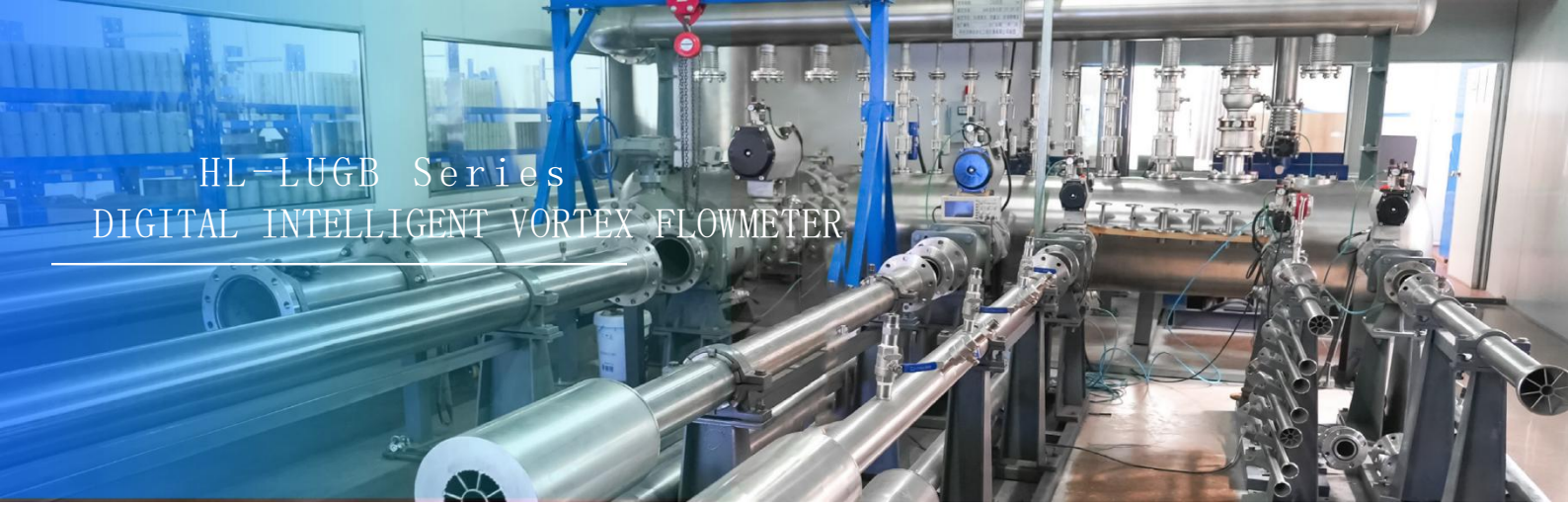
Digital intelligent vortex flowmeter

Brochure

- redundancy design
- difference algorithm
- CFD calculations
- On-line probe replacement

Jiangsu Hualiu Instrument Co . , Ltd



HL-LUGB Series
DIGITAL INTELLIGENT VORTEX FLOWMETER

Product Features

- Based on double detection design and autonomous algorithm, it can provide better measurement accuracy
- Under the guarantee of ± 1.5% RD accuracy, the lower limit is as low as 2m/s, and the range ratio can be expanded to 1:30
- The spectrum analysis technology based on digital signal can provide wider measuring range and higher measuring accuracy
- Intelligent digital display, you can view the temperature, pressure, accumulation
- Built-in temperature and pressure compensation, direct display of mass flow rate
- Output signal 4 ~ 20mA, pulse, RS485, optional HART protocol

Application Area

- Compressed air standard consumption detection
- Steam mass flow and consumption detection
- Measurement of natural gas standard flow and consumption
- Coal mine gas extraction flow monitoring
- Nitrogen, oxygen, argon and other industrial gas monitoring
- Pure water, fuel and other liquid measurement

