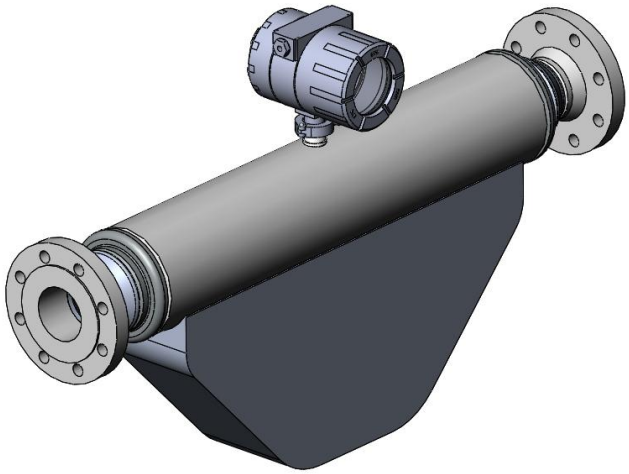
Model Selection Guide
CX015 REV1.1



Micro-bend Type Mass and Density Flow Meter

- Mass Flow Accuracy ±0.10%、±0.15%
- Density Measuring Accuracy ±2kg/m^3
- Normal Diameter DN15~DN200
- Process Temperature Ranges -40℃～+200

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Component Parts of N*V Series Coriolis Mass Flow Meter (Abbreviation: N*V Series Mass Flow Meter):

Micro-bend series flow meter is subdivided into V series,V Series Coriolis Mass Flow Meter is defined as N*V series Mass Flow Meter with mass flow accuracy is 0.1% or 0.15%, whom is made of N*V series mass flow Sensor and DPT100 Transmitter.

Features and Benefits of N*VSeries Coriolis Mass Flow Meter:

- Double V type flow pipe design with high accuracy, flag type mounting with self-draining capability;
- Provides integrated mass flow, volume flow, density, temperature measurement and the calculates the others relevant parameters;
- Compact installation to save installation costs;
- A variety of wetted parts materials for users to choose;
- Various standard flange connections are available for users to choose;
- The output electrical interface of the mass flow sensor is standardized, and the matched mass flow transmitter can be exchanged for easy maintenance;
- High stability without frequent disassembly and calibration;
- No rectification, filter parts, no straight pipe section and other special installation requirements;
- Without moving parts and no need frequent maintain;
- Open-flow elements and right-angle elbows reduce pressure loss, energy consumption and waste compared to U-tubes;

Model Selection Principle

- In the applied fields of Coriolis Mass Flow Meter, the Max. Flow rate is decided by pressure loss while the Min. Flow rate is decided by measuring accuracy.
- Before selecting the product, the client or user should firstly refer to this manual, using the size selection software provided by Xi'an Dongfeng Machinery & Electronic Co., Ltd., as well as the user should provide the relevant data such as accuracy, flow rate, pressure loss, density, viscosity, temperature, etc., which ensures the correct size selection and application. The software can be obtained from salespersons of the agency or downloaded from the company website: www.xadfjd.com.

Catalog

Performance index

Liquid Flow Rate Performance Index

		rated flow kg/h	Max. Flow kg/h
mass flow	N15V	3000	4500
	N25V	17000	25500
	N50V	50000	75000
	N80V	120000	180000
	N100V	230000	345000
	N150V	400000	600000
	N200 V	710000	1065000

		rated flow L/h	Max. flow L/h
volume flow	N15V	3000	4500
	N25V	17000	25500
	N50V	50000	75000
	N80V	120000	180000
	N100V	230000	345000
	N150V	400000	600000
	N200V	710000	1065000

