



Product Manual

Flowmeter/level gauge
pressure transmitter

STRONG

One-Stop Solution Expert For Measuring Instruments

Qingdao Hesheng Strong Measurement and Control Technology Co., Ltd

01 Company Profile



Date Of
Establishment

2013 Years

Own
Factory Qingdao & Pingdu

4800 m²

R&D Team

20 +

Invention
Patent

30 +

Domestic
Clients

216 +

Qingdao Hesheng Strong Measurement and Control Technology Co., Ltd.

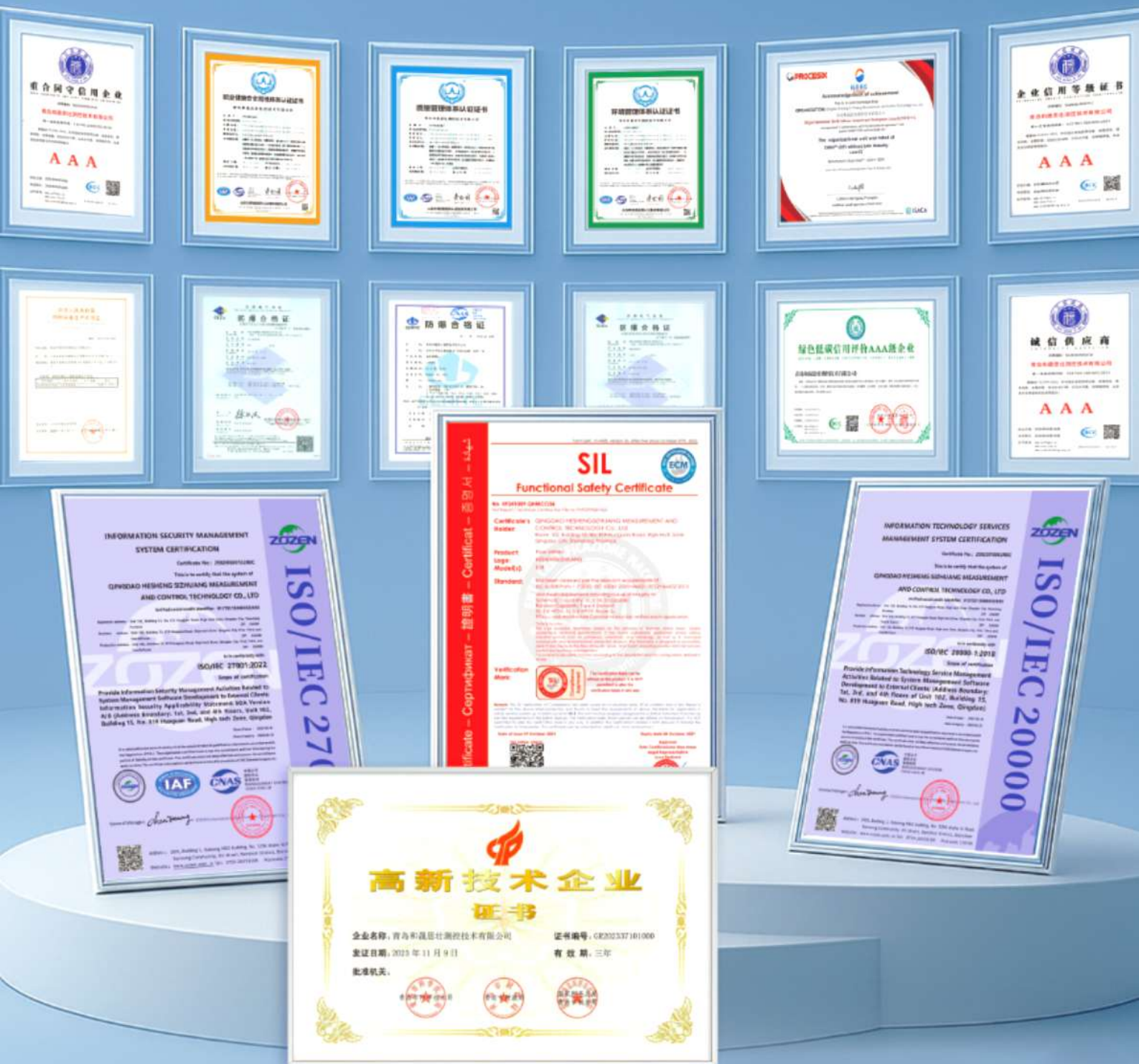
Make measurement more precise and stable, and make management more convenient and intelligent

Founded in 2013 and headquartered in QingDao, China, our company is a high-tech enterprise specializing in the design, research and development, production, sales, and service of smart heating, energy metering management systems, and flow meters. We are a provider of heating metering and smart heating solutions. currently, our company has obtained iso9001 quality management system certification, iso14001 environmental management system certification, iso45001 occupational health and safety management system certification, high-tech enterprise certification, qingdao "specialized, fine, unique, and innovative" enterprise certification, type approval certificate for measuring instruments, and special equipment production license.

01 Company Profile

1.1 Business Qualification

Make Measurement More Precise And Stable
And Make Management More Convenient And Intelligent



01 Company Profile

1.2 Our professional team

Make Measurement More Precise And Stable
And Make Management More Convenient And Intelligent

With over 20 professional engineers, our core team is led by several industry experts. our r&d team is deeply involved in product design, research and development innovation, lean production, precise selection, providing solid support for the steady development of the enterprise.