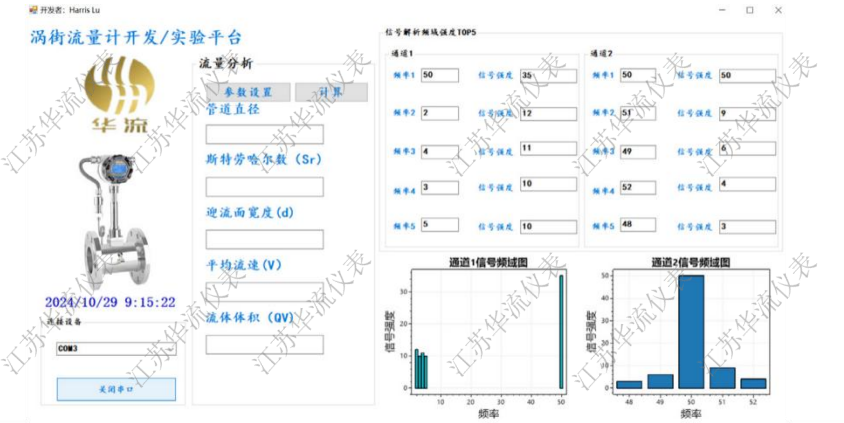
Widely used in machinery manufacturing, electronic appliances, food, metallurgy, chemical, pharmaceutical, textile, water treatment and other fields.

Hualiu digital intelligent vortex flowmeter is different from the traditional flowmeter 5 advantages

HUALIU INSTRUMENT

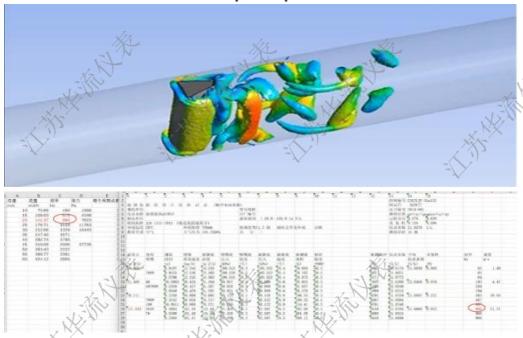
01 | Redundant probe design

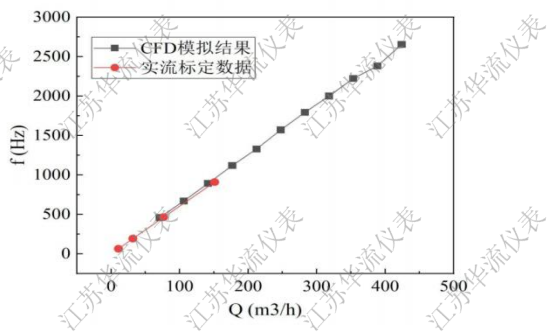
The redundant probe design of Hualiu is different from the general manufacturer's redundant probe design concept. While meeting the conventional redundant design to solve the need to change the meter due to the failure of a single sensor, different sensor positions can obtain the effect of high and low different flow rates, and at the same time, it can broaden the range ratio of the product. The conventional vortex flow rate is (5-50) m/s. The wide range vortex can reach (1-60) m /s. The comparison of the other two sets of probes can effectively filter out interference signals such as vibration.



02 | CFD analog simulation

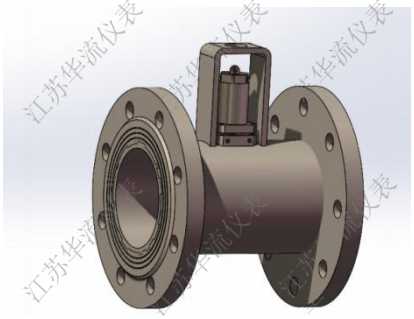
CFD simulation solved the problem of structure optimization, dissected the first principle of "Karman vortex" of vortex flowmeter, and the simulated data were basically consistent with the simulated data, which played an important role in the later structural optimization, different vortices generated by different shapes of vortex generating bodies, and the depth position, size and wall thickness of sensors.





03 | On-line probe replacement

The sensor can be replaced online to solve the problem that the sensor must be removed due to damage, which affects the production and operation of the equipment. Voice broadcasting is intelligent cash withdrawal, and voice control does not need to remove the lid to debug the product, and it is also useful in explosion-proof occasions.

