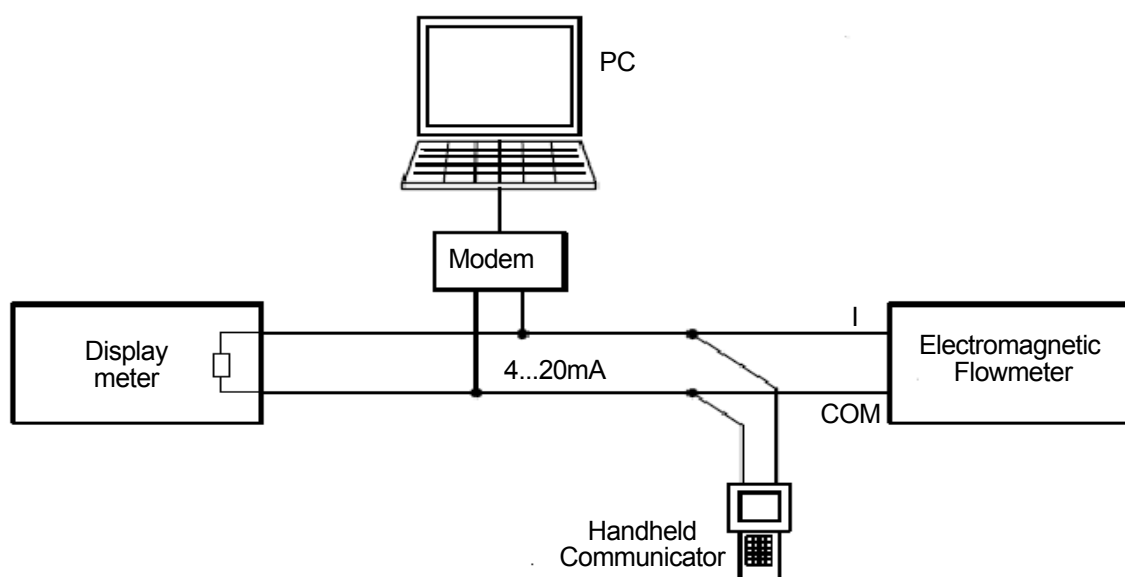
Connect separate type sensor	SIG1 : Signal 1
	SGND : Signal(ground)
	SIG 2 : Signal 2
	DS1 : Signal shield 1
Analog current output	DS 2 : Signal shield 2
	EXT + : Energizing circuit +
	EXT - : Energizing circuit -
	VDIN : Current 2-wire 24V contact
Frequency or pulse output	IOUT : Analog current output
	ICOM : Analog current output (ground)
	POUT : Flow frequency pulse output
Two output alarms	PCOM : Frequency pulse output
	ALMH : High line alarm
	ALML : Low line alarm
Communication Output	ACOM : Alarm output ground
	TRX + : Communication Output(RS-485-A)
	TRX - : Communication Output(RS-485-B)
	TCOM : 232 communication(ground)

