

Vortex Flowmeter

Model: ZJX-PA-F-A3



PRODUCT FEATURES AND APPLICATION FIELDS

Description:

ZJX-PA-F-A3 vortex street flowmeter, according to the Karman vortex street phenomenon, when the medium flows through a triangular cylindrical vortex generator at a certain speed, two alternating rows of vortices are formed on both sides. The frequency of this vortex is proportional to the flow velocity of the fluid, and the vortex street frequency is converted into a standard electrical signal output

Advantages:

Wide measurement range, with a ratio of 1:20 and low pressure loss
High temperature resistance (-40 °C -350 °C), zero drift free, stable performance
Backlit LCD displays temperature, pressure, instantaneous flow rate, and cumulative flow rate, and the page can be switched between Chinese and English
Adopting differential technology, combined with measures such as isolation, shielding, and filtering, to solve seismic and signal problems
Using EEPROM for power-off protection of accumulated flow, with a duration greater than 10 years
Support OEM/ODM customization

Application:

Petroleum and chemical industry
 Steel, Metallurgy
 Food and Beverage
 Medical, pharmaceutical
 Civil engineering, building materials
 Sewage treatment, water conservancy irrigation
 Farmland, electricity
 Environmental protection equipment and construction machinery
 Paper making and mining machinery
 Gas pipeline network, fire protection, scientific research
 Gas, heating, air conditioning systems
 Textile machinery, fire protection

Features:

Capable of measuring the volumetric and mass flow rates of steam, gas, and liquid, while achieving the goals of measurement and control
 Available in both integral and split structures, allowing for horizontal, vertical, and inclined installation at different angles
 Strong electromagnetic interference resistance, low requirements for front and rear straight pipe sections
 During the measurement process, it is almost unaffected by parameters such as fluid density, pressure, temperature, viscosity, etc
 Multiple installation methods and output signals can be selected



PRODUCT PARAMETERS

Converter Type	Integrated type, Segregate type, Low power consumption type
Structure Type	Standard type, Temperature and pressure compensation type, Explosion proof type
Measurement Medium	Liquid, Gas, Steam
Medium Temperature	Low temp. (-40℃~+150℃), Midium temp. (-40℃~+250℃), High temp. (-40℃~+350℃)
Nominal Diameter	DN15~DN1500
Installation Form	Flange Form, Clamping Form, Inline Form
Output/Communication	Pulse, 4-20mA, 4-20mA+Hart, 4-20mA+RS485, Customizable
Power Supply	12VDC, 24VDC, 3.6V battery, Customizable
Accuracy	±1.5%F.S, ±1%F.S, Customizable
Nominal Pressure	1.6MPa, 2.5MPa, 4.0MPa, Customizable
Housing And Flange Materials	Carbon steel, Stainless steel, Customizable
Ambient Temperature	-40℃~80℃ (Converter -15℃~60℃)
Explosion Proof	Without EX-proof, Ex db IIC T6 Gb, Ex ia IIC T6 Ga
Electrical Connections	M20X1.5, 1/2NPT, Customizable
Protection Grade	IP65, IP67 (Segregate type)

Extent table of reference condition under working condition

caliber (mm)	liquid		gas	
	range(m ³ /h)	Output frequency range (Hz)	measurement range (m ³ /h)	Output frequency range (Hz)
25	1.2~16	25~336	8.8~55	190~1140
40	2~40	10~200	27~205	140~1040
50	3~60	8~160	35~380	94~1020
80	6.5~130	4.1~82	86~1100	55~690
100	15~220	4.7~69	133~1700	42~536
150	30~450	2.8~43	347~4000	33~380
200	45~800	2~31	560~8000	22~315
250	65~1250	1.5~25	890~11000	18~221
300	95~2000	1.2~24	1360~18000	16~213
(300)	100~1500	5.5~87	1560~15600	85~880
(400)	180~3000	5.6~87	2750~27000	85~880
(500)	300~4500	5.6~88	4300~43000	85~880
(600)	450~6500	5.7~89	6100~61000	85~880
(800)	750~10000	5.7~88	11000~110000	85~880
(1000)	1200~17000	5.8~88	17000~170000	85~880
>(1000)	agreement		agreement	

