

HNF90

CORIOLIS
MASS FLOW METER



MAINFEATURES

1 Multifunctional

It can simultaneously measure multiple on-site variables such as flow rate, density, and temperature. The transmitter has two output signals that can be configured independently for a single mass, and can be used to display measurement values such as flow rate, density, and temperature. The flowmeter can replace multiple measuring instruments.

2 Direct measurement

Directly measuring the mass flow rate of a fluid eliminates the problem of measuring volumetric flow rate.

4 Range width ratio

It can reach 100:1, and the limit of low-frequency sensors can reach 1000:1.

3 Highly accurate

For liquids, it can reach $\pm 0.1 \pm$ (stability at zero point/actual flow rate) $\times 100\%$, and for gases, it can reach $\pm 0.25 \pm$ (stability at zero point/actual flow rate) $\times 100\%$.

5 Durable and long-lasting

Long service life, low maintenance rate, no obstacles or movable parts in the pipeline, few fault factors, and easy installation and maintenance.

6 Adjustable damping time

Adjustable damping time, user-friendly, convenient and fast.

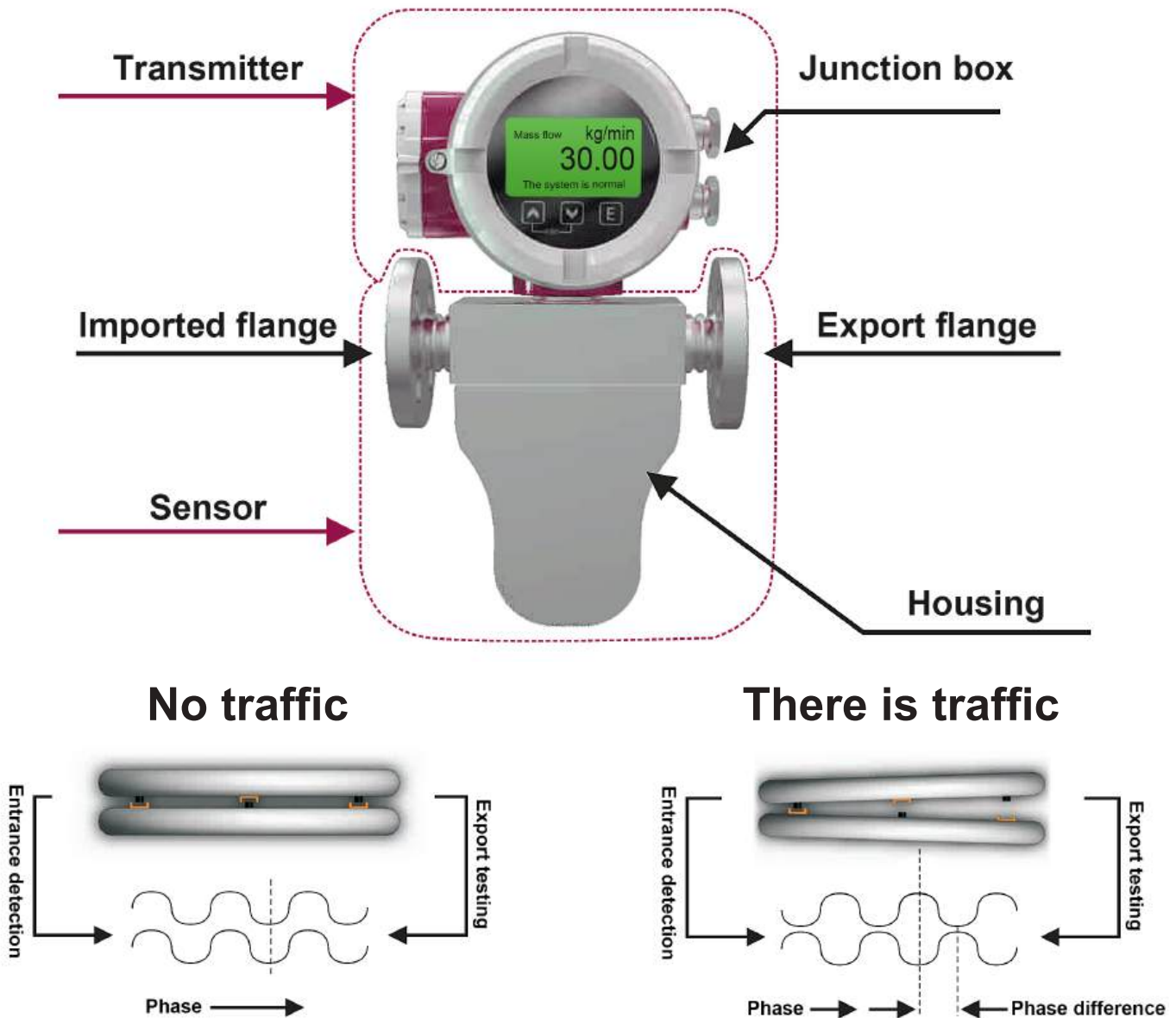
7 Self diagnostic function

It has strong circuit self diagnosis function, which facilitates fault finding.