Mass flow accuracy[1] N*V matched DPT100 transmitter

10：1 within turndown ratio ±0. 1%

15：1[2] within turndown ratio ±0. 15%

15：1 beyond turndown ratio ±（zero stability/instant rate）×100%

Repeatability matched DPT100 transmitter

10：1 within turndown ratio ±0. 05%

15：1 within turndown ratio ±0. 075%

15：1 beyond turndown ratio ±1/2(zero stability/instant rate)×100%

Volume flow accuracy[1] matched DPT100 transmitter

F.S. ± 0.15±(zero stability/instant rate) ×100%

Repeatability matched DPT100 transmitter

F.S. ± 0.075±1/2(zero stability/instant rate) ×100%

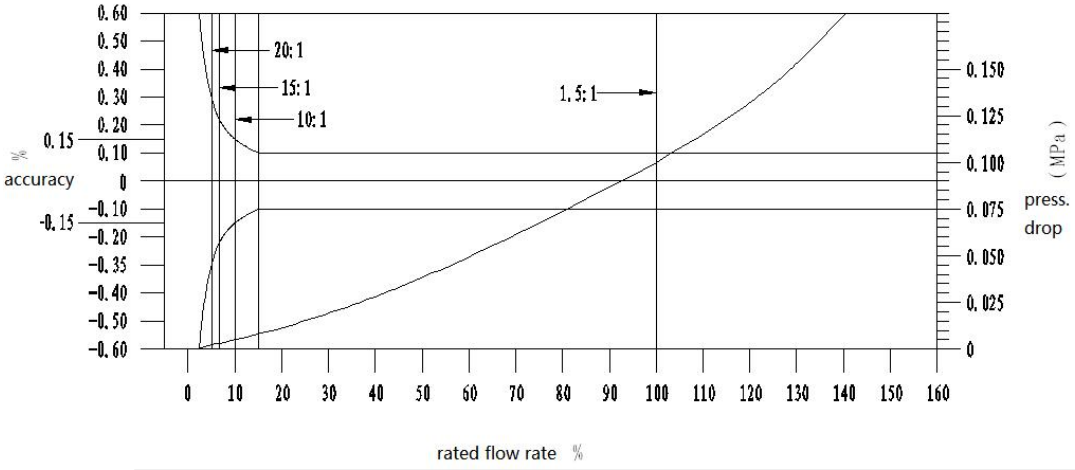
		kg/h
Zero Stability matched DPT100	N15V	0.45
	N25V	2.25
	N50V	7.5
	N80V	18.0
	N100V	34.5
	N150V	60.0
	N200V	109.5

[1] Flow Accuracy includes repeatability, linearity and hysteresis.

[2] Turndown ratio is defined as the value of maximum flow divided by minimum flow.

The chart below shows an example of measured characteristics under various flow conditions. If the flow rate requires a large turndown ratio (greater than 15:1), the zero stability value may affect performance due to fluid conditions and instrumentation used

DPT100 digital mass flow transmitter



Turndown ratio (for maximum flow)	20:1	15:1	10:1	1.5:1	1:1
NV accuracy ±%	0.2	0.15	0.1	0.10	0.10
pressure drop MPa	0.001	0.002	0.015	0.1	0.2

Density Performance Index(only liquid)

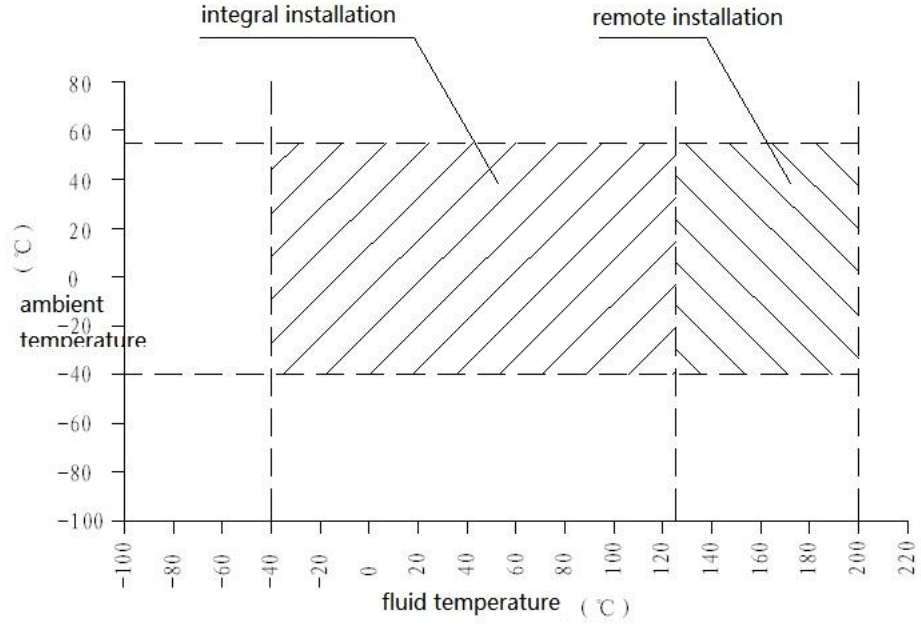
Accuracy[1]	±0.002g/cm^3	±2.0kg/m^3
Repeatability	±0.001g/cm^3	±1.0kg/m^3
Measuring Range	0.2 g/cm^3～3.0 g/cm^3	200 kg/m^3～3000 kg/m^3