Guoying Liu
Senior engineer with 20 years of experience in the metrology industry

Chief Product Engineer

R&D Center



En chao Yu
Senior engineer, expert in digital instrument algorithms and simulation

Chief Algorithm Expert

R&D Center



Fangyong Dong
Orifice flowmeter engineer




Mingze Li
Intermediate Engineer



Lei Zhang
Chief After-sales Engineer



Xiaoyun Wang
Compliance Engineer



Zhuqin Tan
Senior Product Engineer



Weili Yu
Senior Quality Inspection Engineer



Guolei Lu
Production Technology Supervisor



Xiaofei Gong
Chief Financial Officer



Fuqi Zhang
Product Technical Director



Hongli Huang
Watch body inspection engineer



Shaokai Sun
Technical Engineer Of The Installation Department



Yi Liu
Instrument Selection Manager



Tianjiao Liang
Senior Data Analyst



Qingshuo Chen
Senior Sales Manager



Enjiang Liu
Quality Engineer

01 Company Profile

STRONG

1.3 Our production process/quality inspection

Make Measurement More Precise And Stable
And Make Management More Convenient And Intelligent

A comprehensive product system and a rigorous quality inspection system serve as the core guarantees for our product quality. We exercise meticulous control over the entire production process, ensuring full traceability, and lay a solid foundation for quality through standardized management and control.

— R&D — R&D Process



— PROD — Production & Quality Inspection



01 Company Profile



1.4 Our cooperative clients

Make Measurement More Precise And Stable
And Make Management More Convenient And Intelligent



国家能源集团
CHN ENERGY



华能电力
CR POWER



大唐集团公司
CHINA DATANG



中国光大集团
CHINA EVERBRIGHT GROUP



中国华能
CHINA HUANENG



中国煤炭科工集团



中国节能
CHINA ENERGY CONSERVATION
INVESTMENT CORPORATION



中国华电
CHD



中信集团
CITIC Group



上海宝冶集团有限公司
SHANGHAI BAOSHI GROUP CORP.,LTD.



康恒环境
SIUS ENVIRONMENT

亿利 ELION

02 Product System

2.1 Product system

Make measurement more precise and stable, and make management more convenient and intelligent

The company has been deeply involved in the fluid metering industry for 13 years, with its hardware instrument product line covering a full range of products including flowmeters, level gauges, pressure transmitters, thermometers, electronically controlled valves, and metering sub-stations. Its stable and reliable performance has earned unanimous recognition from customers worldwide.

— PRODUCT — Product Catalog



02 Product System



Flow Meter Series /Vortex flowmeter

Petrochemical industry/electric power and energy/metallurgical industry
water treatment/food and pharmaceutical industry

Vortex flow sensor is currently one of the mainstream flow meter products internationally, and it is also a key product of our company. This sensor has a simple structure with no moving parts, and its measurement accuracy is not affected by changes in fluid density, viscosity, temperature, and pressure. It is suitable for multiple media and working conditions, and the signal integration is convenient.

Technical parameters of vortex flowmeter

This parameter table contains overall parameters which may vary according to different vortex street configuration parameters

nominal diameter	20、25、32、40、50、65、80、100、125、150、200、250、300、350、400、450、500			
Maximum working pressure (Mpa)	2.5	Ontology material	1Gr18Ni9Ti	
Operating temperature range (°C)	-40~250 / -40~350 / -40~400		accuracy class	±1.0 ±1.5
Fluid conditions	single-phase fluid	pressure loss coefficient	Cd≤2.4	
power supply	+24VDC, +12VDC (sensor) +24VDC (transmitter)			
output signal	Sensor: Square wave low level <0.5V, high level ≥5V, Rfz≥500 Ω. Transmitter: Proportional to flow rate, 4~20mA standard signal, Rfz<250 Ω			
environmental conditions	Temperature (-40~55°C), relative humidity (5%~90%) atmospheric pressure (86~106Kpa)			
Flow rangeability	1:10~1:20 (air at 20°C and 101325Pa)	1:10~1:20 (normal temperature water)		

Standard Vortex Flowmeter:

Flange connection model/Flange clamping type

The standard vortex flowmeter is a fluid natural oscillation instrument developed based on the "Karman vortex street" principle. It involves inserting a non-streamlined flow element vertically into the pipeline fluid. When the flow velocity is high enough, vortices will be generated downstream of the flow element, and the frequency of these vortices is linearly related to the medium flow velocity within a certain range, allowing the calculation of fluid flow rate. Since vortex flowmeters have no moving mechanical parts, they have a long lifespan, require minimal maintenance, exhibit stable meter factors, and are not affected by changes in medium pressure, temperature, viscosity, and other parameters in various working environments. However, due to its working principle, traditional vortex flowmeters are not easily installed in conditions with vibration.

Anti-Vibration Vortex Flowmeter:

Flange connection model/Flange clamping type

"Anti-vibration Vortex Flowmeter" is the latest generation of product independently developed by Qingdao Hesheng Measurement and Control Technology Co., Ltd., which has solved the international problem of traditional vortex flowmeters having a narrow measurement range and poor anti-vibration performance. The LUB series vortex flowmeter has a wider measurement range, better anti-vibration effect, and more stable operation, making it the preferred instrument for internal measurement assessment and trade settlement in enterprises.

Characteristics of anti-vibration vortex flowmeter:

The circuit board of the Heshun Measurement and Control LUB series anti-vibration vortex flowmeter is equipped with a DSP signal processing circuit and anti-vibration algorithm, as well as a mature piezoelectric crystal sensor. After long-term field testing and operation, its performance is reliable. Even under complex working conditions, the anti-vibration vortex flowmeter can effectively identify the signals generated by the flowmeter body and the interference signals generated by vibrations, and perform shielding processing to achieve accurate and stable operation.