Tips: above table the caliber (300)~(1000) is plug-in

**Density of common gaseous medium
in standard condition:**

Name	Density (kg/m ³)
Dry air	1.2928
Acetylene	1.1717
oxygen	1.4289
Carbon onoxide	1.2504
Carbon dioxide	1.9770
Fluorine gas	1.7840
Propylene	1.9140
Ammonia	0.7710
Ethylene	1.2604
Hydrogen	0.08988
Methane	0.7167
Ethane	1.3567
Propane	2.0050
Butane	2.7030
Nitrogen	1.2506
Helium	0.9000
Nitric oxide	1.3401
Nitrogen dioxide	2.0550

Flow table (saturated steam) [kg/h]

Absoulte pressure	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.2	1.5	2.0
Temp. (°C)	133.54	143.62	151.84	158.94	164.96	170.71	175.36	179.88	187.96	198.4	212.37
Density	1.651	2.163	2.669	3.170	3.667	4.162	4.655	5.147	6.127	7.602	10.05
DN15 Qmin	11	12	13	15	16	17	18	19	20	23	26
Qmax	63	73	81	88	85	101	107	112	123	136	160
DN20 Qmin	13	15	16	18	19	20	21	22	24	27	31
Qmin	102	116	129	141	151	161	170	179	196	218	250
DN25 Qmin	17	19	21	23	25	27	28	30	32	36	42
Qmax	133	153	170	185	199	212	224	236	257	287	330
DN32Qmin	30	34	38	41	44	47	50	52	57	63	73
Qmax	236	271	301	328	352	375	397	417	455	507	583
DN40 Qmin	24	39	43	47	51	54	57	60	66	73	84
Qmax	340	390	430	470	510	540	570	600	660	730	840
DN50 Qmin	63	73	81	88	95	101	107	112	122	136	157
Qmax	630	730	810	880	950	1010	1070	1120	1220	1360	1570
DN65 Qmin	106	121	134	146	158	168	178	187	204	227	261
Qmax	1060	1210	1340	1460	1580	1680	1780	1870	2040	2270	2610
DN80 Qmin	148	170	188	205	221	235	249	262	285	318	366
Qmax	1480	1700	1880	2050	2210	2350	2490	2620	2850	3180	3660
DN100	222	242	269	293	315	336	355	374	408	454	522
Qmax	2220	2420	2690	2930	3450	3360	3550	3740	4080	4540	58220
DN125	318	363	404	440	473	504	533	561	612	6681	783
Qmax	3180	3630	4040	4400	4730	5040	5330	5610	6120	6810	7830
DN150	423	484	538	586	631	672	711	747	815	908	1044
Qmax	4230	4840	5380	5860	6310	6720	7110	7470	8150	9080	10440
DN200	847	969	1076	1173	1262	1344	1421	1495	1631	1815	2089
max	8470	9690	10760	11730	12620	13440	14210	14950	16310	18160	20890
DN250	1270	1453	1614	1969	1892	2016	2132	2242	2446	2725	3133
Qmax	12700	14530	16140	17690	18920	20160	21320	22420	24460	27250	31330
DN300	2116	2422	2691	2932	3154	3360	3553	3737	4077	4541	5221
Qmax	21160	24220	26910	29320	31540	33600	35530	37370	40770	45410	52210
DN350	3175	3634	4037	4399	4732	5041	5331	5606	6116	6813	7833
Qmax	31750	36340	40370	43990	47320	50410	53310	56060	61160	68130	78330
DN400	3810	4361	4844	5279	5678	6049	6397	6727	7339	8175	9400
Qmin	38100	43610	48440	52790	56780	60490	63970	67270	73390	81750	94000
DN450	4445	5087	5651	6159	6624	7057	7463	7847	8562	9537	10966
Qmax	44450	50870	56510	61590	66240	70570	74630	78470	85620	95370	109660
DN500	5291	6056	6728	7332	7886	8401	8894	9343	10193	11354	13055
Qmax	52910	60560	67280	73320	78860	84010	88940	93430	101930	113540	130550
DN600	6771	7751	8610	9383	10092	10751	11370	11956	13045	14530	16707
Qmax	67710	77510	86100	93830	100920	107510	113700	119560	130450	145300	167070

Design & installation:

It is important to install meter, if not installed well, then would affect precision, use-life and damage.