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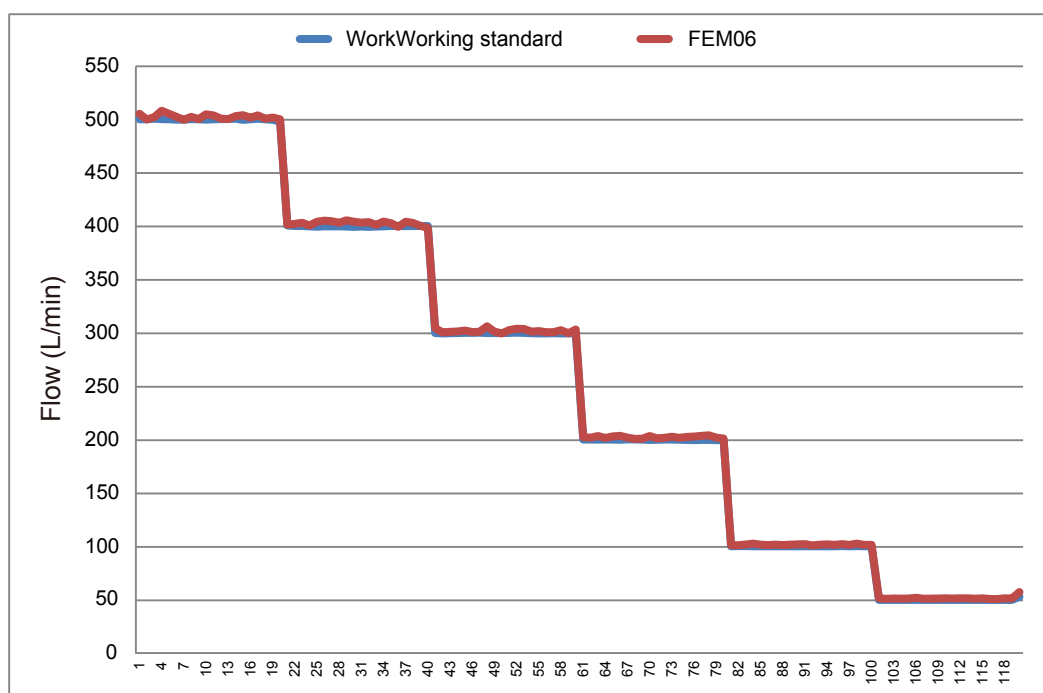
## | Diagram |



## | Communication network |



## | Curves Graph |



# Electromagnetic Flowmeter

## | Ordering Guide |

**FEM06-** **50** **0** **1** **S** **4.0** **L** **0** **0** **C** **1** **0** **0** **D**

Diameter Size	Electrode	Liner Material	Flange Connection	Working Pressure	Working Temp.	Grounding Rings	Protection	Installation Type	Output	Housing Material	Flange Material	Power Supply
15 : 15mm 20 : 20mm 25 : 25mm 32 : 32mm 40 : 40mm 50 : 50mm 65 : 65mm 80 : 80mm 100 : 100mm 125 : 125mm 150 : 150mm 200 : 200mm 250 : 250mm 300 : 300mm 350 : 350mm 400 : 400mm 450 : 450mm 500 : 500mm 600 : 600mm 700 : 700mm 800 : 800mm	0 : Stainless Steel 316(Standard) 2 : Hastelloy 3 : Titanium 4 : Tantalum W : Option	1 : Rubber(50...800mm) 2 : PTFE(50...800mm) 3 : PFA(15 ... 400mm) 4 : FEP(F46) (15 ... 250) W : Option	S : DIN A : ANSI J : JIS W : Option	4.0 : 4.0Mpa. Max Pressure with flanges(10 ... 150mm) 2.5 : 2.5Mpa. Max Pressure with flanges(200 ... 600mm) 1.6 : 1.6Mpa. Max Pressure with flanges(700 ... 800mm)	L : ≤ 80 °C H : ≤ 150 °C	0 : None 1 : Have		C : Compact Type R : Remote Type	1 : 4...20mA/ Pulse 3 : 4...20mA/ Pulse & RS-485	0 : Carbon Steel(Standard) 1 : SUS304 W : Option	0 : Carbon Steel(Standard) 1 : SUS304	D : 24VDC A : 100 ... 240VAC

Note : Standard ( Housing & Flange : Carbon Steel )  
 ( Diameter Size : 15 ... 600mm · Accuracy 0.5% )  
 ( Diameter Size : 700 ... 800mm · Accuracy 1% )  
 ( Output : 4 ... 20 mA+Pulse )

## | Additional option ( ILAC / TAF ) Test report |



Additional option : Yuden standard calibration laboratory test report (TAF accreditation: 3032) complying with ISO /IEC 17025. TAF has mutual recognition arrangement with ILAC MRA

Project	Measurand level or range
Flowmeters	Flow rate : 2.4 ...30m³/h(40.0 ... 500.0L/min)
	Flow velocity : 0.2 ... 3m/s
	8 basic points(8 basic points on average or specified by customer)