MEASURING PRINCIPLE

The HNF90 mass flowmeter consists of two parts: a sensor and a transmitter,

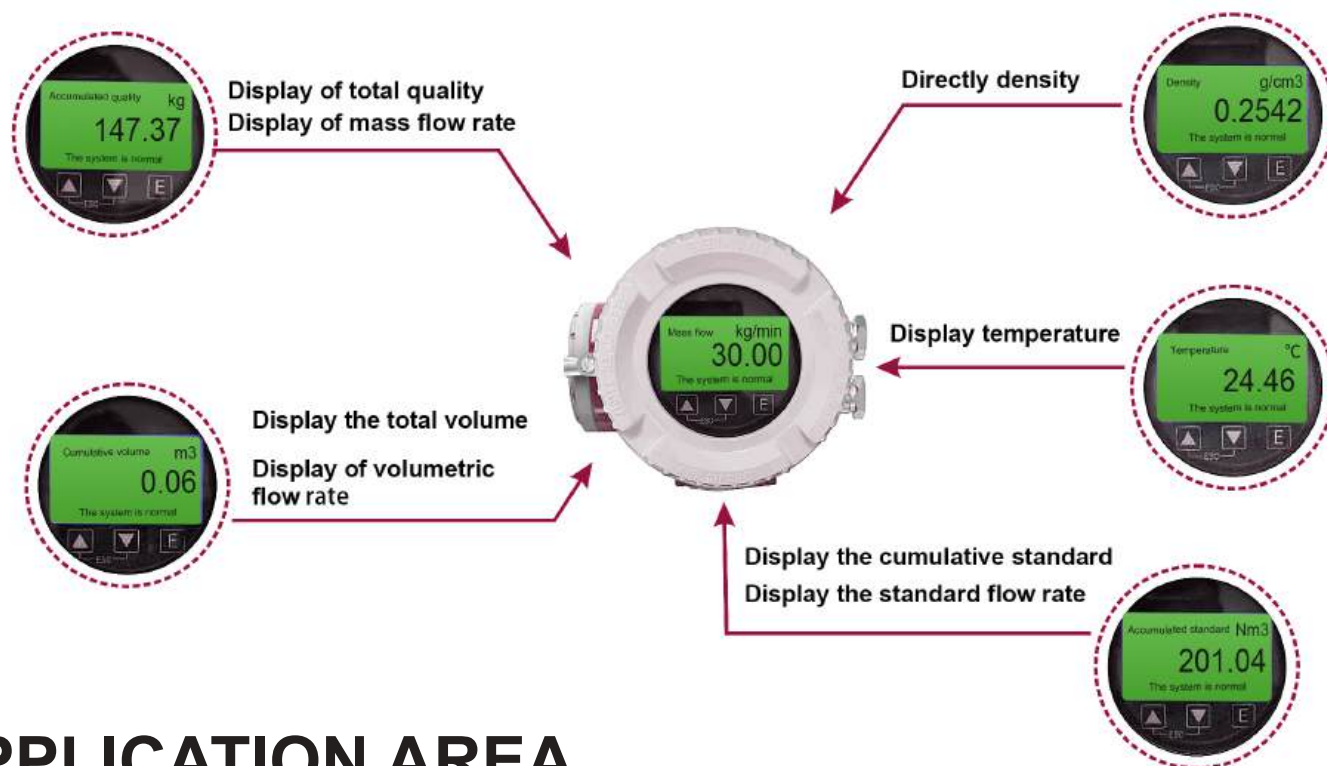
Make the flow tube flowing through the medium vibrate, and the sensor detects and analyzes the changes in frequency, phase difference, and amplitude of the flow tube, directly measuring the mass of the medium flowing through the current flow tube, and calculating the density from the vibration frequency. Simultaneously measuring multiple process variables of the medium, such as mass flow rate, volume flow rate, density, and temperature.



MEASURING PRINCIPLE

The transmitter is composed of an intelligent control system with DSP and ARM as the core, to achieve accurate measurement of mass flow rate, density, and temperature.

At the same time, it adopts high-performance microprocessors, LCD display screens, convenient and fast parameter settings, and has self checking and self diagnostic functions.



APPLICATION AREA

The HNF90 mass flowmeter can directly measure the mass flow rate of fluids, and the measurement results are not affected by the characteristics of medium density, temperature, pressure, flow velocity distribution, etc. It has the characteristics of high measurement accuracy, good stability, easy use, small maintenance, strong communication function, and can achieve multi parameter measurement.

Chemical
industry

Petroleum
natural gas

Electronics and
semiconductor

Lithium Battery

Photovoltaic

Filling Machine

Pharmacy

Food and
Drinks

Fuel
Battery

life
Science

1 Provide factory normal operating time and availability

2 Reduce maintenance costs and workload

3 Improve factory efficiency and product quality

4 Improve measurement performance and accuracy

5 Improve measurement accuracy and reliability

APPLICATION AREA CHART

INDUSTRY	APPLICABLE MEDIA	INDUSTRY	APPLICABLE MEDIA
Gas metering	CNG/LNG metering	The food industry	Palm oil metering
	Gas metering		Drink measurement
	Chlorine mtering		Peanut oil metering
	Industrial gas measurement		Edible oil metering
	Measurement of Carbon dioxide		Flavorants metering
	Other gaese		Blended oil metering
The oil industry	LPG metering	The chemical industry	Chemical applications
	Fluid metering petrochemical plant		Liquid paraffin metering
	Oil production plant		Measurement of chemical raw materials
	Supporting the use of metering skid		Methanol metering
	Wells auxiliary material		Hydrogen peroxide metering
	Loading/unloading of crude oil and refined oil		Metering fertilizer plant resin
Shipbuilding industry	Measurement of marine oil		Measurement of highly corrosive fluids such as nitric acid sulfuric acid hydrochloric acid and strong alkali
Pharmaceutical	Trimethylamine metering		Xylene metering
	Pharmaceutical and Chemicals		Measurement of agricultural raw materials
	Concoction measurement		
Lithium battery industry	Electrolyte production storage and transportation injection	Photovoltaic industry	Photovoltaic polycrystalline silicon hydrogen gas
Building materials industry	High viscosity resin metering		SiHCl3
	Coating measurement		SiCl4
Other industries	Metallurgical industry Paper industry Refrigeration industry		

TECHNICAL PARAMETER

Accuracy and repeatability

Accuracy	±0.15% flow rate (0.15 level), ±0.2% flow rate (0.2 level) ±0.5% flow rate (0.5 level), ±1.0% flow rate (1.0 level)
Repeatability	0.075% traffic, 0.1% traffic, 0.25% traffic, 0.5% traffic
Density accuracy	±0.001g/cm3(±1kg/m3)
Temperature accuracy	± 1°C or ± 0.5% X test value
Temperature repeatability	0.2°C
Relative humidity	≤95%

Zero stability

Model	Zero stability	Model	Zero stability
HNF9001	0.0002	HNF9040	0.020
HNF9002	0.0005	HNF9050	0.025
HNF9003	0.001	HNF9065	0.040
HNF9004	0.001	HNF9080	0.050
HNF9008	0.002	HNF90100	0.100
HNF9015	0.006	HNF90150	0.200
HNF9020	0.010	HNF90200	0.300
HNF9025	0.010	HNF90250	0.750
HNF9032	0.010		