[1] Flow Accuracy includes repeatability, linearity and hysteresis, density accuracy index of ±1.0kg/m3 is calculated under the condition of water of 20℃ & 1-2bar.

Temperature Performance Index

Accuracy	All Models	±1℃
Repeatability	All Models	±0.2℃
Temperature Limits[2]	All models of sensors matched all option transmitters	

[2]Temperature Limits maybe need explosion protection for further limit because installed in hazardous area, refer to P9.



- The temperature must be heated to the local ambient temperature between -40℃~+55℃ (such as using steam tracing method) when the temperature below -40℃.

temperature range：		-50℃～+200℃	（Pt100）
fluid temperature：	integral installation	-40℃～+125℃	
	remote installation	-40℃～+200℃	
ambient temperature：	storage	-40℃～+70℃	
	usage	-40℃～+55℃	

Power Supply & Power Consumption

transmitter DPT100 maximum 10W

Note：The DC Starting Current of Flow Meter is Less Than 1A.

Ambient Influence

Process Temperature Influence

Process Temperature Influence Process Temperature Influence is defined as below:

■ Regarding to Mass Flow Measurement, Process Temperature Influence is the maximum zero offset which is caused by the Process temperature deviates zero coordinate temperature.

■ Regarding to Density Measurement, process temperature Influence is the maximum measurement deviation which is caused by the process temperature deviates density calibrated temperature.

		%Maximum Flow Rate Value/ ℃	Density Accuracy /℃（kg/m^3）
Maximum Error	N15V	±0.0001875	±0.015
	N25V	±0.0001875	±0.015
	N50V	±0.00075	±0.015
	N80V	±0.00075	±0.015
	N100V	±0.001125	±0.015
	N150V	±0.0040	±0.015
	N200V	±0.00025	±0.015

Pressure Influence

Pressure Influence Pressure Influence is defined as：
The changes of sensor flow and density sensibility is caused by process pressure deviates calibrated pressure.
Pressure Influence can be amended.

	flow accuracy influenced by pressure （%flow value/ MPa）	density accuracy influenced by pressure （kg/m^3/ MPa）
N15V	-	-0.43
N25V	-	-0.58
N50V	-0.11	0.145
N80V	-0.25	0.029
N100V	-0.58	-1.45
N150V	-0.35	-1.45
N200V	-0.20	-0.37

● The maximum calibrated pressure we apply in our factory is 0.4MPa.

Usage Limits

Pressure Rating

		Normal Pressure MPa	Max. Pressure MPa
flow tube pressure rating			
	N15V	4	11
	N25V	4	11
	N50V	4	11
	N80V	4	11
	N100V	4	11
	N150V	4	11
	N200V	4	11

The pressure(the unlisted temperature can be calculated by the linear insert method) should be lowered down as per the following terms if operating temperature surpass 148℃:

	flow tube	
	316Lsensor	304sensor
less than 148℃	no	no
to 204℃	low down 7.2%	low down5.4%

Vibration Limits

In accordance with the standard GB/T2423.11 . To bear 10 periods at the condition of a=1g(g=9.8m2/s) and (5～2000)Hz frequency to scan. Suggested to apply remote installation if the application area vibration surpass a=0.5g.