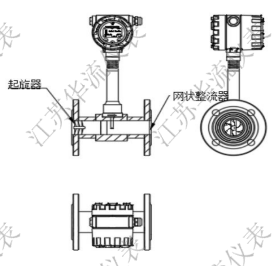


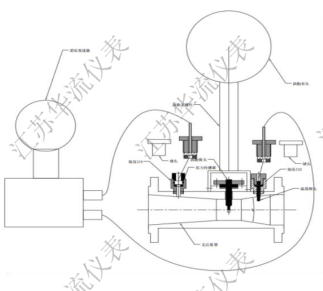
04 | Seismic test

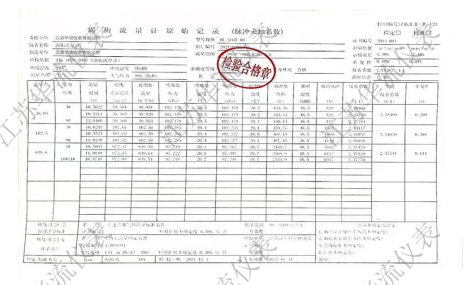
Earthquake resistance is also an important index of Woji, and the experiment is compared with the seismic performance of Yokogawa Company in Japan.

05 | on-line proving

The lower limit flow rate of conventional vortex flowmeter is 5m/s, while the low flow rate of Hualiu can reach 0.8m/s or below. For the situation of field contraction, Hualiu has developed strong rectifier vortex flowmeter, which greatly reduces the requirements of straight pipe section. The research and development can calibrate vortex flowmeter online by differential pressure method, and the flowmeter can be calibrated online without removing the meter.







Patent Qualification

Hualiu adopts unique dual probe redundancy design and software algorithm with independent intellectual property rights, which effectively guarantees the stability and accuracy of measurement.

patent number: ZL 2024 2 0413887.6

patent number: ZL 2023 1 1023033.3

certificate number: CLEx22.0354

patent number: ZL 2018 2 1106234.4

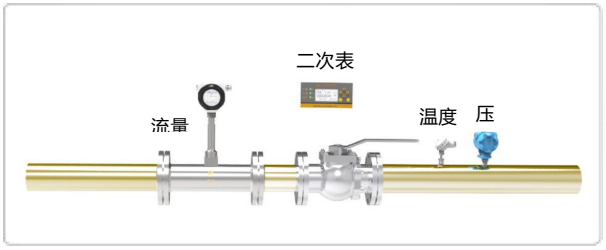
patent number: ZL 2021 2 2836236.7

patent number: ZL 2021 2 2939250.X

■ The above is part of the patent display of Hualiu company

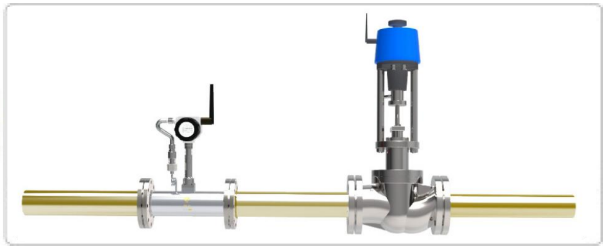
Easy installation

With the integrated design of temperature and pressure, there is no need to weld the temperature and pressure sensors in the pipeline, and there is no need to erect the instrument box and place the secondary table, the construction amount is reduced to 1/4 of the transmission steam flowmeter, and the installation cost is also greatly reduced.