Safety and Protection

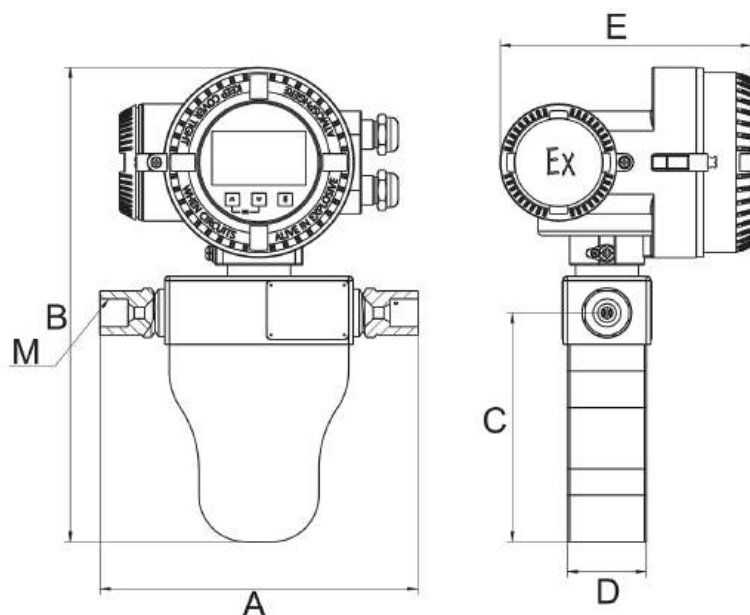
Explosion proof mark	Ex d ib IIC T6 Gb
Explosion proof certificate number	CQEx22.0774X
Protection level	IP67
Explosion proof performance meets the requirements	GB3836.1-2010、GB3836.2-2010、GB3836.4-2010
Application scenarios	Suitable for Zone 1 and Zone 2 explosive hazardous areas, equipment category IC, backward compatible with IIA and IIB

Note: The separate or integrated installation of sensors and transmitters does not affect their explosion-proof performance.

HIGH VOLTAGE SERIES

Suitable for fields such as high-pressure gas metering and hydrogen/CNG metering platforms

Dimensions (mm)



Product Features

Nominal diameters DN04, DN08, DN15

Excellent performance in small flow measurement, meeting the requirements for adding and measuring high-pressure gases such as hydrogen.

1.5 times the experimental surplus to ensure the reliability and safety of ultra-high voltage applications.

The tube is smooth without any other components, and there is no additional pressure loss during the measurement process.

The contact medium components are made of composite metal materials, which have excellent resistance to hydrogen embrittlement

Model	Caliber	A	B	M	E	C	D
HNF9004PU	1/6"	207	348	NPT 1/4"	172	180	54
HNF9008PU	1/4"	217	324	13/16-16UNF	172	157	54
HNF9015PU	1/2"	206	348	G3/4"	172	180	54

Model and caliber selection

Model	Caliber		Medium temperature	Working pressure W.P	Process connection type Standard (factory default)
	inch	mm			
HNF9004PU	1/6"	DN04	-40°C~+85°C	≤87.5MPa	NPT1/4"i nternal thread
HNF9008PU	1/4"	DN08	-40°C~+85°C	≤45MPa	13/16-16UNF internal thread
HNF9015PU	1/2"	DN15	-40°C~+85°C	≤25MPa	G3/4" internal thread

CRYOGENIC SERIES

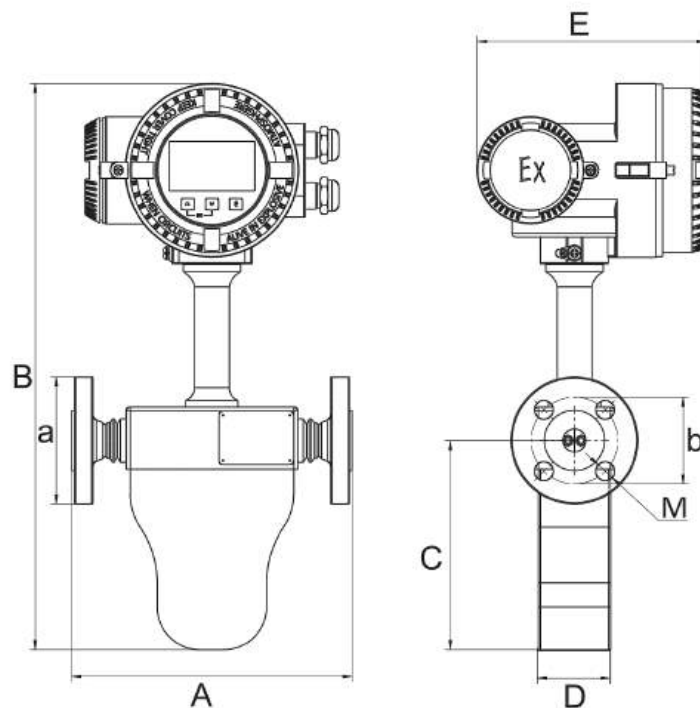
Specially designed for chemical energy, natural gas, and cryogenic application environments

- ❶ Nominal diameter DN08 DN25、DN40、DN50、DN80.
- ❷ High sensitivity.
- ❸ High precision digital signal processing enables precise and stable measurements.
- ❹ Compact design, small size, stable performance, and longer service life.

