

SFX-800



- electromagnetic flow meter
- 0.5% F.S measuring accuracy
- RS-485 Modbus communication, 4-20 mA output
- measuring the flow of fluid in the forward and reverse directions
- unaffected by the temperature, pressure, density of the liquid
- no pressure loss
- readings that are unaffected by changes in density or viscosity

The electromagnetic flow meter SimFlux SFX-800 is designed based on the Faraday electromagnetic induction principle and are used to directly measure the flow rate of conductive liquids in closed pipelines. During on-site monitoring and display, standard current signals, pulse signals, and RS-485 digital signals can be output for recording, adjustment, and control, achieving automatic detection and control. It can be widely used in industries such as tap water, chemical industry, coal, environmental protection, light textile, metallurgy, paper making, etc.

APPLICATIONS

- Tap water
- Chemical industry
- Coal
- Environmental protection
- Light textile
- Reservoirs

OPERATING PRINCIPLE

The operating principle of electromagnetic flowmeter is based on Faraday's law of electromagnetic induction. The two electromagnetic coils at the upper and lower ends as shown in Figure 1 generate a constant or alternating magnetic field. When the conductive medium flows through the electromagnetic flowmeter, the induced electromotive force can be detected between the left and right electrodes on the wall of the flowmeter tube. The magnitude of the induced electromotive force is proportional to the electrically conductive medium flow rate, the magnetic induction density of the magnetic field, and the width of the conductor (the inner diameter of the flowmeter measuring tube), and the flow rate of the medium can be obtained by calculation. The induced electromotive force equation is as follows:

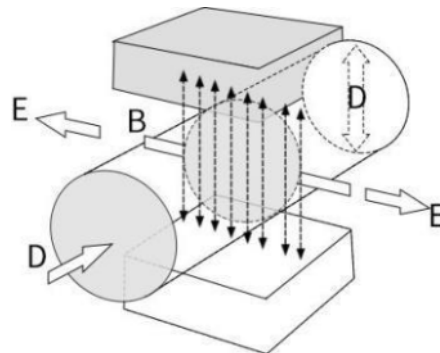


Fig. 1

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

where:

- E - induced electromotive force
- K - meter constant
- B - magnetic induction density
- V - average flow speed in cross-section of measuring tube
- D - inner diameter of measuring tube

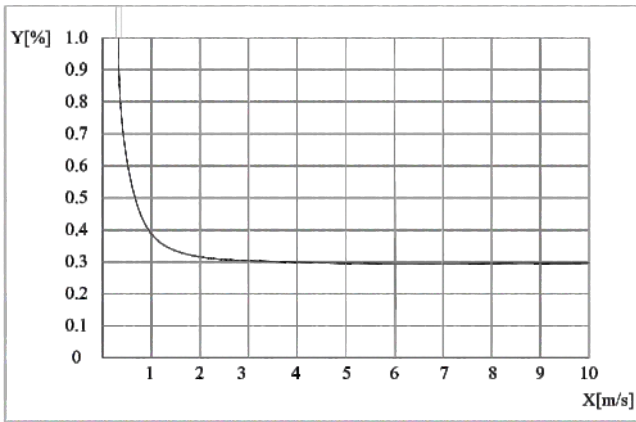
When measuring the flow, the fluid flows through a magnetic field which is perpendicular to the flow direction. The flow of conductive fluid induces a potential proportional to the average flow velocity, thus requiring the conductivity of the measured flowing liquid to be higher than the minimum conductivity. The induced voltage signal is detected by two electrodes and transmitted to the converter via a cable. After a series of analog and digital signal processing, the accumulated flow and real-time flow are displayed on the display of the converter.



TECHNICAL DATA

Input			
Measured variable	Direct measured variables : Flow velocity Calculated measured variables : Volume flow , mass flow.		
Velocity of flow	Typically Velocity of flow: 0.5m/s~5m/s		
Nominal diameter	DN10~DN1000		
Flow range	Nominal diameter	Min value (m³/h)	Max value (m³/h)
	DN10	0.14	1.4
	DN15	0.32	3.2
	DN20	0.56	5.6
	DN25	0.88	8.8
	DN32	1.4	14
	DN40	2.3	23
	DN50	3.5	35
	DN65	6	60
	DN80	9	90
	DN100	14	140
	DN125	22	220
	DN150	32	320
	DN200	56	560
	DN250	88	880
	DN300	127	1270
	DN350	173	1730
	DN400	226	2260
	DN450	286	2860
	DN500	353	3530
DN600	509	5090	
DN700	693	6930	
DN800	905	9050	
DN900	1150	11500	
DN1000	1410	14100	
Range ratio	1:10		
Output			
Current output	Function	Measurement of volume and quality (in the case of constant density)	
	Setting	Scope	(4~20)mA
		Max	20mA
		Min	4mA
	Internal voltage	24VDC	
Loading	≤750Ω		
Pulse output	Function	Set up Pulse output	