Environmental request for installing:

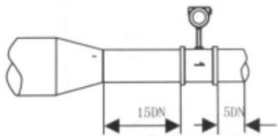
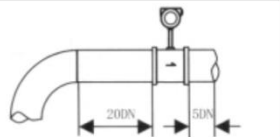
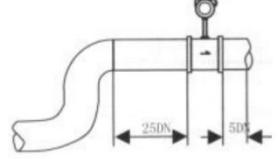
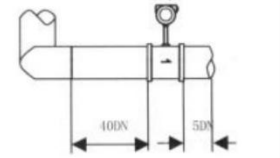
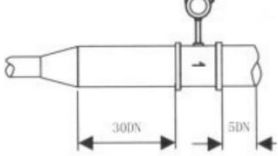
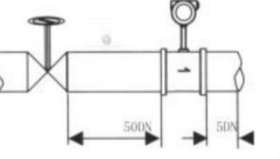
- 1). To avoid strong current, high frequency and powerful switch set, power supply of meter shall be avoided to near by these equipments.
- 2). To avoid high-Temp & radiation source. if have to install it, need heat insulation & ventilated measure.
- 3). To avoid high-Temp & etchant gas, if have to install it, need ventilated measure.
- 4). Vortex street flow meter shall be avoided to install on shaking part of pipeline. if have to install on it, shall add clamp device and vibration pad which located on 2D to enhance shake proof . meter has better to installed indoors, pay attention to waterproof when installing meter outdoors, special notice the joint, make cable conductor to U shape to avoid water get into the amplifier body Around installing place shall save enough space, so that install connection line and maintenance routine.

Request for installing of pipeline meter:

- 1) .Vortex street-flow meter need a request for about installing point up-down stream pipe, if not flow field of medium will be affected in pipeline, refer to measurement accuracy of meter。 up-down stream pipe of meter as chart(III)

DN is nominal caliber of meter

UNIT: mm

sensor upstream pipe type	front and back straight pipe length	sensor upstream pipe type	front and back straight pipe length
concentric contract opening-valve		90 degree elbow	
two 90 degree Elbow which on a same plane		two 90 degree Elbow which not on a same plane	
concentric expanded pipe		control valve half open the vale (not recommend)	

chart(III)

Tips: control valve shall not install on upstream of meter, it better to the downstream 10D.

2). Up-down internal diameter of pipe shall be same. if not, than internal diameter of pipe D_p and vortex

street meter inner diameter D_b , shall be as follow

$$0.98D_b \leq D_p \leq 1.05D_b$$

Up-down internal diameter of pipe shall be concentric with inner diameter of flow meter, The non-axiality

δ shall be less than $0.05D_b$.

3). Sealing gasket which between meter with flange, can not joint inside pipe when installing, and its inner

diameter shall more than meter's about 1~2mm.

4). Design for temp & press point. When test pipeline need install temp & pressure transmitter, pressure

tap may be downstream of 3-5D, thermometer hole may be downstream of 6-8D, see chart (VII). D is

nominal caliber, Unit: mm.

5). Meter can be installed by horizontal, vertical and bias ways on pipeline.

6). When test air, gas can flow anywhere when under uptake pipe to install. if there some air inside pipe, to

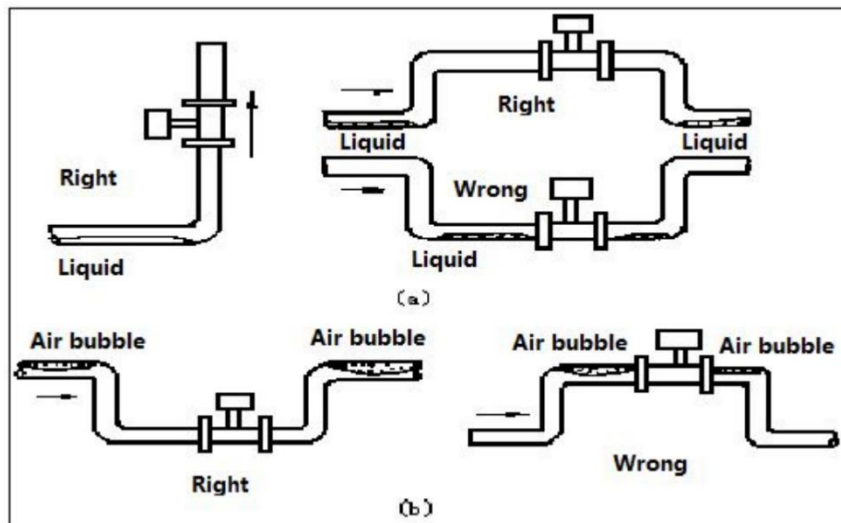
prevent liquid into the test pipe, so the air may from below to top, as list (IV) a.