Model and caliber selection

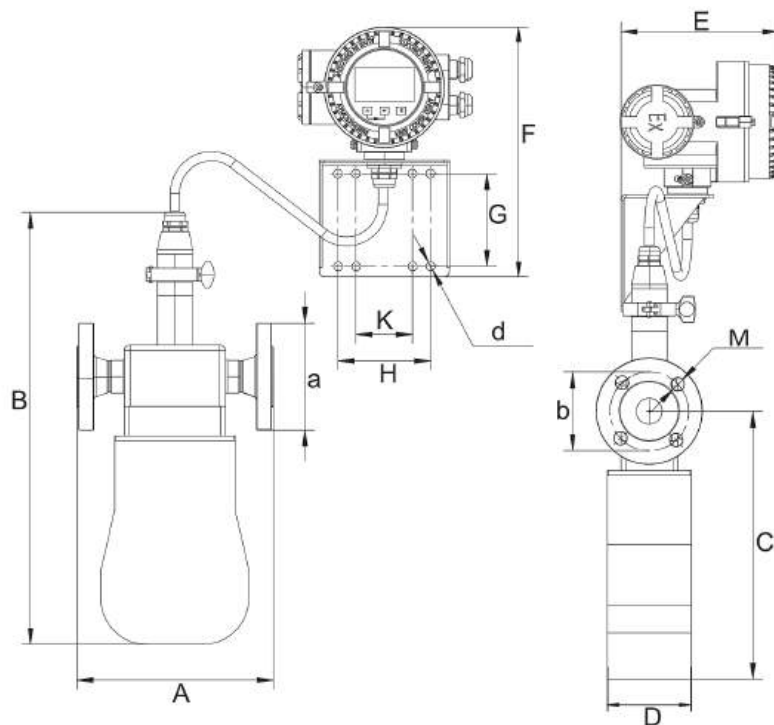
Model	Caliber		Medium temperature	Working pressure W.P	Maximum flow		Process connection type Standard (factory default)
	inch	mm			kg/min	Lb/min	
HNF9008LU	1/4"	DN08	-200°C~+85°C	≤4MPa	25	55	HG/T20592 DN15PN40flange
HNF9025LU	1/2"	DN25	-200°C~+85°C	≤4MPa	220	485	HG/T20592 DN25PN40flange
HNF9040LU	1-3/4"	DN40	-200°C~+85°C	≤4MPa	500	1102	HG/T20592 DN40PN40flange
HNF9050LU	2"	DN50	-200°C~+85°C	≤4MPa	850	1874	HG/T20592 DN50PN40flange
HNF9080LU	3"	DN80	-200°C~+85°C	≤4MPa	2900	6393	HG/T20592 DN80PN40flange

Dimensions (mm)



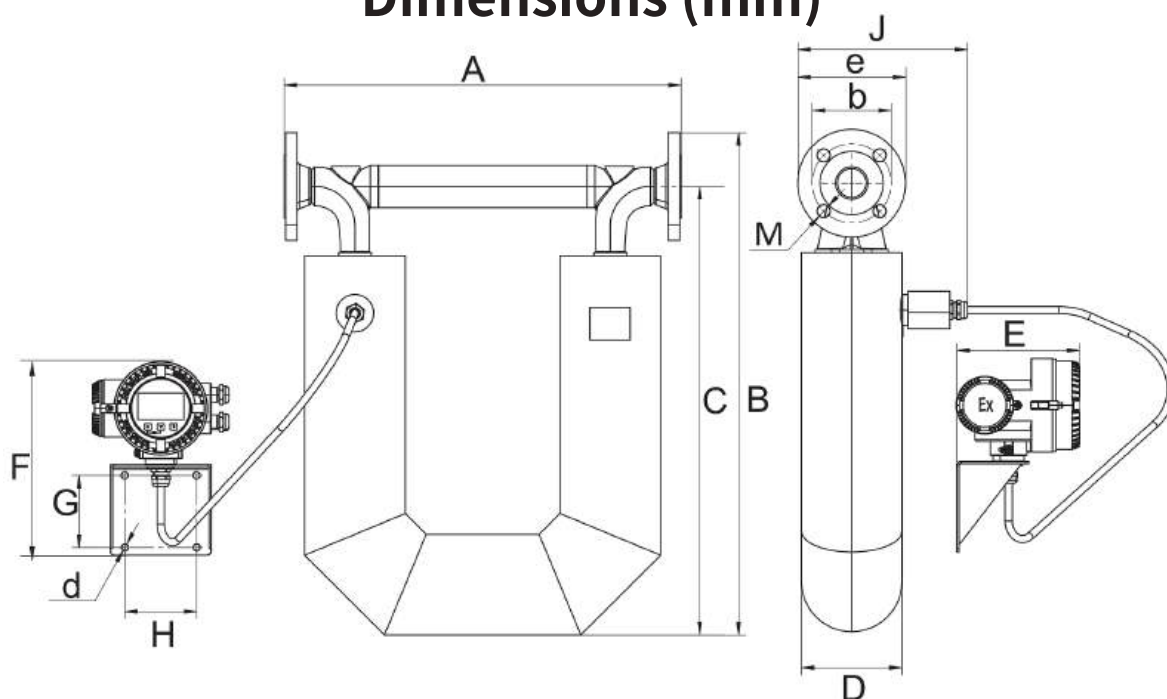
Model	Caliber	A	B	E	C	D	b	M
HNF9008LU	1/4"	210	424	172	157	54	φ65	φ14

Dimensions (mm)



Model	Caliber	A	a	B	F	G	H	K	d	C	D	E	b	M
HNF9025LU	1"	210	φ115	469	300	100	100	61	φ9.50	289	90	172	φ85	φ14

Dimensions (mm)



Model	Caliber	A	B	C	D	J	E	F	G	H	d	e	b	M
HNF9040LU	1-3/4"	552	699	624	140	236	172	300	100	100	φ9.50	φ150	φ110	φ18
HNF9050LU	2"	600	747	665	159	305	172	300	100	100	φ9.50	φ150	φ125	4-φ16
HNF9080LU	3"	763	950	850	219	353	172	300	100	100	φ9.50	φ150	φ160	8-φ18