Safety & Protection

Tested and Issued certification by National Explosive-proof Electrical Products Quality Supervising and Testing Center:

Explosion-proof Mark: compact mounting： Ex de ib IIC T6 NF
remote mounting： Ex ib IIC T6 NF

Protection Level： IP67（sensor）

“T” temperature groups refer to the maximum surface temperature of the sensor at the working temperature of 55℃.
See chart 1

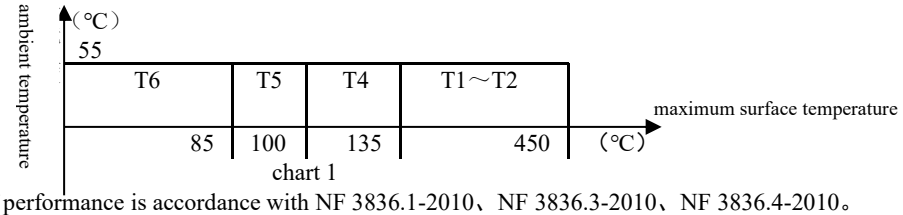


chart 1

Explosion-proof performance is accordance with NF 3836.1-2010、NF 3836.3-2010、NF 3836.4-2010。
Protection Level is accordance with NF4208-2008。
Applications: applied in the explosive dangerous location zone 1 and zone 2, device type is llC, which is compatible with llA、IIB, temperature groups are T1~T6.

Note:The Ex-proof performance will not be affected by the installation of sensor and transmitter(remote or compact installation).

Structure Material

Wetted parts	Sensitive tubes	022Cr19Ni10（304L）
		022Cr17Ni12Mo2（316L）
		HC-22
	reducer unions	06Cr19Ni10（304）
		022Cr19Ni10（304L）
		022Cr17Ni12Mo2（316L）

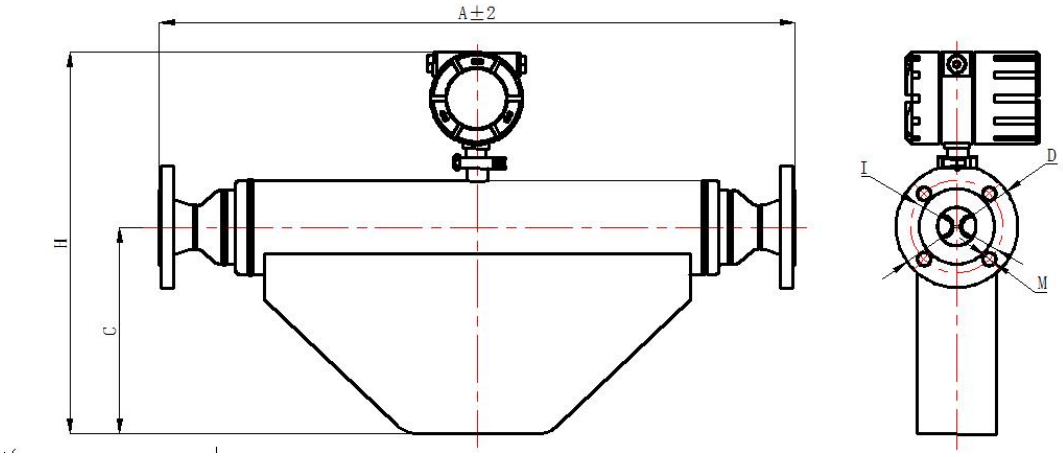
		HC-22
	Split parts	022Cr19Ni10（304L）
		022Cr17Ni12Mo2（316L）
		C-22
	flanges	06Cr19Ni10（304）
		022Cr19Ni10（304L）
		022Cr17Ni12Mo2（316L）
		HC-22
Cover	Sensor	0Cr18Ni9(304)
	Transmitter	Cast aluminum alloy(coated polyester epoxy)
	Junction Box	Cast aluminum alloy(coated polyester epoxy)

Weight

Weight: the weight refers to the mass flow meter welded the GB/T9115.1-2000 PN 40 welding neck flanges. The weight unit is (kg) .

Sensor Model	Compact Mount（kg）	Remote Mount（kg）
N15V	9.3	6.3
N25V	16.2	13.6
N50V	46	43
N80V	83	80
N100V	133	130
N150V	243	240
N200V	416	413

N*V Integral Installation：



Note: The Listed Flanges In The Below Tables Are Welded-neck Steel Pipe Flanges RF.