Traditional installation

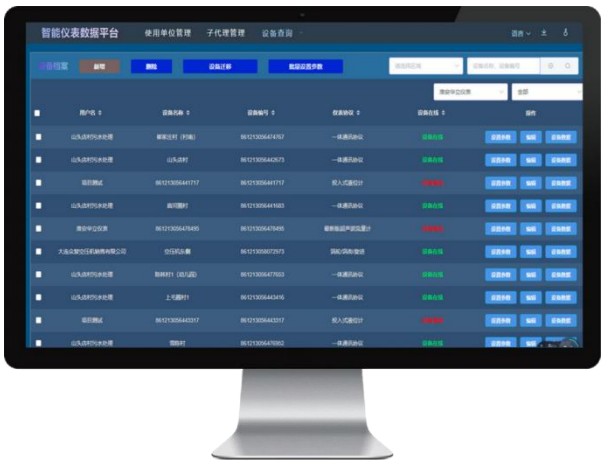
VS



Hualiu intelligent vortex flowmeter pressure regulation integrated installation

Remote System

It can be embedded with 4G module, access to Hualiu smart heat network monitoring system, and use PC or mobile phone APP to realize remote meter reading and metering management of the flow meter, greatly reducing the workload of on-site meter reading. Both users and owners can check the flow on the network at any time so that usage is recorded and billing is fair and transparent. Owners can purchase or rent the server, purchase the SIM card, Hualiu company is responsible for setting up the software system, and can also use the cloud platform and mobile APP software provided by Hualiu company free of charge.



Intelligent heat network monitoring system

Connection method

Pipe flange connection

Pipe insert connection

Pipe threaded connection

Pipe clamp connection

Technical parameter

Parameter items	Parameter
Measuring Media	Gas/steam/liquid
calibre	DN15-DN300(1/2～12inches)
measuring range	Gas/Steam (Standard) DN15～DN20 6～70m/s DN25～DN32 4～70m/s DN40～DN300 2～70m/s Gas/steam(extended type) DN15～DN20 6 ～ 80m/s DN25～DN32 4 ～ 80m/s DN40～DN300 2 ～ 80m/s liquid 0.3～7m/s
accuracy	Operating flow ±1%RD(气体/蒸汽) mass flow rate ±1 .5%RD medium pressure ±0.75%FS medium temperature ±1 .0℃(±1%FS when >100℃时)
repeatability	±0.3%RD
Electric source	24V DC、3.6V锂电池

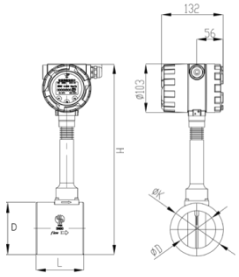
Output signal	-40～250℃(Normal temperature type) -40～350℃(high temperature modification) -40～400℃(Ultra high temperature type)
medium temperature	1 channel 4-20mA Optional HART 1 channel pulse 1 channel RS485-Modbus 1 channel high and low level alarms
process pressure	1.6Mpa (standard configuration) /2.5Mpa/4.0Mpa/6.3Mpa
environment temperature	-40～85℃
ambient humidity	5～90%RH
process connection	Flange type/clamp type/clamp type (sanitary type)/ Insert type/thread type
Level of protection	IP65/IP67
explosive-proof grade	ExdIIC T6 Gb
Material quality	Body material Sensor instrument housing 304/316/316L 304/316/316L

All measurement data can be transmitted through HART@4 ~ 20mA signal line using special instructions to the upper computer, or optionally using ModBus protocol to transmit the above multi-parameter data.

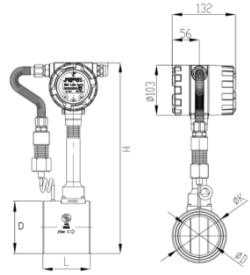
Flow range table

Nominal diameter DN	inches	Liquid flow (Industry standard)m3/h	Gas flow (Industry standard)kg/h	Gas flow (enterprise standard)kg/h	Mass flow (Enterprise standard)m3/h	Gas flow (Enterprise standard)m3/h	mass flow rate（company standard） kg/h
DN 15	½ ″	0.8～6	5～25	5～25	18～92	3～25	11～92
DN 20	¾ ″	1～10	5.5～50	5.5～50	20～183	4～70	15～257
DN 25	1 ″	1.6～16	8.5～70	8～80	29～293	5～100	18～367
DN 32	1¼ ″	2.2～20	18～150	12～240	44～880	10～250	37～917
DN 40	1½ ″	2.5～25	22～220	15～300	55～1100	10～350	37～1284
DN 50	2	3.5～35	36～320	20～400	73～1467	16～500	59～1834
DN 65	2½ ″	6.5～65	50～480	35～700	128～2567	30～1000	110～3667
DN 80	3 ″	10～100	70～640	45～900	165～3300	36～1200	132～4401
DN 100	4 ″	15～150	130～1100	80～1600	293～5868	65～2000	238～7335
DN 125	5 ″	27～270	200～1700	125～2500	458～9168	100～2800	367～10268
DN 150	6 ″	40～400	280～2240	150～3000	550～11002	100～3500	367～12836
DN 200	8 ″	80～800	580～4960	400～5200	1467～19070	200～5500	734～20170
DN 250	10 ″	120～1200	970～8000	970～8000	3557～29338	600～9000	2200～33006
DN 300	12 ″	180～1800	1380～11000	1380～11000	5061～40340	800～15000	2934～55010