CONVENTIONAL SERIES

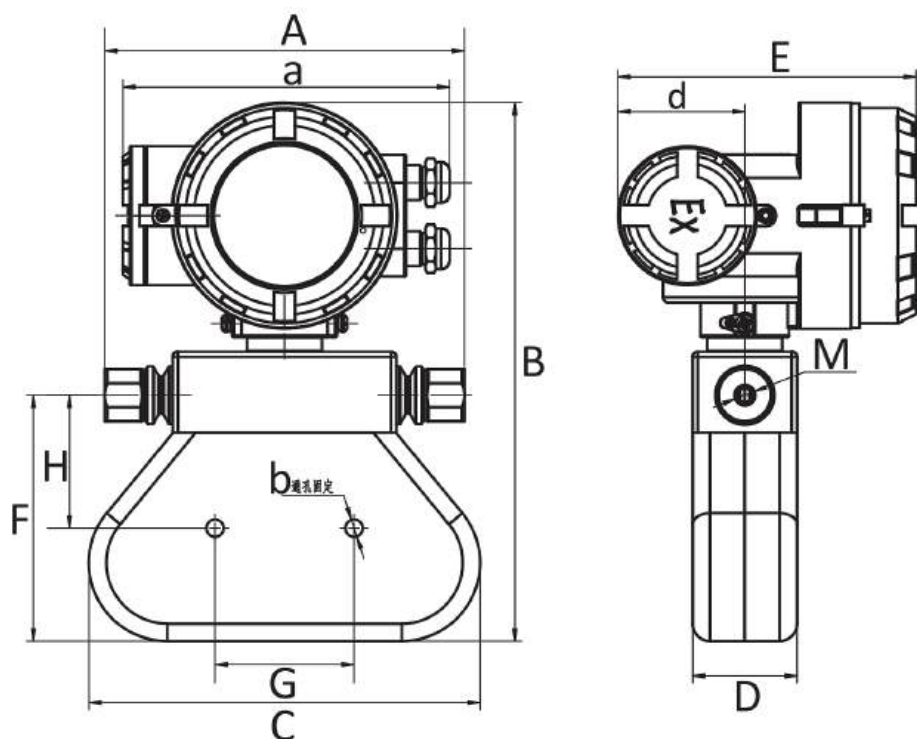
Suitable for trade handover and process control of loading and unloading materials in the fields of petrochemicals, metallurgy, power, papermaking semiconductors, etc

- ① Nominal diameter DN01 DN02、DN03、DN04、DN08、DN15、DN20、DN25、DN32、DN40、DN50 DN65、DN80、DN100、DN150、DN200、DN250
- ② Not affected by physical properties such as fluid viscosity and density.
- ③ Integrated design, small size, easy installation.

Model and caliber selection

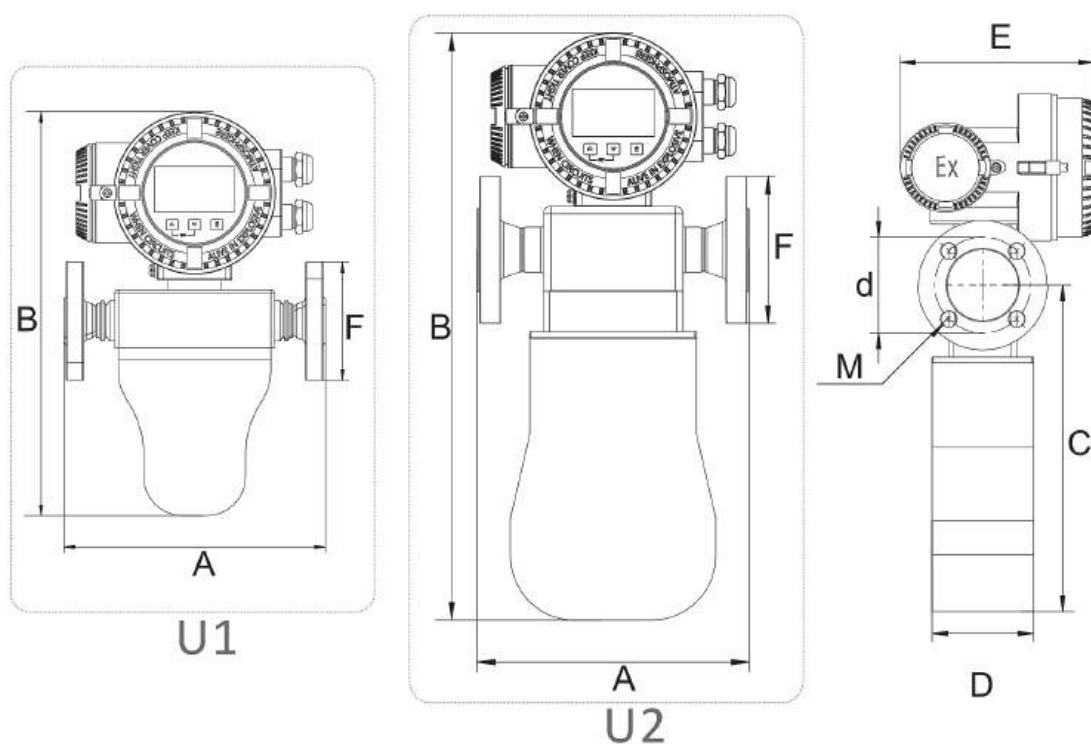
Model	Caliber		Medium temperature	Working pressure W.P	Maximum flow		Process connection type Standard (factory default)
	inch	mm			kg/min	Lb/min	
HNF9001TU	1/12"	DN01	-40°C~+85°C	≤10MPa	0.58	1.27	NPT1/4 "internal thread
HNF9002TU	1/10"	DN02	40°C~+85°C	≤10MPa	1.55	3.41	NPT1/4 "internal thread
HNF9003TU	1/8"	DN03	40°C~+85°C	≤10MPa	5	11	NPT1/4 "internal thread
HNF9004TU	1/6"	DN04	40°C~+85°C	≤10MPa	10	22	NPT1/4 "internal thread
HNF9008TU	1/4"	DN08	40°C~+85°C	≤10MPa	25	55	HG/T20592 DN08 PN40flange
HNF9015TU	1/2"	DN15	40°C~+85°C	≤10MPa	70	154	HG/T20592 DN15 PN40flange
HNF9020TU	3/4"	DN20	40°C~+85°C	≤10MPa	120	265	HG/T20592 DN20 PN40flange
HNF9025TU	1"	DN25	40°C~+85°C	≤10MPa	220	485	HG/T20592 DN25 PN40flange
HNF9032TU	1-1/4"	DN32	40°C~+85°C	≤10MPa	360	793	HG/T20592 DN32 PN40flange
HNF9040TU	1-3/4"	DN40	40°C~+85°C	≤10MPa	500	1102	HG/T20592 DN40 PN40flange
HNF9050TU	2"	DN50	40°C~+85°C	≤10MPa	850	1874	HG/T20592 DN50 PN40flange
HNF9065TU	2-1/2"	DN65	40°C~+85°C	≤6.3MPa	1800	3968	HG/T20592 DN65 PN40flange
HNF9080TU	3"	DN80	40°C~+85°C	≤6.3MPa	2900	6393	HG/T20592 DN80 PN40flange
HNF90100TU	4"	DN100	40°C~+85°C	≤4MPa	5300	11684	HG/T20592 DN100 PN40flange
HNF90150TU	6"	DN150	40°C~+85°C	≤4MPa	12000	26455	HG/T20592 DN150 PN40flange
HNF90200TU	8"	DN200	40°C~+85°C	≤4MPa	18000	39683	HG/T20592 DN200 PN40flange
HNF90250TU	10"	DN250	40°C~+85°C	≤4MPa	30000	66138	HG/T20592 DN250 PN40flange