	Pulse output	Basis	$F_{max} \leq 5000 \text{ cp/s}$ Output pulse width: 0.1ms ~2000ms (This value is lower than the maximum duty cycle, with a maximum duty cycle of 1:1 $F_{max} \leq 5000 \text{ cp/s}$
		Pulse coefficient	0.001~100000/unit
	Passive	$U_{Outer} \leq 30\text{VDC}$	
	Active	$U_{Internal} \leq 24\text{VDC}$ $I \leq 4.52\text{mA}$	
Communications	RS-485 serial, MODBUS-RTU communication protocol		
Relay (Remote type optional)	2 channels SPST, 250VAC/3A		
Power supply			
Supply voltage	100VAC~240VAC, 50/60Hz; 20VDC~28VDC		
Power consumption	$\leq 15\text{W}$		
Terminals	Screw type terminal block, maximum wire diameter 2.5mm ²		
Cable entries	M20*1.5 Cable gland		
Signal cable	Apply only to remote type		
Performance characteristics			
Reference operating conditions	Medium: water Temperature: 20°C Pressure: 0.1MPa Stallation requirements: Inlet run $\geq 10\text{DN}$, Outlet run $\geq 5\text{DN}$		
Accuracy	Measurement value $\pm 0.5\%$ (Flow velocity 0.5m/s~5m/s)		
Repetitiveness	0.16%		
Maximum measured error	 <p>①X[m/s]: Velocity of flow ②Y[%]: Actual measured value deviation</p>		



Process	
Medium temperature range	Chloroprene rubber (CR): -10°C~70°C Polyurethane rubber (UR): -10°C~60°C PTFE/FEP: -10°C~120°C PFA: -10°C~120°C
Pressure rating (High pressure can be customized)	DN10~DN250: PN<1.6MPa DN300~DN1000: PN<1.0MPa Note: (If there are differences in the selection of individual specifications, the label shall prevail, and high-voltage can be customized)
Conductivity	≥50μS/cm
Buried depth	Not deeper than 5 meters (only for remote type sensors with IP68 protection)
Immersion depth	Not deeper than 3 meters (only for remote type sensors with IP68 protection)
Environment	
Ambient temperature	Integrated type: -10°C~55°C Remote type: -20°C~60°C
Storage temperature	-20°C~55°C
Ingress protection	Integrated type
	Remote type

WIRING TERMINALS

1. Integrated type

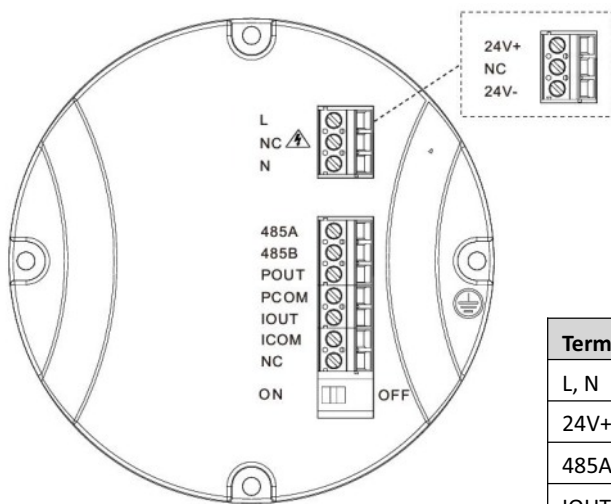


Fig.2: Terminal schematic diagram

Terminal	Description
L, N	220V AC power supply
24V+, 24V-	24V DC power supply
485A, 485B	RS-485 serial communication
IOUT, ICOM	(4..20) mA output
POUT, PCOM	Pulse output
⏏	Converter instrument protection grounding