Note: The mass flow rate is the mass flow rate of saturated steam at a temperature of 170℃, a pressure of 0.7Mpa, and a density of 3.6673kg/m3.



General gripper size drawing

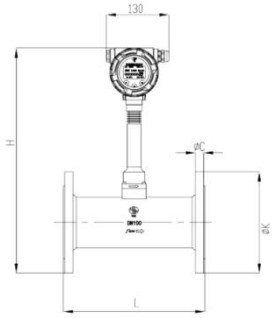


Temperature and pressure compensation gripper size diagram

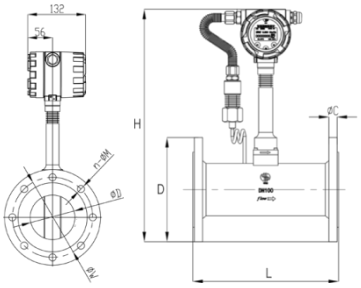
Clamp type (with: clamping flange)size specification （national standard PN16）

公称口径 DN	表体外径 K	表体长度 L	法兰螺距 W	法兰厚度 C	螺孔直径 M	螺栓数量 n	法兰外径 D	法兰内径 B	密封面 d	密封面 f	表体总高度 H
15	60	80	65	14	14	4	95	22	46	2	364
20	60	80	75	16	14	4	105	27.5	56	2	364
25	60	80	85	16	14	4	115	34.5	65	2	364
32	60	80	100	18	18	4	140	43.5	76	2	364
40	80	80	110	18	18	4	150	49.5	84	2	384
50	80	80	125	20	18	4	165	61.5	99	2	384
65	100	80	145	20	18	4	185	77.5	118	2	404
80	113	100	160	20	18	8	200	90.5	132	2	427
100	132	100	180	22	18	8	220	116	156	2	436
125	158	100	210	22	18	8	250	141.5	194	2	479
150	183	110	240	24	22	8	285	170.5	211	2	506
200	242	140	295	26	22	12	340	221.5	266	2	589
250	298	114	355	28	26	12	405	276.5	319	2	615
300	350	130	410	32	26	12	460	327.5	370	2	666

Note 1: The body length L has an error range of ±3mm



Flange size drawing



Temperature and pressure compensation flange size drawing

Flange size table （national standard PN16）

公称口径 DN	法兰外径 K	表体长度 L	中心螺距 W	法兰厚度 C	螺孔直径 M	螺栓数量 n	密封面 d	密封面 f	表体高度 H
15	95	200	65	14	14	4	46	2	381
20	105	200	75	16	14	4	56	2	386
25	115	200	85	16	14	4	65	2	391
32	140	200	100	18	18	4	76	2	404
40	150	200	110	18	18	4	84	2	419
50	165	200	125	20	18	4	99	2	426
65	185	200	145	20	18	4	118	2	446
80	200	200	160	20	18	8	132	2	465
100	220	200	180	22	18	8	156	2	471
125	250	250	210	22	18	8	194	2	499
150	285	300	240	24	22	8	211	2	530
200	340	300	295	26	22	12	266	2	583
250	405	300	355	28	26	12	319	2	643
300	460	300	410	32	26	12	370	2	695