Dimensions (mm)



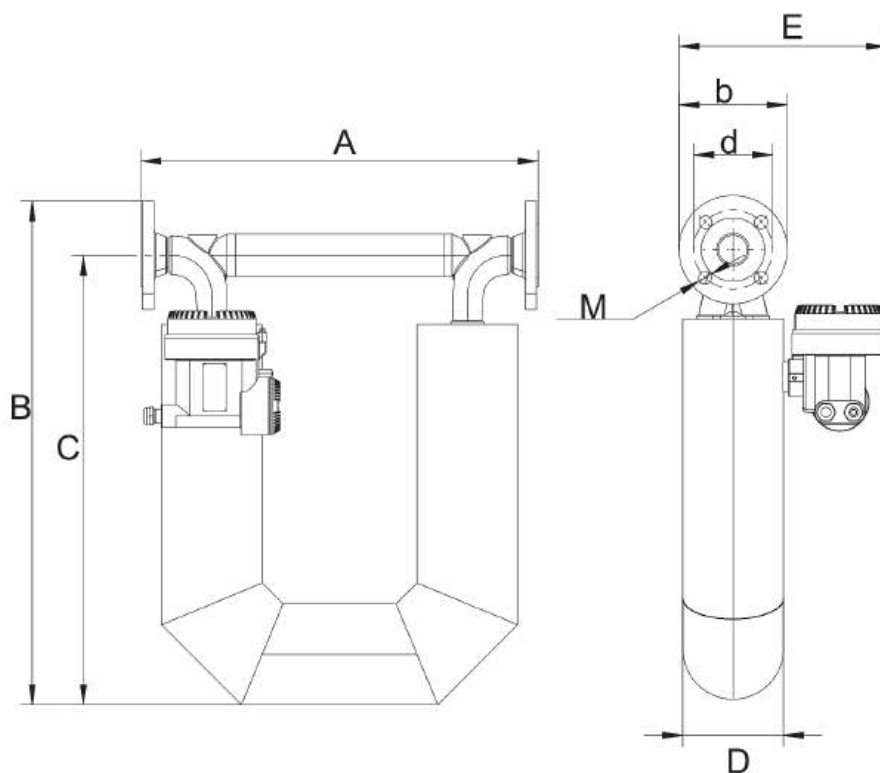
Model	Caliber	A	a	B	C	G	F	H	b	D	E	d	M
HNF9001TU	1/12"	207	188	310	225	80	142	77	2- ϕ 10	60	172	73	NPT1/4"
HNF9002TU	1/10"	207	188	310	225	80	142	77	2- ϕ 10	60	172	73	NPT1/4"
HNF9003TU	1/8"	207	188	310	225	80	142	77	2- ϕ 10	60	172	73	NPT1/4"

Dimensions (mm)



Types of	Model	Caliber	A	B	F	C	D	E	M	d
U1	HNF9004TU	1/6"	210	325	95	156.50	54	172	4-φ14	φ65
	HNF9008TU	1/4"	210	325	95	156.50	54	172	4-φ14	φ65
	HNF9015TU	1/2"	210	348	95	180	54	172	4-φ14	φ65
U2	HNF9020TU	3/4"	212	458	115	289	90	172	4-φ14	φ85
	HNF9025TU	1"	212	458	115	289	90	172	4-φ14	φ85

Dimensions (mm)



Model	Caliber	A	B	C	D	E	M	d	b
HNF9032TU	1-1/4"	540	694	624	140	283	4-φ18	φ100	φ140
HNF9040TU	1-3/4"	552	699	624	140	288	4-φ18	φ110	φ150
HNF9050TU	2"	600	747	665	159	305	4-φ16	φ125	φ165
HNF9065TU	2-1/2"	620	760	665	159	315	8-φ18	φ145	φ185
HNF9080TU	3"	763	950	850	219	353	8-φ18	φ160	φ200
HNF90100TU	4"	963	1079	962	273	416	8-φ22	φ190	φ235
HNF90150TU	6"	1164	1144	994	φ324	467	8-φ26	φ250	φ300
HNF90200TU	8"	1266	1445	1257	φ377	423	12-φ30	φ320	φ375
HNF90250TU	10"	1360	1904	1683	φ448	500	12-φ30	φ385	φ450