— PRODUCT — J series



— PRODUCT — H series

This model is equipped with a new high-performance digital circuit board



— PRODUCT — S series



— PRODUCT — W series



— PRODUCT — F series



Vortex Flowmeter Selection Table

Confirm the instrument series before model selection

Flowmeter	LUB23	
Nominal Diameter	25	DN25
	32	DN32
	...	DN.....
Measuring Medium	Y	liquid
	Q	gas
	Z	steam
Type Selection	V	Anti-vibration type
	N	standard form
	H	H series (flange connection, please specify the flange standard for special requirements)
Compensation Method	N	Vortex sensor without compensation
	P	Integrated pressure compensation
	T	Integrated temperature compensation
	W	Integrated temperature and pressure compensation
Connection Method	J	Flange clamping
	G	Flange connection (please specify the flange standard if there are special requirements)
Output Signal	A	4-20mA output (two-wire)
	F	Pulse (frequency) output
Contact Method	M	485Modbus
	H	Hart
	W	--
Pressure Rating	16	1.6Mpa
	25	2.5Mpa
	40	4.0Mpa
Accuracy Class	A	Level 1.0
	B	Level 1.5
	C	Grade 0.75 (liquid)
Temperature Grade	H	-40°C-280°C
	G	-40°C-350°C
Power Supply Method	X	Powered by lithium battery
	B	24VDC
Display Mode	D	With display
	N	No display
Explosion-Proof Rating	0	Non-Explosion-Proof
	1	Ex D IIC T6 GB
	2	Ex Ia IIC T6 Ga
Special Equipment Supervision and Inspection Certificate (TS Certificate)	0	No
	1	yes



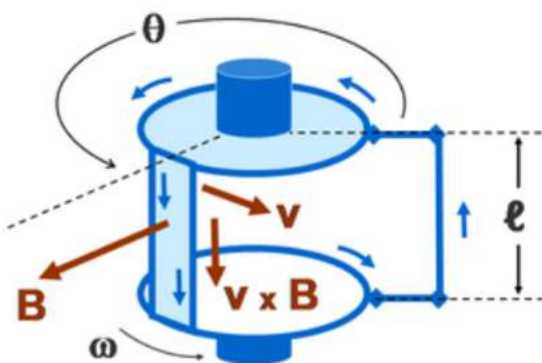
Flow Meter Series / Electromagnetic Flowmeter

Petrochemical industry/electric power and energy/metallurgical industry
water treatment/food and pharmaceutical industry

The HSD series electromagnetic flowmeter is used for flow measurement of conductive liquids in pipelines. It covers strong corrosive liquids such as acids, alkalis, and salts, slurry, waste water, and the volumetric flow of solid-liquid two-phase suspensions. It is widely used in petrochemical, mining and metallurgy, coal, water conservancy and hydropower, water supply and drainage, sewage treatment, and other industries.

Operating Principle Of Electromagnetic Flowmeter

The measurement principle of the electromagnetic flowmeter sensor is based on Faraday's law of electromagnetic induction. A pair of detection electrodes are installed on the pipe wall, which is perpendicular to both the axis of the measuring pipe and the magnetic field lines. When the conductive liquid moves along the axis of the measuring pipe, it cuts through the magnetic field lines, generating an induced electromotive force. This induced electromotive force is detected by the two electrodes on the measuring pipe, and its magnitude is given by the formula $E=K*B*V*D$.



Among Which

- E** For induced electromotive force
- K** It is the instrument constant
- B** For magnetic induction intensity
- V** To measure the average flow velocity within the cross-section of the pipe
- D** To measure the inner diameter of a tube



Product Features:

- 01** Unaffected by changes in fluid density, viscosity, temperature, pressure, and conductivity, the linear measurement principle enables high-precision measurements.
- 02** The measuring tube has no obstructive or moving parts inside, resulting in minimal pressure loss. Therefore, it does not cause additional energy loss or blockage, achieving significant energy-saving effects. It is particularly suitable for measuring liquid-solid two-phase flow media, such as sewage, mud, slurry, and pulp.
- 03** The installation straight pipe section is low, with only a 5D straight pipe section before the meter and a 3D straight pipe section after the meter (D is the inner diameter of the meter, measured in millimeters).
- 04** The instrument covers a wide range of diameters from DN3 to 3200, with multiple options for linings and electrodes, capable of meeting the flow measurement requirements of various conductive liquids.
- 05** It supports signal outputs such as pulse, 4-20mA, 485 Modbus-RTU communication, Hart protocol, Profibus, and GPRS remote transmission.
- 06** The converter utilizes a 32-bit embedded processor, featuring full digital processing, fast operation, strong anti-interference capability, reliable measurement, high accuracy, and a measurable range up to 1:150.
- 07** High-definition backlit LCD display, with a full Chinese character menu for operation, it is easy to use, simple to operate, and easy to learn and understand.
- 08** It features conductivity measurement capabilities, allowing for the determination of whether the sensor is empty or not. Additionally, it possesses self-checking and self-diagnostic functions.
- 09** The internal calculator can display forward cumulative flow, reverse cumulative flow, and instantaneous flow separately.
- 10** The insertion-type electromagnetic flowmeter is easy to install and can be tapped on-site with pressure without interrupting the flow, offering absolute installation and price advantages.

