

---

# HREF7100 Electromagnetic Flowmeter

## Overview

HREF7100 Intelligent Electromagnetic Flowmeter is designed and manufactured with the most advanced domestic and abroad technology, featuring high accuracy, reliability, good stability and long service life.

We pay our attention to every detail in the process of the product structure design, material selection, manufacturing, assembly and factory testing etc. With a water tower up to 35m as pressure stabilizer for actual flow calibration, we have a professional production line for electromagnetic flowmeter, also we design and develop a series of software and hardware for electromagnetic flowmeter for mass production to ensure high quality in long term use. The product has backlight and wide temperature-ranged Chinese/English LCD display. With fully practical function, visual display, easy operation, it saves troubles for on-site installation operation and maintenance. MFE600 can be widely used in industrial fields such as petroleum, chemical, metallurgy, water supply and drainage, steel, coal, paper, food, textile, environmental protection and other municipal administration, water conservancy construction field etc.

## Features

1. The electromagnetic flowmeter is an instrument for volume flux measurement. The flux measurement will not be influenced by the fluid density, viscosity, temperature, pressure and electrical conductivity changes. There is a linear relationship between the inducing voltage signal of sensor and the average velocity. Its accuracy is high.
2. Due to the unimpeded flow and no moving parts, it will not cause additional energy loss or jam. Therefore it is remarkable for energy saving, especially it is suitable for measurement of liquid-solid two-phase fluids such as sewage, slurry, pulp, coal slurry, pulp etc.
3. The electromagnetic flowmeter has no mechanical inertia. With good sensitivity, it can measure the transient pulsating flux, and has good linearity.

4.It has low requirements for installation. Short straight pipe is needed, generally 5D in front of the flowmeter, 3D behind it (D is the interior diameter of the selected instrument).

5. Only the lining and electrodes contact with the media, as long as the selection of electrode and lining materials is proper, they can be corrosion resistance and abrasive resistance, and are able to ensure long-term use.

6. When power supply is off suddenly, EEPROM can protect parameter setting and cumulative values.

7. The converter uses a low-power consumption single-chip for processing data. And it uses SMD electronic components and SMT surface mounting technology to ensure reliable performance, high accuracy, low power consumption and zero stability. With Chinese dot matrix LCD display, it can display the integrated flux, transient flux, velocity, flow percentage and other parameters.

8.Multi-electrode structure ensures high accuracy. With the grounding electrode, it doesn't need grounding ring, therefore saves the cost.

9. The low-frequency rectangle wave excitation improves the flux stability. It has low power consumption and good low flow characteristics.

10.Bidirectional measurement system can be used for measuring forward flux and reverse flux.

#### Installation and Structure

##### Installation:

Separate model: converter, 50mm pipe or plane installation

Integrated model: combined with the sensor

Wire connector: ISO M20 × 1.5 female thread

Wire Terminals: M3 screw

Housing material: aluminum alloy

##### Structure:

Protection class: IP65 (general type); IP68 (waterproof)

Performance



Separated



Integrated

Diameter	DN 10 ~ DN500
Excitation method 方式 Excitation	Square wave constant current excitation
Installation method	<b>Integrated</b> flange, separated flange
Lining materiel	Neoprene, urethane rubber, PTFE, F46

Electrode material	316L, Hc, Hb, titanium, tantalum, platinum rhodium, tungsten carbide
Ground	Built-in grounding electrode (DN25 and above)
Medium	Conductive liquid
level of accuracy	0.5, 1.0
Dielectric conductivity	> 5 $\mu\text{S}/\text{cm}$
Flow rate	$\leq 10 \text{ m/s}$
Pipe connection flange	GB 81 ~ 59
Pipe connection	Flange connection
Medium temperature	Neoprene: $-10^{\circ}\text{C} \sim 60^{\circ}\text{C}$ ; PTFE: $-10^{\circ}\text{C} \sim 120^{\circ}\text{C}$ Polyurethane rubber: $-10^{\circ}\text{C} \sim 80^{\circ}\text{C}$ ; F46: $-10^{\circ}\text{C} \sim 150^{\circ}\text{C}$
Rated pressure	4.0 MPa; 1.6 MPa; 1.0 MPa
Protection level	IP65 ; IP68
output signal	4mA ~ 20mA DC current; pulse / frequency; upper and lower limit alarm
Cable interface	M20×1.5 female