STRAIGHT TUBE SERIES

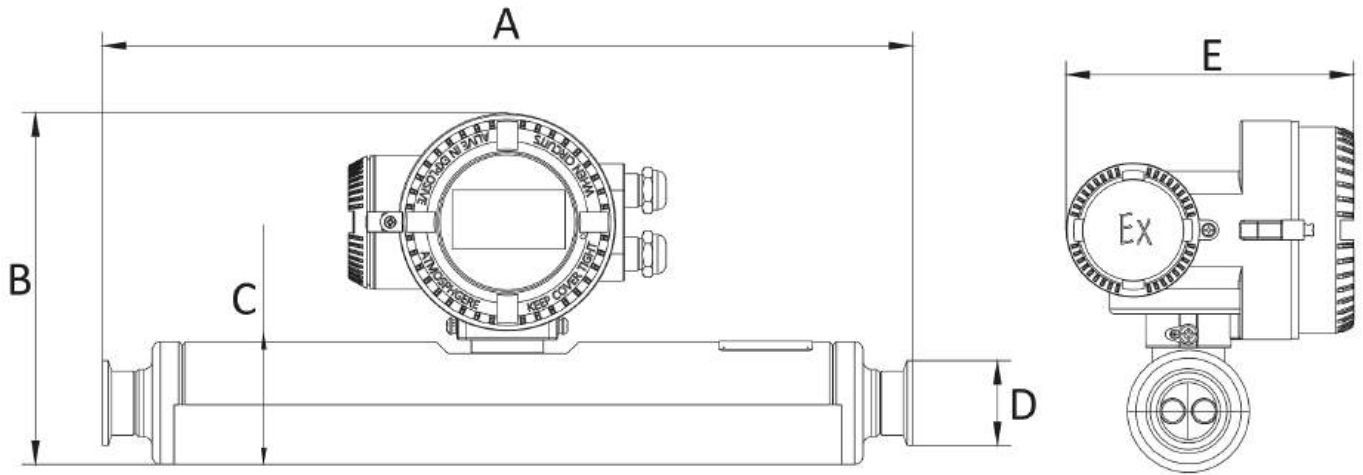
A quality flow meter designed specifically for precise measurement and process control in the filling field

- ① Nominal diameter DN04 DN08、DN15、DN20、DN25、DN32、DN40、DN50 DN65、DN80、DN100.
- ② Integrated design, small size, easy installation.
- ③ Measurement is not affected by the characteristics of the medium.
- ④ Sanitary design, compliant with 3A certification, passed EHEDG testing.
- ⑤ Can be used for CIP/SIP cleaning to ensure product quality.
- ⑥ Durable casing (aluminum or stainless steel).

Model and caliber selection

Model	Caliber		Medium temperature	Maximum flow	
	inch	mm		kg/min	Lb/min
HNF9004SL	1/6"	DN04	-40°C~+85°C	10	22
HNF9008SL	1/4"	DN08	-40°C~+85°C	22	55
HNF9015SL	1/2"	DN15	-40°C~+85°C	70	154
HNF9020SL	3/4"	DN20	-40°C~+85°C	120	265
HNF9025SL	1"	DN25	-40°C~+85°C	220	485
HNF9032SL	1-1/4"	DN32	-40°C~+85°C	360	793
HNF9040SL	1-1/2"	DN40	-40°C~+85°C	500	1102
HNF9050SL	2"	DN50	-40°C~+85°C	850	1874
HNF9065SL	2-1/2"	DN65	-40°C~+85°C	1800	3968
HNF9080SL	3"	DN80	-40°C~+85°C	2900	6393
HNF90100SL	4"	DN100	-40°C~+85°C	5300	11684

Dimensions (mm)

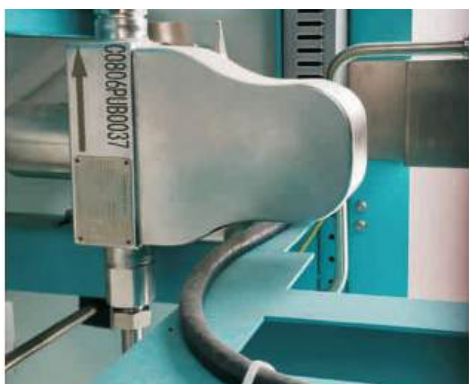


Model	Caliber	A	B	C	D	E
HNF9004SL	1/6"	382	207	73	50.8	172
HNF9008SL	1/4"	382	207	73	50.8	172
HNF9015SL	1/2"	382	207	73	50.8	172
HNF9020SL	3/4"	483	209	73	50.8	172
HNF9025SL	1"	483	209	73	50.8	172
HNF9032SL	1-1/4"	764	258	φ124	φ106	172
HNF9040SL	1-1/2"	764	258	φ124	φ106	172
HNF9050SL	2"	764	258	φ124	φ106	172
HNF9065SL	2-1/2"	764	258	φ124	φ106	172
HNF9080SL	3"	954	323.3	φ180	φ155	172
HNF90100SL	4"	1090	362	φ219	φ183	172

APPLICATION CASES



LNG refueling station



Hydrogen refueling station



Fine Chemicals



On site application of hydrogenation flowmeter



On site application of hydrogenation flowmeter



Caustic soda



Chemical industry



Ammonia and methanol measurement



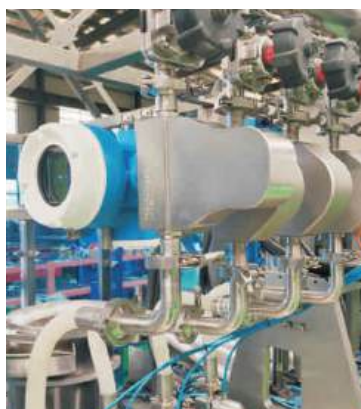
Power plant



Mud measurement



Steam measurement



Food filling



Refrigerant filling



Salt chemical industry



Air separation loading measurement



LNG liquefaction plant

QUALITY FLOWMETER SELECTION TABLE

NAME	CODE	CODE DESCRIPTION
Nominal Diameter	001	DN01
	002	DN02
	003	DN03
	004	DN04
	008	DN08
	015	DN15
	020	DN20
	025	DN25
	032	DN32
	040	DN40
	050	DN50
	065	DN65
	080	DN80
	100	DN100
	150	DN150
	200	DN200
	250	DN250
Application code	T	Conventional type
	P	High voltage type
	L	Cryogenic type (-255~85°C) limited U-shaped
	S	Sanitary type (3-A certification)
	G	High temperature type (85-200°C)
	C	Ultra high temperature type (200~350°C) limited U-shaped
	X	Special working conditions (detailed explanation required)
Sensor series	U	U-shaped sensor
	W	Micro bending sensor
	L	Straight tube sensor
	D	Inverted Triangle Sensor
	X	Special customization (detailed explanation required)
Maximum working pressure of flow tube	02	1.6MPa
	04	4MPa
	06	6MPa
	10	10MPa
	20	20MPa