Flange（GB/T 9124.1） Flange（HG/T 20592）			A	H	C	F	M	I	D
Model	DN（mm）	PN（MPa）							
N15V	15（standard）	4.0	405	367	165	180	14	65	95
N25V	25（standard）		580	461	250	180	14	85	115
N50V	50（standard）		859	511	275	180	18	125	165
N80V	80（standard）		1026	591	355	180	18	160	200
N100V	100（standard）		1197	626	390	180	22	190	235
N150V	150（standard）		1486	776	480	180	25	250	300
N200V	200（standard）		1834	863	530	180	27	320	375

Flange （HG/T 20615） Flange（ASME B16.5）			A	H	C	F	M	I	D
Model	DN（mm）	PN（Class）							
N15V	15（customized)	300	432	367	165	180	16	66.7	95
N25V	15（customized）		624	461	250	180	18	88.9	125
N50V	50（customized）		903	511	275	180	18	127	165
N80V	80（customized）		1070	591	355	180	18	168.3	215
N100V	100（customized）		1239	626	390	180	22	200	255
N150V	150（customized）		1534	776	480	180	22	269.9	320
N200V	200（customized）		1882	863	530	180	26	330.2	380

Note: The High Light Lines Are Finished Products, But Others Are Tested Products.

N*V Order Information

OPTIONS	CODES	CODES DESCRIPTION
Product Series □	N	N Series Mass Flow Meter
Sensor Model □□□	15	(0～4500)kg/h
	25	(0～25500)kg/h
	50	(0～75000)kg/h
	80	(0～180000)kg/h
	100	(0～345000)kg/h
	150	(0～600000)kg/h
	200	(0～1065000)kg/h
Tubes Type	V	Micro-bend (low frequency with high precision)
Accuracy	1	0.10%
	2	0.15%
	3	0.50%
Transmitter Model □□□□	W000	Null
	D100	DPT100【English Display、IP67、Ex d e ib IIC T6 NF、Remote Type】
	D101	DPT100【English Display、IP67、Ex d e ib IIC T6 NF、Integral Type】
Sensor Characteristic □	B	304 & 316L
	M	304L
	L	316L
	H	HC-22
	T	Customized
Power Supply □	0	Null
	1	18VDC-36VDC
	2	85VAC-265VAC
	3	Intelligent Power
Process Connection Type □	A	GB/T 9124.1 Welded Neck Flanges 4MPa WN-RF
	C	GB/T 9124.1 Welded Neck Flanges 6.3MPa WN-RF
	E	HG/T 20615 Welded Neck Flanges Class300 WN-RF
	F	ASME B16.5 Welded Neck Flanges Class150 WN-RF
	G	ASME B16.5 Welded Neck Flanges Class300 WN-RF
	I	HG/T 20592 Welded Neck Flanges 4MPa WN-RF
	T	Customized

OPTIONS	CODES	CODES DESCRIPTION
Process Connection Size □	B	DN15
	D	DN25
	F	DN40
	G	DN50
	I	DN80
	J	DN100
	L	DN150
	M	DN200
	T	Customized
Accessories □	0	Null
	1	5m cable
	2	Carbon steel flanges, bolts and nuts, metal winding gaskets, 5m cable
	3	Stainless steel flanges, bolts and nuts, metal winding gaskets, 5m cable
	4	Carbon steel flanges, bolts and nuts, metal winding gaskets
	5	Stainless steel flanges, bolts and nuts, metal winding gaskets
	9	Customized
Electrical Interface for Transmitter Power Supply and Signal □	W	Sealing nuts
	M	M20×1.5
	N	1/2NPT
	P	3/4NPT
	G	G1/2
	E	G3/4
	T	Customized
Communications □	0	Null
	1	Active Current (4～20)mA、Active Frequency(0～10)kHz、RS-485
	2	Active Current(4～20)mA、RS-485
	3	Active Frequency(0～10)kHz、RS-485
	4	Passive Frequency(0～10)kHz、RS-485
	5	Active Frequency(0～10)kHz、Passive Current(4～20)mA+ HART(DPT)
	6	Active Frequency(0～10)kHz、Active Current(4～20)mA+ HART(DPT)
	7	Passive Frequency(0～10)kHz、Active Current(4～20)mA+ HART(DPT)
	8	Passive Frequency(0～10)kHz、Passive Current(4～20)mA+ HART(DPT)
	9	Customized
Measuring Modes □	B	General Measuring Type
	C	Water-cut Type
	E	Concentration Measurement Type
	F	Viscosity Measuring Type
	G	Velocity Measuring Type
	Z	Undefined