Table 1: Terminal description



2. Remote type

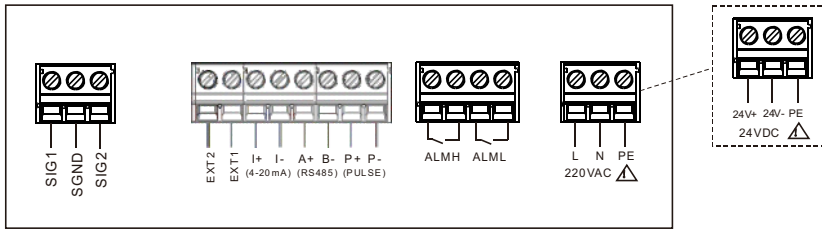


Fig. 3: Terminal schematic diagram

Terminal	Description
SIG1, SIG2, SGND	Sensor signal
EXT1, EXT2	Excitation signal
I+, I-	(4..20) mA, output
A+, B-	RS-485 serial communication
P+, P-	Pulse output
ALMH, ALML	Relay output (Optional)
L, N N	220V AC power supply
24V+, 24V-	24V DC power supply
PE	Ground

Table 2: Terminal description

DIMENSIONS

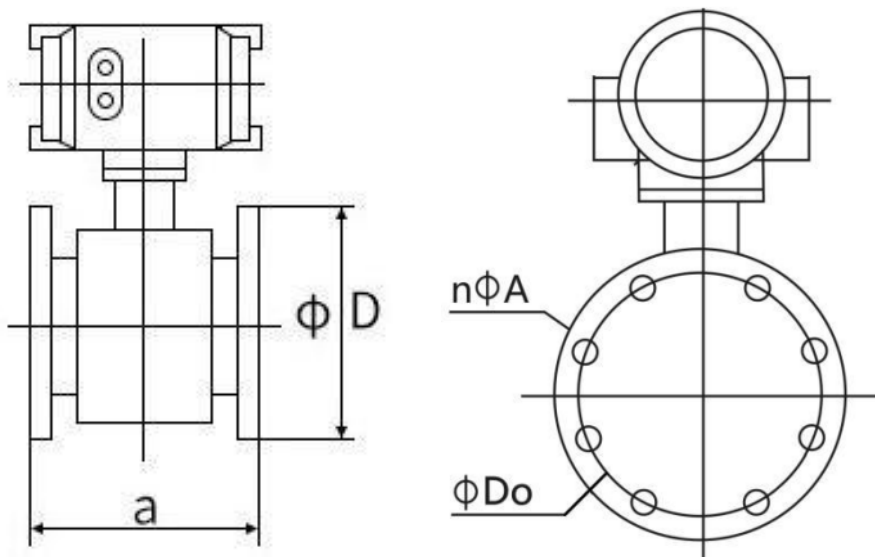


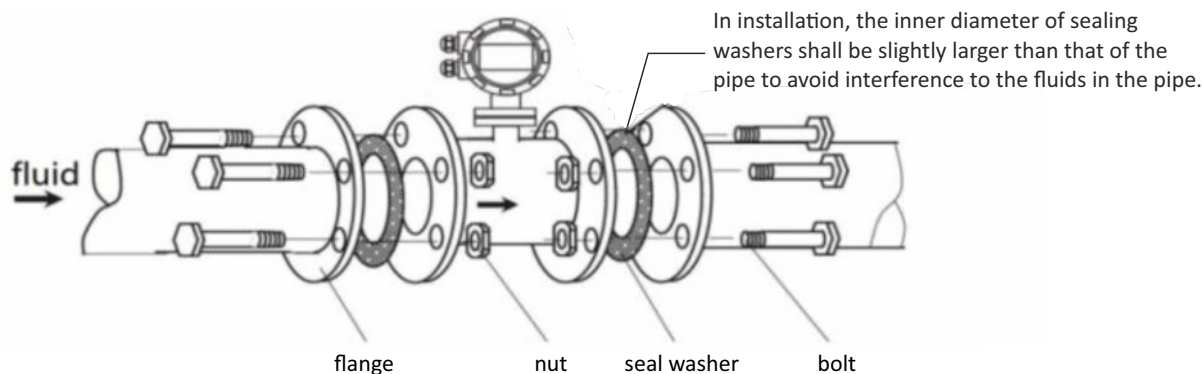
Fig. 4: Sensor dimensions



DN	a	D	Do	n*A	Pressure resistance
10	200	90	60	4*14	1.6MPa
15	200	95	65	4*14	1.6MPa
20	200	105	75	4*14	1.6MPa
25	200	115	85	4*14	1.6MPa
32	200	135	100	4*18	1.6MPa
40	200	145	110	4*18	1.6MPa
50	200	160	125	4*18	1.6MPa
65	200	180	145	4*18	1.6MPa
80	200	195	160	8*18	1.6MPa
100	250	215	180	8*18	1.6MPa
125	250	245	210	8*18	1.6MPa
150	300	280	240	8*23	1.6MPa
200	350	335	295	12*23	1.6MPa
250	450	405	355	12*25	1.6MPa
300	500	440	400	12*23	1.0MPa
350	550	500	460	16*23	1.0MPa
400	600	565	515	16*25	1.0MPa
450	600	615	565	20*25	1.0MPa
500	600	670	620	20*25	1.0MPa
600	600	780	725	20*30	1.0MPa
700	700	895	840	24*30	1.0MPa
800	800	1015	950	24*33	1.0MPa
900	900	1115	1050	28*33	1.0MPa
1000	1000	1230	1160	28*36	1.0MPa