Note 1: The body length L has an error range of ±3mm

Flange size table （national standard PN10）

公称口径 DN	法兰外径 D	表体长度 L	中心螺距 K	法兰厚度 C	螺孔直径 M	螺栓数量 n	密封面 d	密封面 f	表体高度 H
15	95	200	65	14	14	4	46	2	381
20	105	200	75	16	14	4	56	2	386
25	115	200	85	16	14	4	65	2	391
32	140	200	100	18	18	4	76	2	404
40	150	200	110	18	18	4	84	2	419
50	165	200	125	20	18	4	99	2	426
65	185	200	145	20	18	4	118	2	446
80	200	200	160	20	18	8	132	2	465
100	220	200	180	22	18	8	156	2	471
125	250	250	210	22	18	8	184	2	499
150	285	300	240	24	22	8	211	2	530
200	340	300	295	24	22	8	266	2	583
250	395	300	350	26	26	12	319	2	638
300	455	300	400	28	26	12	370	2	693

Note 1: The body length L has an error range of ±3mm

Flange size table （national standard PN25）

公称口径 DN	法兰外径 D	表体长度 L	中心螺距 K	法兰厚度 C	螺孔直径 M	螺栓数量 n	密封面 d	密封面 f	表体高度 H
15	95	200	65	14	14	4	46	2	381
20	105	200	75	16	14	4	56	2	386
25	115	200	85	16	14	4	65	2	391
32	140	200	100	18	18	4	76	2	404
40	150	200	110	18	18	4	84	2	419
50	165	200	125	20	18	4	99	2	426
65	185	200	145	22	18	8	118	2	446
80	200	200	160	24	18	8	132	2	465
100	235	200	190	26	22	8	156	2	479
125	270	250	220	28	26	8	184	2	510
150	300	300	250	30	26	8	211	2	538
200	360	300	310	32	26	12	274	2	593
250	425	300	370	35	30	12	330	2	648
300	485	300	430	38	30	16	389	2	706

Note 1: The body length L has an error range of ±3mm

Flange size table （national standard PN40）

公称口径 DN	法兰外径 D	表体长度 L	中心螺距 K	法兰厚度 C	螺孔直径 M	螺栓数量 n	密封面 d	密封面 f	表体高度 H
15	95	200	65	14	14	4	46	2	381
20	105	200	75	16	14	4	56	2	386
25	115	200	85	16	14	4	65	2	391
32	140	200	100	18	18	4	76	2	404
40	150	200	110	18	18	4	84	2	419
50	165	200	125	20	18	4	99	2	426
65	185	200	145	22	18	8	118	2	446
80	200	200	160	24	18	8	132	2	465
100	235	200	190	26	22	8	156	2	478
125	270	250	220	28	26	8	184	2	509
150	300	300	250	30	26	8	211	2	538
200	375	300	320	36	30	12	284	2	600
250	450	300	385	42	33	12	345	2	665
300	515	300	450	48	33	16	409	2	722

Note 1: The body length L has an error range of ±3mm

Product Selection

model	code	explain
Type of instrument	SY-LUGB	vortex flow meter
Path code	—XXX	For example, 015 indicates DN15

connection type	code	illustration
	FF	flange connections
	FJ	Flange clamping type
	LW	Threaded connection; Suitable for DN15 ~ DN50
	CF	Simple plug-in type; Suitable for DN300 and above
	KG	Sanitary clamp connection; Suitable for DN15 ~ DN100, working pressure below 1.0MPa

Meter material	code	illustration
	S3	Vortex generator, shell, sensor material 304
	S6	Vortex generator, shell, sensor material 316
	T3C6	Vortex generating body, shell 304, sensor material 316

output mode	code	illustration
	P	pulse output
	A	4-20mA output, two wire, three wire, four wire system optional
	AR	4-20mA output with RS485 communication
	HT	Two-wire 4-20mA output, HART protocol, RS485

dielectric strength level	code	illustration
	P16	nominal pressure 1 .6MPa
	P25	nominal pressure 2.5MPa
	P40	nominal pressure 4.0MPa
	P63	nominal pressure 6.3MPa
	PH	Customized for special pressure

Sensor temperature resistance	code	illustration
	T1	Maximum temperature resistance 260 degrees
	T2	Maximum temperature resistance 350 degrees
	T3	Maximum temperature resistance 400 degrees

Quality cast quality service moved customers

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