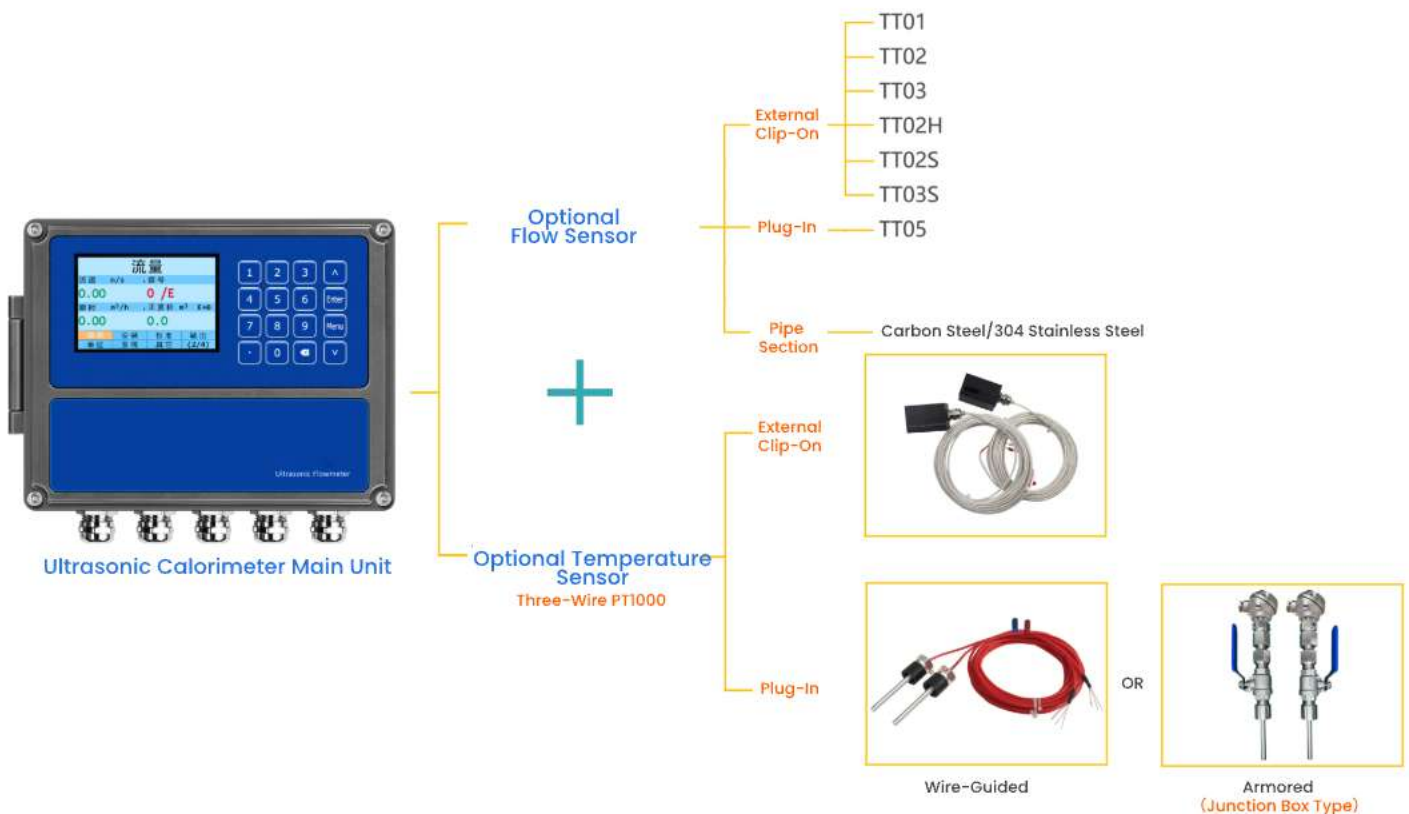
Flowmeter	HSD-		Selection table for electromagnetic flowmeters	
Instrument Form	S	Flange-connected flowmeter		
	C	Insertion flowmeter		
	H	Flange-connected heat meter		
Nominal Diameter	25	DN25		
	32	DN32		
	...	DN...		
Electrode Material	A	316L Stainless Steel Electrode		
	C	Hastelloy (HB, HC) Electrodes		
	Q	Tantalum Electrode		
	T	Titanium Electrode		
	W	Tungsten Carbide Electrode		
	J	Platinum Electrode		
Lining Material	R	Neoprene		
	P	Polytetrafluoroethylene		
	J	Polyurethane		
	K	F46		
	A	PFA		
Body Material	A	Stainless Steel		
	B	Carbon Steel		
Matching Flange	0	Without matching flange		
	1	With carbon steel companion flange		
	2	With stainless steel companion flange		
Grounding Method	B	Grounding Electrode		
	C	316L Grounding Ring		
Pressure Rating	10	1.0Mpa (DN250-DN1000)		
	16	1.6Mpa (DN10-DN200)		
Temperature Grade	E	≤60°C		
	H	≤150°C		
Structural Type	I	Integrated type		
	D	Separated type		
Signal Communication	P	pulse output		
	A	4-20mA output		
	H	HART Protocol		
	M	Modbus communication		
Power Supply	0	220VAC50HZ		
	1	24VDC		
Protection Level	0	IP65		
	1	IP68		
Explosion-Proof Rating	0	No		
	1	Yes		



Flow Meter Series /Ultrasonic Flowmeter

Petrochemical industry/electric power and energy/metallurgical industry
water treatment/food and pharmaceutical industry

The HSC series ultrasonic flowmeter comes with a built-in heat accumulation function, equipped with a pair of platinum resistors, and adopts the international standard enthalpy heat calculation formula (enthalpy difference method) to measure cold/heat. This series of products is divided into integrated, split modular, and battery-powered types.