INSTALLATION

1. Installation direction - the flow direction of the measured fluid shall be consistent with flow direction mark indicated on the flowmeter.
2. Seal gaskets installed between flanges shall have good corrosion resistance and shall not protrude into the interior of the pipe.
3. When welding or flame cutting is performed adjacent to sensor pipe, isolation measures shall be taken to prevent the lining from being deformed due to heat.
4. If it is installed in a well or immersed in water, apply sealant on the terminal box of the sensor after the system is installed and debugged (if the protection level of the electromagnetic flowmeter is IP68 at type selection, it has been subject to water-proof sealing).
5. When the flowmeter is installed on the field, use bolts to connect the flange on the sensor to that on the pipe. Bolts, nuts and their threads for securing meters shall be complete and free of damage and well lubricated. Use them with suitable flat washers and spring washer. A torque wrench shall be used to tighten the bolts according to the flange size and torque. Regularly tighten the bolts during daily use to prevent looseness of the bolts.



ORDERING

SFX-800-		Description
Nominal diameter	10	DN10(3/8")
	15	DN15(1/2")
	20	DN20(3/4")
	25	DN25(1")
	32	DN32(1.25")
	40	DN40(1.5")
	50	DN50(2")
	65	DN65(2.5")
	80	DN80(3")
	1C	DN100(4")
	1E	DN125(5")
	1G	DN150(6")
	2C	DN200(8")
	2G	DN250(10")
	3C	DN300(12")
	3G	DN350(14")
	4C	DN400(16")
	4G	DN450(18")
	5C	DN500(20")
	6C	DN600(24")
7C	DN700(28")	
8C	DN800(32")	
9C	DN900(36")	
A0	DN1000(40")	
Process connection	J	JB/T 81 flange
	D	GB/T9124 flange
	G	Clamp
	I	ISO2852 Clamp
	A	ANSI B16.5 flange
	S	JIS B2220 flange
	X	Others
Nominal pressure	A	PN6
	B	PN10
	C	PN16
	D	PN25
	E	PN40
	F	PN63
	J	JIS 10K
	G	Class 150
	X	Other



SimFlux Flow Meters

Process connection material and body material	MC										Carbon steel
	M1										304SS
	XX										Others
Accuracy	K										0.5 Class
Output and power supply	AA										4-20mA+pulse+RS485, 220VAC
	AM										4-20mA+pulse+RS485, 24VDC
	AE										4-20mA+HART+pulse+RS485, 220VAC
	AN										4-20mA+HART+pulse+RS485, 24VDC
	AC										Pulse+4-20mA+RS485+SPST, 220VAC
	AP										Pulse+4-20mA+RS485+SPST, 24VDC
	CE										Pulse+4-20mA+HART+RS485+SPST, 220VAC
	CF										Pulse+4-20mA+HART+RS485+SPST, 24VDC
Electrode material		M3									316LSS
		MF									Hastelloy B
		MG									Hastelloy C
		T1									Ti
		T2									Ta
		MH									Platinum Iridium Alloy PT
		MJ									WC
Lining material			N6								PTFE
			N1								CR
			N2								PU
			N7								Teflon F46/FEP
Electrical interface, Housing material, and protection level				WA							Integrated Type, M20×1.5 Cable Gland, Aluminum Alloy, IP65
					W5						Integrated Type, M20×1.5 Cable Gland, Aluminum Alloy, IP66/67
						WC					Remote Type, M20×1.5 Cable Gland, Aluminum Alloy, IP68
Cable length for the remote type								00			0m
								10			10m
								15			15m
								20			20m
								25			25m
								30			30m
								XX			Others
Language								2			English
								3			Russian



SimFlux Flow Meters

	4			Spanish
	5			Korean
	X			Others
Additional certification	0			None
Accessories	PB			Paired with Carbon Steel Flange
	PC			Paired with 304SS Flange
	PE			Paired with SS316L Grounding Ring