7). When test for liquid, to ensure pipeline filled full, so install meter under vertical or bias working

condition, shall ensure liquid flow from below to top. If there are some air inside of pipeline, meter may be

installed under pipeline to prevent air into it.

As chart (IV) as follow:



8). when test high& low temp medium, may pay attention to heat preservation. inside changer (inside body of

gauge outfit) must be not more than 70°C ; if low temp inside will produce water into meter and reducing

insulation

OVERALL DIMENSIONS

Overall dimension installing of meter: SEE (V) & (VI)

1、Flange clamp type vortex flowmeter

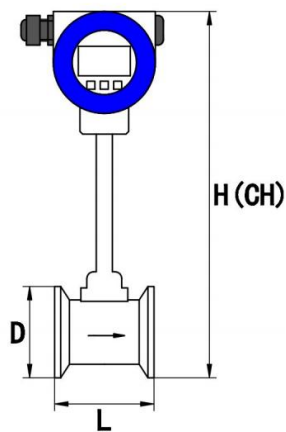


Chart (V)

DN (mm)	L	D	H	CH
15~25	70/90	54	325	385
32	85	69	325	385
40	85	79	325	385
50	85	89	330	390
65	85	104	340	400
80	90	119	360	420
100	90	139	380	440
125	95	168	405	465
150	100	194	430	490
200	102	248	485	545
250	115	300	540	600
300	130	350	590	650

2、Plug-in vortex flow meter

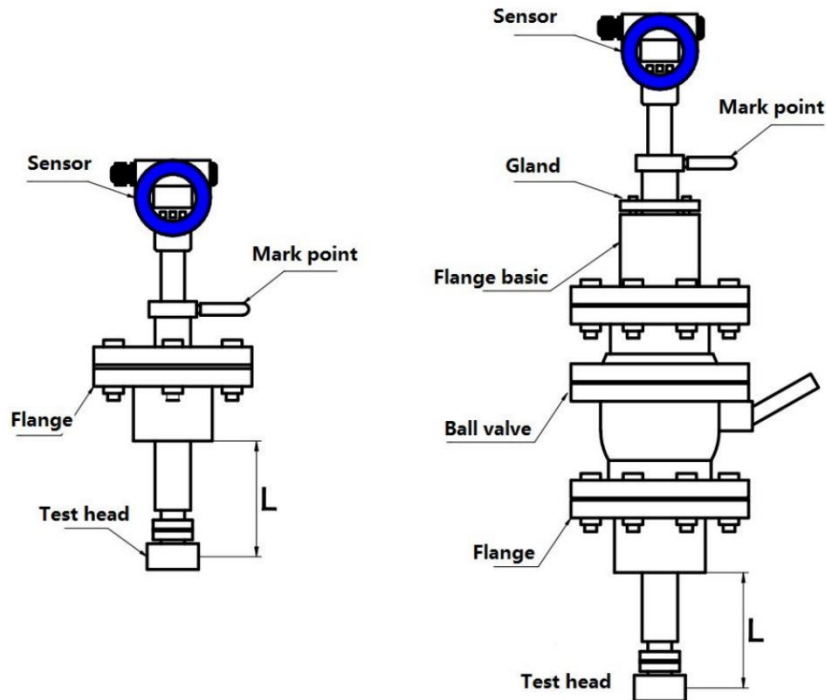
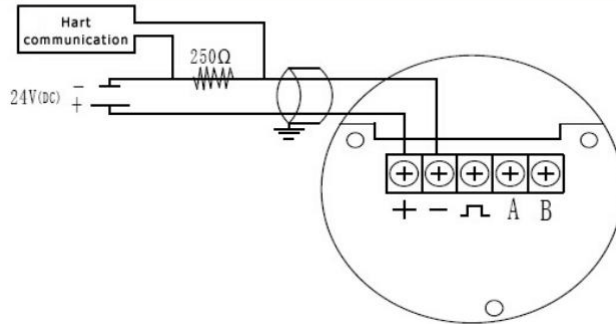


Chart (VI)