— PRODUCT — HSCseries



Product Features of Ultrasonic Flowmeter

- 01 Unaffected by changes in fluid density, viscosity, temperature, pressure, and conductivity, the linear measurement principle enables high-precision measurement.
- 02 There are no obstructive or moving parts inside the measuring tube, and no pressure loss occurs, thus neither additional energy loss nor blockage will be caused.
- 03 The instrument caliber covers a range from DN20 to 5000, capable of meeting the flow measurement requirements of various liquids.
- 04 It features full digital processing, fast operation speed, strong anti-interference capability, reliable measurement, high accuracy, and a measurable range up to 1:150.
- 05 It can be used to measure fluid flow and flow in large-diameter pipes that are difficult to access or observe.
- 06 It can measure the flow rate of strongly corrosive media and non-conductive media.

Ultrasonic Flowmeter Selection Table

Flowmeter	HSC-	
Caloric Function	N	No calorie function
	Y	It has a heat function and comes with a temperature sensor
	B	It has a heat function, and users can equip their own temperature sensors
Nominal Diameter	25	DN25
	32	DN32
	...	DN...
Pressure Rating	06	0.6Mpa
	10	1.0Mpa
	16	1.6Mpa
	25	2.5Mpa
Power Supply	A	220VAC (only for split type)
	B	24VDC (integrated or separate type)
Output Signal	M	4-20mA output (two-wire system)
	B	Pulse (frequency) output
	C	Rs485 interface Modbus-RTU communication
Accuracy Class	A	Level 0.5 (agreement ordering)
	B	Level 1.0
	C	Level 2 (calorimeter)
Sensor Installation Form	0	pipe section
	1	plug-in
	2	external clip-on
Transformer Form	Y	Integrated type
	B	Split wall-mounted
	P	Split disc assembly
	M	Split module
Pipe Material	0	carbon steel
	1	stainless steel
	2	cast iron
	3	PVC
Protection Level	0	IP65
	1	IP68
Explosion-Proof Rating	1	non-explosion-proof
	2	Split explosion-proof
matching flange	0	Without matching flange
	1	With carbon steel flange
	2	With stainless steel companion flange



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Balanced Flow Meter

Flow Meter Series /Balanced flow meter

Petrochemical industry/electric power and energy/metallurgical industry
water treatment/food and pharmaceutical industry

The HSP series balanced flowmeter is a novel differential pressure flow meter. It utilizes unique technology and processing techniques to approximate the flow characteristics of a Venturi tube, achieving a relatively small permanent pressure loss in exchange for a larger stable differential pressure value, thus enabling high-precision, long-term stable measurement.

Technical parameters of balanced flowmeter

This parameter table lists the overall parameters, which may vary according to different configuration settings

pipe diameter range	DN25 ~ DN2000
accuracy class	±1%, ±0.5% (customized)
Straight pipe section:	3D before the table, 1D after the table.
Range ratio:	10:1, and it can be made wider under suitable working conditions.
Repeatability:	0.1% to 0.15%.
Re value range:	200 to 107.
Beta value range:	0.25 to 0.9.
Upper temperature limit:	550°C.
Pressure upper limit:	42MPa.

Flowmeter	HSP-		Selection table for balanced flowmeters
Installation Type	S	pipe section	
	Z	Direct welding type	
	P	Wafer type (flat welding flange)	
	D	Wafer type (hubbed flange)	
Nominal Diameter	25	Liquid	
	32	Gas	
	...	Steam	
Material Of Body And Flange	T	pipe section	
	S	Direct welding type	
	L	Wafer type (flat welding flange)	
	G	Wafer type (hubbed flange)	
Throttle Component Material	S	three hundred and four	
	P	316L	
	Q	Other Customizations	
Pressure Rating	16	1.6 MPa	
	25	2.5 MPa	
	40	4.0 MPa	
	63	6.3 MPa	
Install The Attachment	G	Integrated high-temperature accessories	
	F	Split-type high-temperature accessories	
	C	Integrated medium-temperature accessories	
Matching Flange	0	Without matching flange	
	1	With carbon steel companion flange	
	2	With stainless steel companion flange	
Special Equipment Supervision And Inspection Certificate	0	Yes	
	1	No	

— PRODUCT —
HSPseries





Flow Meter Series / Thermal mass flowmeter

Petrochemical industry/electric power and energy/metallurgical industry
water treatment/food and pharmaceutical industry

With a measurement lower limit as low as 0.1 Nm/s and a range ratio of 1:2500, it is suitable for precise metering in pipelines with severe flow fluctuations, micro-flow branch pipelines, and standalone equipment. Equipped with innovative intelligent diagnostic technology, it prevents sensor overheating and damage, ensuring long-term stable operation of the equipment.

— PRODUCT — HSR series



02 Product System



Flow Meter Series / Ultrasonic Level Gauge

Petrochemical industry/electric power and energy/metallurgical industry
water treatment/food and pharmaceutical industry

The unique 45-degree oblique waterproof joint design achieves an overall waterproof rating of IP68. We produce every product with world-class quality standards, ensuring that you can feel assured, at ease, and comfortable when choosing our products.