Maximum working pressure of flow tube	25	25MPa
	35	35MPa
	45	45MPa
	70	70MPa
	96	96MPa
Process Connection Standard	FR	HG/T 20592 PN 1.6 MPa
	FQ	HG/T 20592 PN 2.5MPa
	FT	HG/T 20592 PN 4.0 MPa
	FU	HG/T 20592 PN 6.3 MPa
	FV	HG/T 20592 PN 10 MPa
	FW	HG/T 20592 PN 16 MPa
	FA	HG/T 20615 Class 150
	FB	HG/T 20615 Class 300
	FC	HG/T 20615 Class 600
	FD	HG/T 20615 Class 900
	FE	HG/T 20615 Class 1500
	GS	G-pipe thread
	DS	DIN 11851-SI(mm)
	DT	DIN 11851-US(in)
	DU	DIN 11864-1 Form A Threaded (Sanitary) Connection
	DV	DIN 11864-2 Form A slotted flat flange connection
	GT	GB/T 9115 PN 2.5 MPa
	NS	NPT thread
	US	American standard UNF thread
	HS	Sanitary connector - (Tri Clamp compatible)
	GU	GB/T 9115 PN 1.6 MPa
	GV	GB/T 9115 PN 4.0 MPa
	GW	GB/T 9115 PN 6.3 MPa
	GX	GB/T 9115 PN 10 MPa
	GY	GB/T 9115 PN 16 MPa
	AS	ASME B16.5 (ANSI) Class 150
	AT	ASME B16.5 (ANSI) Class 300
	AU	ASME B16.5 (ANSI) Class 600
	AV	ASME B16.5 (ANSI) Class 900
	AW	ASME B16.5 (ANSI) Class 1500
	AX	ASME B16.5 (ANSI) Class 2500
	ES	EN 1092-1 (DIN) PN 16
	ET	EN 1092-1 (DIN) PN 25
	EU	EN 1092-1 (DIN) PN 40

Process Connection Standard	EV	EN 1092-1 (DIN) PN 63
	EW	EN 1092-1 (DIN) PN 100
	EX	EN 1092-1 (DIN) PN 160
	JS	JIS B2220 10K
	JT	JIS B2220 20K
	JU	JIS B2220 40K
	JV	JIS B2220 63K
	SS	SMS 1145 Threaded (Sanitary) Connection
	MS	Metal face sealing joint
	OS	O-Ring sealing joint
	ZS	ZS ZG1/8-F
	ZT	ZT ZG1/2-F
	ZU	ZU ZG3/4-F
	ZV	ZV ZG1-F
	NS	1/2 NPT-F
	NT	3/4 NPT-F
	BS	1/2"
	VS	VCO connector
	CS	Slotted chuck
	C9	Customize other standard types of connections (detailed explanation required)
Measurement tube material	S	316L (default)
	G	316L high nickel
	L	904L
	T	Titanium
	C	C4 steel
	H	Hastelloy alloy
	D	Duplex steel
	A	Tantalum material
	X	Other materials requested by the user (detailed explanation required)
Accuracy class	S	0.1 level quality
	A	0.15 level quality
	B	0.2 level quality
	C	0.5 level quality
	D	1.0 level quality
	X	Other requirements (detailed explanation required)
Installation form of transmitter	N	Integrated type
	S	Split type (default cable length of 3 meters)
	J	Compact integrated (without explosion-proof certification)
	D	Rail installation (without explosion-proof certification)
	X	Other requirements (detailed explanation required)

Display function	C	CLS100C with display
	M	CLS100 without display (default)
	X	Other requirements (detailed explanation required)
OUTPUT	M	Modbus RTU/RS-485、Pulse active (default)
	L	4-20mA current loop active, with default signal
	H	Hart, 4-20mA current loop active, with default signal
	P	Profibus PA Modbus RTU/RS-485、Pulse active
	X	Other requirements (detailed explanation required)
Authentication	N	Nothing
	C	Ex Explosion proof Certification
	A	3-A certification
	S	Special Equipment Production License
	X	Other requirements (detailed explanation required)
Transmitter version	V1	CLS100 (default)
	V2	CLS200
	V3	CLS300
	XX	Other requirements (detailed explanation required)
Measurement mode	M	Quality
	D	Density
	A	Quality and density
	X	Other requirements (detailed explanation required)
Process connection material	E	Three hundred and four
	S	316L
	G	316L high nickel
	L	Titanium
	T	C4 steel
	C	Hastelloy alloy
	H	Duplex steel
	D	Tantalum material
	A	Other materials requested by the user (detailed explanation required)
Material of sensor housing	E	Three hundred and four
	S	316L
	X	Other materials requested by the user (detailed explanation required)
Power supply	1	24VDC
	2	220VAC/24VDC adaptive
	X	Other requirements (detailed explanation required)
Electrical interface	N	1/2 NPT
	M	M20 * 1.5 (default)
	X	Special customization (detailed explanation required)

Density accuracy	1	0.003g/ml
	2	0.001g/ml
	3	0.0005g/ml
	4	0.0002g/ml
	5	0.00015g/ml
	Q	No requirements (default)
Insulation jacket function	N	None (default)
	Y	Have
Language	E	English operating interface
	C	Chinese operation interface (default)
	R	Russian operating interface
	X	Other (detailed explanation required)
Annex	0	None (default)
	1	Carbon steel flanges, bolts, nuts, and metal wrapped gaskets
	2	Stainless steel flanges, bolts, nuts, and metal wrapped gaskets
	X	Other (detailed explanation required)
Other customization requirements (Detailed explanation is required)		

HNF90

Mass flow meter

Directly measure the mass flow rate of a fluid

Multifunctional

High-precision

Long service life and low maintenance rate

Range width ratio

Adjustable damping time