Communication	RS 485 communication protocol (modbus protocol) RS 232 communication protocol (optional)
Display	Instantaneous flow, alarm display, percentage, flow rate, positive and negative cumulative flow, and total cumulative.
Power supply	220V AC, 24V DC/12V DC, 3.6 V battery powered
Type of use	Normal type, waterproof type
High pressure	custom made

HREF7100 Series electromagnetic flowmeter performance profile (clamping type)

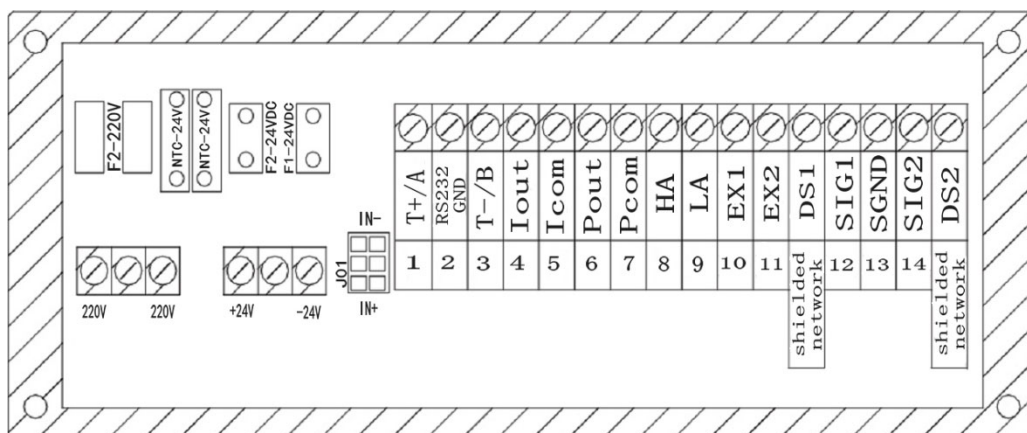
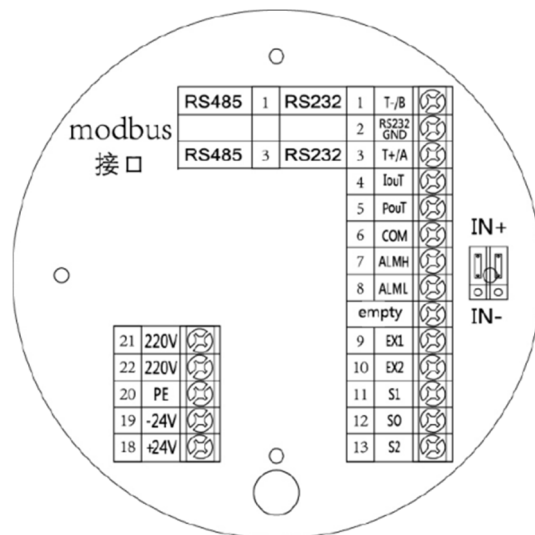
Diameter	DN 10 ~ DN500
Excitation	Square wave constant current excitation
Installation type	<b>Integrated</b> clamping, separated clamping,
Lining material	Neoprene, urethane rubber, PTFE, F46
Electrode material	/316L, Hc, Hb, titanium, tantalum, platinum rhodium, tungsten carbide
Ground	Built-in grounding electrode (DN25 or more)
Medium	Conductive liquid
level of accuracy	0.5, 1.0
Dielectric conductivity	> 5 $\mu$ S/cm

Flow rate	≤ 10 m/s
Pipe connection	GB9119-2000 or GB9115-2000
flange	
Pipe connection	Flange clamp
Medium	Neoprene: -10°C ~ 60°C; PTFE: -10°C ~ 120°C
temperature	Polyurethane rubber: -10°C ~ 80°C; F46: -10°C ~ 150°C
Rated pressure	4.0 MPa; 1.6 MPa; 1.0 MPa
Protection level	IP65 ; IP68
output signal	4mA ~ 20mA DC current; pulse / frequency; upper and lower limit alarm
Cable interface	M20×1.5 female
Communication	RS 485 communication protocol (modbus protocol)
n	RS 232 communication protocol (optional)
Display	Instantaneous flow, alarm display, percentage, flow rate, positive and negative cumulative flow, and total cumulative
Power supply	220V AC, 24V DC/12V DC, 3.6V battery powered
Type of use	Normal type, waterproof type
High pressure	custom made

## Electrical connections

1. In order to ensure the insulation inside the sensor junction box, prevent the insulation caused by moisture, and do not connect the cable outdoors in rainy days.