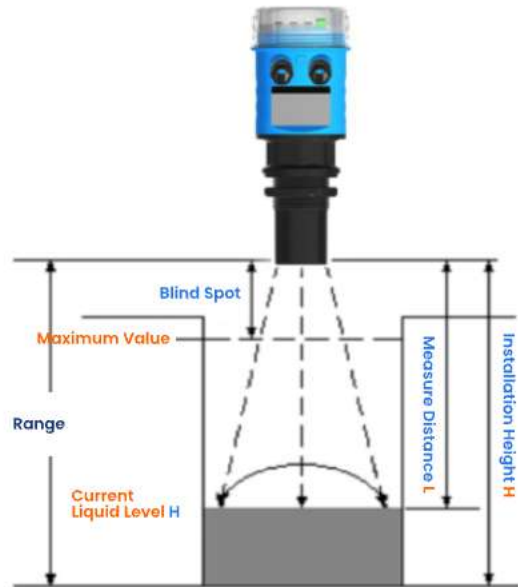
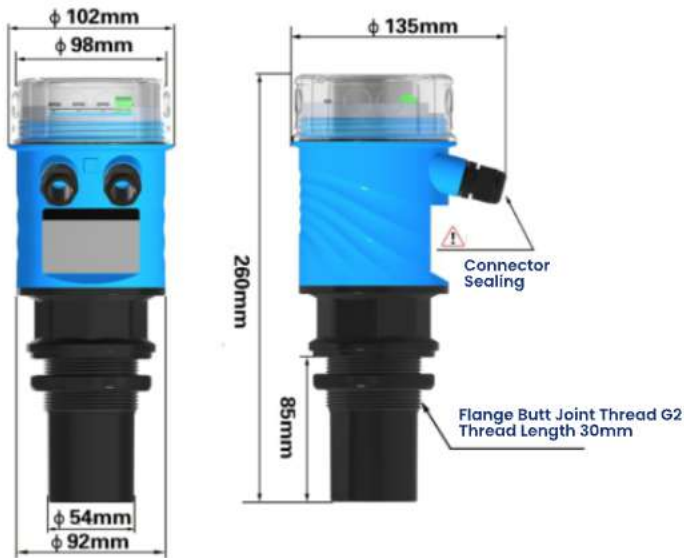
— PRODUCT — HSYW series



Standard probe / Integrated corrosion-resistant probe / Split probe / Flanged probe

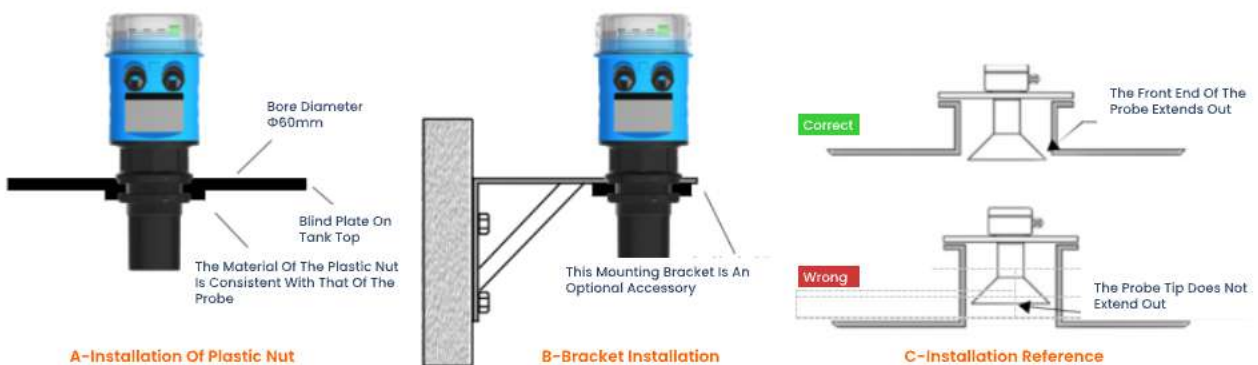
Product Specifications

Ultrasonic level gauge



Product installation form

Ultrasonic level gauge



02 Product System



STRONG



Radar Level Gauge

Flow Meter Series / Radar Level Gauge

Petrochemical industry/electric power and energy/metallurgical industry
water treatment/food and pharmaceutical industry

The product's maximum range can reach 120m, and the blind zone can be minimized to 0.08m. Due to its higher operating frequency and shorter wavelength, it is particularly suitable for solid-state applications. The working method of transmitting and receiving electromagnetic waves through a lens antenna has unique advantages in high dust and harsh temperature environments (+200°C).

— PRODUCT — HSYWseries

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Product Specifications

Confirm the instrument series before model selection

transmission frequency	76-81GHz, FM scanning frequency width 5GHz
measurement range	(0.08~120) m
measurement accuracy	±1mm
Beam angle	3°、8°
Use dielectric constant range	>=2
Power supply range	(18~28) VDC (< 1W) 、 220VAC
contact method	HART/MODBUS
signal output	4~20mA/HART/RS485/MODBUS总
fault output	3.6mA、22mA
On-site operation/programming	128×64 display screen / four buttons / host computer setup software
Environmental temperature/humidity	(-40~85)°C/≤95%RH
Shell material	Aluminum alloy or stainless steel are optional
Antenna type	Lens antenna, other antennas need to be customized
Process pressure	(-0.1~4)MPa
Product dimensions	φ100*270mm
Cable entrance	M20*1.5、NPT1/2 "
Recommended cable	AWG18、0.75mm ²
Protection level	IP68
Installation method	Thread or flange
Net weight/Gross weight	2.480Kg/2.995Kg
packing box dimensions	28*28*32cm
Temperature resistance of medium	-40°C—130°C (High temperature requires customization)