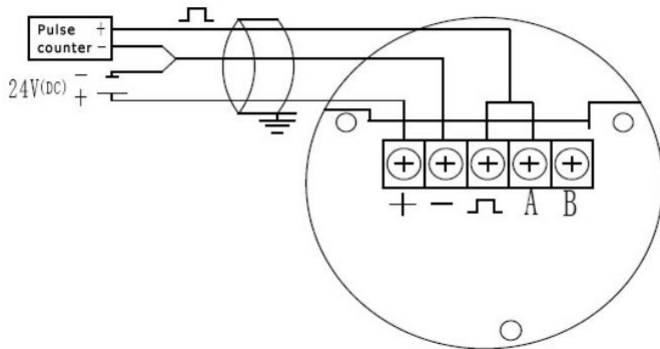
DN (mm)	DN250	DN300	DN400	DN500	DN600	DN800
L (mm)	125	150	200	250	300	400

PRODUCT CONNECTION MODE

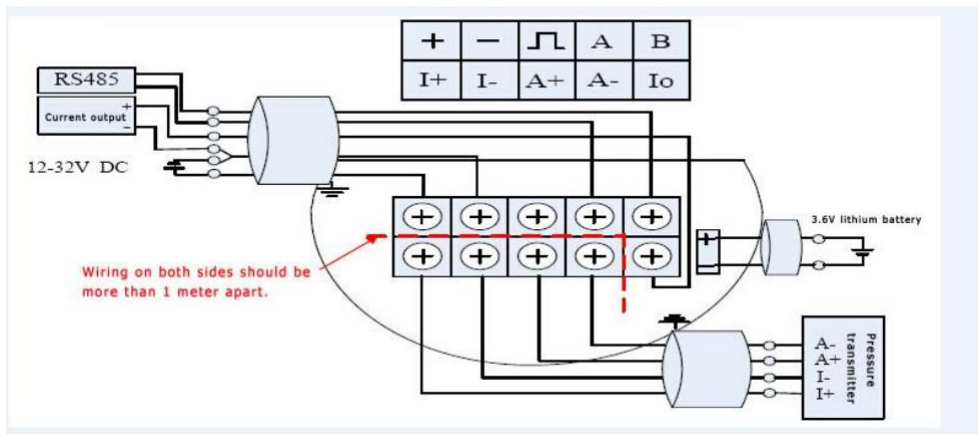
Two-wire power supply / LCD / 4-20mA output



Two-wire power supply / LCD display / pulse output



RS485 with current output and using H880TDZ-485 terminal board wiring as below:



PRODUCT SELECTION TABLE

Code																
ZJX-PA-F-A3	Vortex Flowmeter															
	Code	Nominal Diameter														
	Fill In The Actual Demand	DN15~DN1500														
	Code	Converter Type														
	I	Integrated type														
	S	Segregate type														
	B	Low power consumption type														
	Code	Installation Form														
	F	Flange Form														
	C	Clamping Form														
	I	Inline Form														
	Code	Structure Type														
	T1	Standard type														
	T2	Temperature and pressure compensation type														
	T3	Explosion proof type														
	Code	Measurement Medium														
	L	Liquid														
	G	Gas														
	S	Steam														
	Code	Medium Temperature														
	A	Low temp. (-40°C ~ +150°C)														
	B	Midium temp.(-40°C ~ +250°C)														
	C	High temp. (-40°C ~ +350°C)														
	Code	Output/Communication														
	S1	Pulse														
	S2	4-20mA														
	S3	4-20mA+Hart														
	S4	4-20mA+RS485														
	S5	Customizable														
	Code	Power Supply														
	P1	12VDC														
	P2	24VDC														
	P3	3.6V battery														
	P4	Customizable														
	Code	Accuracy														
	A1	±1.5%F.S														
	A2	±1%F.S														
	A3	Customizable														
	Code	Nominal Pressure														
	D1	1.6MPa														
	D2	2.5MPa														
	D3	4.0MPa														
	D4	Customizable														
	Code	Housing And Flange Materials														
	C	Carbon steel														
	S	Stainless steel														
	A	Customizable														
	Code	Explosion Proof														
	E0	Without EX-proof														
	E1	Ex db IIC T6 Gb														
	E2	Ex ia IIC T6 Ga														
	Code	Electrical Connections														
	C1	M20X1.5														
	C2	1/2NPT														
	C3	Customizable														
	Code	Protection Grade														
	L	IP65														
	C	IP67 (Segregate type)														
ZJX-PA-F-A3	DN80	I	F	T1	L	A	S2	P2	A2	D1	C	E0	C1	C	Model No.Example	


ZIJUXING

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