2. Connect the power cable and signal cable to have round lugs at both ends.
3. It is recommended to use conduits, which can be thick and sturdy steel pipes or flexible metal pipes.
4. All power cables and non-four-core 24V DC signal cables must be equipped with metal cable protection tubes.
5. When waterproof and sealed cable joints are provided, the waterproof and sealed cable joints should be tightened to ensure that there is no water in the box.
6. To protect the operator and maintenance personnel from electric shock and to prevent external noise, connect the ground to the mark ( $\leq 10\Omega$ ).



### Integrated wiring diagram

Terminal symbol		Function Description
1	T-/B	RS485Communication output RS232Communication output (Optional)
2	RS232 GND	
3	T+/A	
4	IOUT	4mA ~ 20mA DC Current output
5	POUT	Bidirectional flow pulse output / frequency output
6	COM	
7	ALMH	Flow high limit alarm output
8	ALML	Flow lower limit alarm output
	Empty	
9	EX1	Excitation current
10	EX2	
11	S1	Electrode line
12	S0	Ground wire
13	S2	Electrode line
20	PE	
21	220V	220V AC Power supply access
22	220V	
19	-24V	24V DC Power supply access
18	+24V	
Shorting piece	IN+	When the shorting piece is pressed upward (IN+), the flow output is positive, and when the shorting piece is below (IN-), the output is negative.
	IN-	



### Separate wiring diagram

Terminal symbol		Function Description	
1	T-/A	RS485 Communication output	
2	RS232 GND	RS232 Communication output	
3	T+/B	(Optional)	
4	Iout	4mA ~ 20mA DC Current output;	With supply output, if no supply, pull out shorting piece
5	Icom	the place of current	
6	Pout	Bidirectional flow pulse output / frequency output	
7	Pcom	The place of pulse output	

8	HA	Flow high limit alarm output
9	LA	Flow lower limit alarm output
10	EX1	Excitation current
11	EX2	
Shielded network	DS1	
12	SIG1	Electrode line
13	SGND	Ground wire
14	SIG2	Electrode line
Shielded	DS2	
	220V	220V AC Power supply access
	220V	
	-24V	24V DC Power supply access
	+24V	
Shorting piece	IN+	When the shorting piece is pressed upward (IN+), the flow output is positive, and when the shorting piece is below (IN-), the output is
	IN-	

## Flowmeter model instruction

Item	Specification code	Description
Instrument type	HREF7100	Electromagnetic Flowmeter
Measuring pipe diameter	XXX	Example: 100 means DN100
Electrode form	1	Standard fixed (required)
Electrode material	0	Stainless steel 316L
	1	Platinum crucible (Pt)
	2	Hastelloy B (HB)
	3	Tantalum (Ta)
	4	Titanium (Ti)
	5	Hastelloy C (HC)
Lining material	3	Neoprene
	4	Polyurethane rubber
	5	F4(PTFE) Polyfluoroethylene F4
	6	F46(FEP) Polyperfluorethylene-propylene F46
Rated pressure (MPa)	4.0	DN 10 ~ 80
	1.6	DN 100 ~ 150
	1.0	DN 200 ~ 1000
	0.6	DN 1100 ~ 2000

Medium operating temperature	E	< 60°C
	H	< 120°C
Ground	1	Built-in ground electrode
	*	No built-in ground electrode
Protection level	0	IP65
	1	IP68
Converter type	0	Integrated
	1	Separated
Analog signal	0	4mA to 20m ADC (with pulse/frequency)
	*	No analog signal output
Digital signal	0	No digital signal output
	1	RS-485 (ModBus protocol)
	2	RS232
	3	Other (custom)
shell material	0	Carbon steel
	1	stainless steel
Body flange material	0	Carbon steel
	1	stainless steel
Companion Flange	0	No
	1	Yes
	2	With stainless steel flange
Power supply	0	220VAC

	1	24VDC
	2	Battery powered
	3	12VDC
Instrument range	(XXX)	Example: (200) indicates that the maximum flow rate corresponding to 20mA is 200m <sup>3</sup> /h.

Selection example: HREF7100-200-103-1.0E1-0001-0010(max)

Model description: electromagnetic flowmeter; diameter DN200; fixed stainless steel electrode, neoprene lining; rated pressure 1.0MPa, temperature <60 °C, built-in grounding electrode; protection class IP65, integrated, with 4mA ~ 20mA DC (frequency or Pulse output), with RS485 digital signal output; shell material and flange are carbon steel, with mounting mating flange (including bolt and nut), 220V AC power supply.