Please select the liquid level gauge according to the working conditions. The shell material, Bluetooth function, and measuring range of the radar liquid level gauge can be customized

Valve Series / Prepaid Control Valve

Size/form can be customized according to the on-site working conditions



Measurement Substation / Instrument Protection Box

Size/form can be customized according to the on-site working conditions



Pressure transmitter / Pressure & Differential Pressure Transmitter

Petrochemical/Power and Energy/Metallurgical Industry/Water Treatment/Food and Pharmaceutical

Rosemount Series Products



Yokogawa Series



Domestic High-End Series



Other Series /Temperature/Display/Power Terminal

The type of instrument can be customized according to the on-site working conditions



IoT software /Internet Of Things/Digital Twin/Simulation Analysis

Petrochemical industry/electric power and energy/metallurgical industry
water treatment/food and pharmaceutical industry

The intelligent heat network management system is based on the rapidly developing network communication technology, establishing a heat network information management system to achieve rapid information sharing, improve the comprehensive efficiency of heat network operation, enhance the monitoring capability of central dispatching, and ensure real-time and scientific management decision-making. It enables unattended remote monitoring, dynamic tracking, effective processing, scientific analysis, and centralized dispatching management of on-site data, thus achieving the goal of energy conservation and consumption reduction for enterprises.

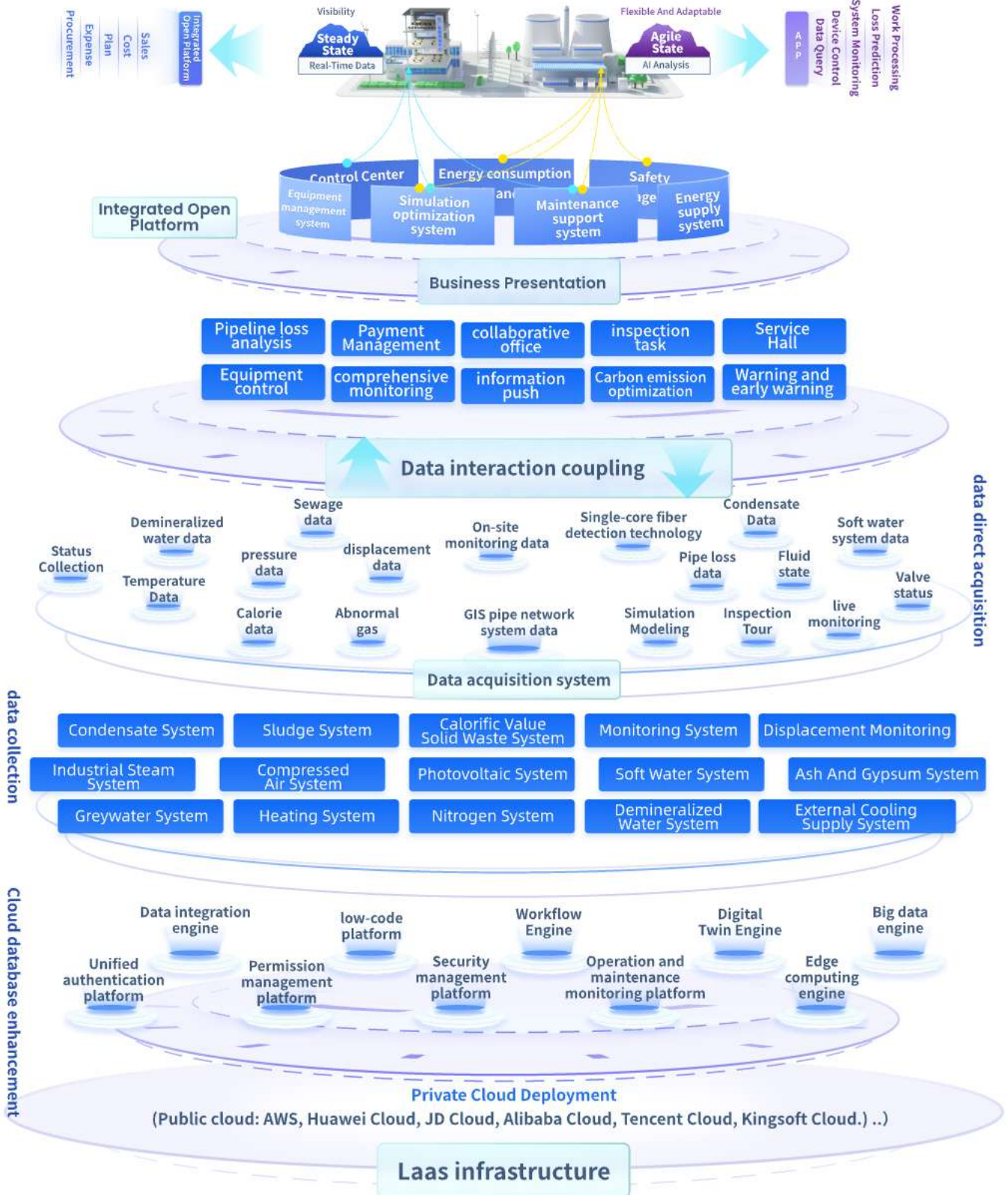


Prepaid metering system/Remote Transmission Via IoT Technology

The prepaid metering system consists of a data monitoring system at the management center, a card issuance and recharge system (optional), a text message reminder platform, a client-side metering control terminal, on-site metering instruments (including flowmeters, pressure transmitters, and temperature sensors), and prepaid control valves.

Integrated Energy Management And Control Platform

Utilize Big Data And Intelligent Models To Optimize Decision-Making



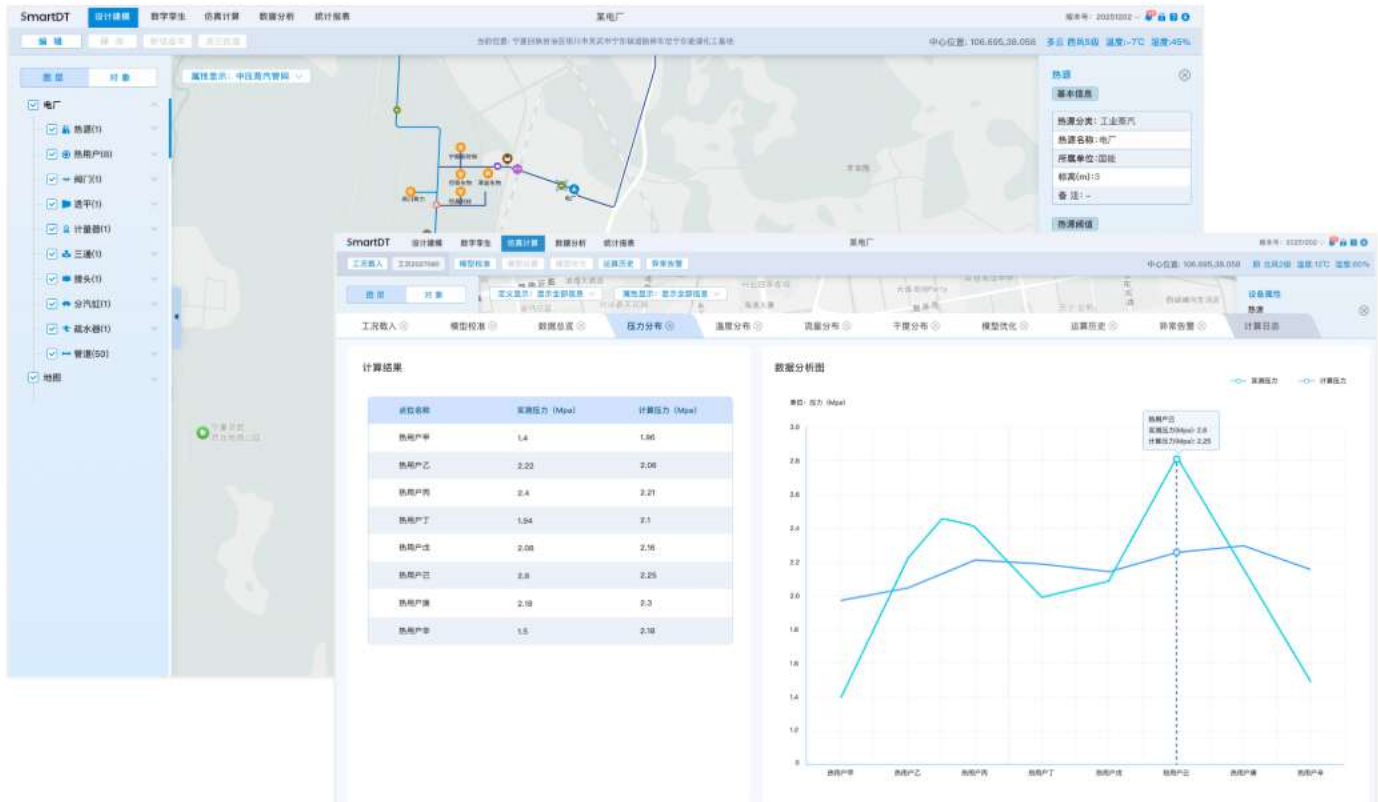
Smart Heating Network System

Visualization screen/Smart heat network/Smart APP



Heat Network Simulation Calculation

Load Forecasting/Pipe Loss Analysis/3D Display Analysis



03 On-Site Installation

On-Site Installation **Live Shooting**

On-Site Installation Status /Vortex Flowmeter

Project location: Ningxia, China Pipe specification: DN250 steam pipe



On-Site Installation Status /Prepaid Electric Control Valve

Project location: Xi'an, China Pipe specification: DN150 steam pipe



On-Site Installation Status

/Balanced Orifice Flowmeter/With Primary Instrument Protection Box

Project location: Shandong, China Pipe specification: DN200 steam pipe



On-Site Installation Status

/Balanced Orifice Flowmeter/Rosemount Differential Pressure Transmitter

Project location: Hebei, China Pipe specification: DN200 steam pipe



On-Site Installation Status /Balance Orifice Flowmeter

Project location: Shandong, China Pipe specification: DN500 steam pipe



On-Site Installation Status /Ultrasonic Level Gauge

Project location: Hebei, China Measurement medium: sewage, river



On-Site Installation Status /Radar Level Gauge

Project location: Fujian, China Measurement medium: pressure vessel tanks, water tanks



On-Site Installation Status /Thermal Mass Flowmeter

Project location: Guangxi, China Measurement medium: Compressed air ultra-low pressure vacuum gas



Qingdao Hesheng Measurement & Control One-stop Expert in Metrological Instrument Solutions

Qingdao Hesheng Strong Measurement and Control Technology Co., Ltd

Flowmeter/level gauge/temperature/pressure transmitter



Qingdao Hesheng Strong Measurement and Control Technology Co., Ltd.

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