See page 19 for selection details

FM50
Mass Flowmeter

Principle of operation

The working principle of mass flowmeter, also known as Coriolis force mass flowmeter, is to make the zigzag part at the lower end of two parallel U-shaped tubes oscillate slightly, thus driving the straight tube to oscillate, and the two tubes are separated or closed together, that is, the oscillation is synchronous. At this time, if gas flows through the pipeline, the pipeline will force the moving gas or liquid to oscillate together, and in order to resist this forced oscillation, the gas or liquid will exert a counter-effect force on the pipeline in its moving direction, which is called Coriolis force. Under the effect of Coriolis force, the oscillations of the two pipes are out of synchronization, showing a difference, which can be detected by the circuit, and this difference is proportional to the size of the mass flow of gas passing through the pipe. A mass flowmeter that uses this principle to measure gas flow is called a Coriolis mass flowmeter.

Product description

It can reach 130℃ in all standard applications, and this sanitary connection makes it very suitable for the measurement principle of Coriolis mass flowmeter in food/beverage applications. When the liquid or gas approaches or moves away from the oscillation axis, the Coriolis force Fc will be generated in the oscillation system.
The Coriolis measuring system is symmetrically designed, and one or two measuring tubes, straight or bent, form a driver to drive the measuring tube (AB) to perform balanced vibration. When the flow velocity v=0m/s(0ft/s), the Coriolis force Fc is also 0. In the flowing state, for example, the flow velocity v > 0m/s (0ft/s), the fluid particles in the product accelerate in the AC section and decelerate in the CB section. Coriolis force Fc is the inertia of liquid particles from AC acceleration section and CB deceleration section.
This force causes slight deformation of the measuring tube, which is accumulated on the fundamental component, resulting in phase deviation, which is proportional to the mass flow. This deformation is received by a special sensor. The oscillation characteristics of the measuring tube will be affected by temperature and pressure, and the measured value will be corrected accordingly.

Functional performance

Innovative double U-shaped measuring tube structure
Temperature range -200℃ to +400℃
Optional insulation/heating jacket
Compact shell structure
Optimized diverter to minimize pressure loss.
Modular electronic movement concept: electronic components and sensors are easy to replace.
Easy to empty when installed vertically, convenient to clean.

Product application

Water and wastewater treatment
Petrochemical, petroleum and natural gas
Food and beverage medicine
General industry
Supercritical gas

Technical parameter

measuring system	Coriolis mass flowmeter
Measuring principle	Measurement of mass flow and density of liquid, gas and solid medium
applied range	Mass, density, temperature
Measured value	Volume, reference density, concentration, flow rate
Conversion value	
Sensor range	Monotypic/taxonomic 1000barg @ 20℃/1450ppsig @ 68 f,
Stainless steel 316L 08...250	Temperature range-70℃ ...+230℃/-94 ...+446 F.
	Only for 1000barg @ 20℃/1450ppsig @ 68 f,
	Temperature range-50℃ ...+400℃/-58 ...+752 F.
	Only for 1000barg @ 20℃/1450ppsig @ 68 f,
Hastelloy 08...80	Temperature range-200℃ ...+40℃/-364 ...+104 F.
Super dual-phase steel 80...150	Monotypic/taxonomic 200barg @ 20℃/2900 psig @ 68 F,
	Temperature range-70℃ ...+230℃/-58 ...+446 F.
	Monotypic/taxonomic 200barg @ 20℃/2900 psig @ 68 F,
	Temperature range-50℃ ...+230℃/-58 ...+446 F.
design	
basic	The system includes a measuring sensor and a converter that processes the output signal.
characteristic	All-welded maintenance-free structure sensor, double U-shaped measuring tube
form	
Integral structure	Integrated converter
Split structure	Equipped with local split or wall-mounted converter
Modbus structure	The sensor has its own electronic components. Modbus communication is connected to PLC
measurement accuracy	
Quality (standard)	
liquid	0.1% actual measured value
gas	0.2% of the actual measured value
Quality (option)	
liquid	0.1%,0.15%,0.2% of the actual measured value
gas	0.2%,0.25%,0.3% of the actual measured value
repeatability	
liquid	Better than 0. 05% (including comprehensive effects of repeatability, linearity and lag)
gas	Better than 0. 2% (including the comprehensive effects of repeatability, linearity and lag)
Benchmark condition	
medium	water
temperature	+20℃/68°F
working pressure	1barg/14.5psig
Influence of process temperature change on sensor zero point	
All materials	0.00075% of the maximum flow /1℃/0.00042% of the maximum flow/1 F.
Influence of pressure change on mass flow	
All material sizes 08...50	0.05%/1barg/0.00034%/1psig

Technical parameter

All material sizes 80...100	0.0055%/1barg/0.00038%/1psig
All material sizes 150...250	0.008%/1barg/0.00055%/1psig
density	
measuring range	100...3000kg/m3/6...187lbs/ft3
Benchmark condition	
precision	±1kg/m3/±0.06lbs/ft3
Accuracy (field calibration)	±0.2kg/m3/±0.012lbs/ft3
temperature	
precision	±0.5℃/±0.9°F (Display value±0.5%)

Operating conditions

Nominal range (1barg/14.5psig pressure loss)	
08	600 kg/h / 22 lbs/min
10	1200 kg/h / 44 lbs/min
15	3800 kg/h / 139 lbs/min
25	19000 kg/h / 698 lbs/min
50	35000 kg/h / 1286 lbs/min
80	78000 kg/h / 2866 lbs/min
100	175000 kg/h / 6430 lbs/min
150	320000 kg/h / 11758 lbs/min
200	550000 kg/h / 20209 lbs/min
250	1000000 kg/h 36743 lbs/min
	The operating density is assumed to be 1000kg/m3/62.4 lb/ft3, and the compression is assumed to be 1.15barg for Hastelloy instruments.
Maximum range	
All sizes of instruments	150% nominal range
ambient temperature	
Integrated, aluminum shell converter	Standard temperature range:-40 ... 65℃/-40 ... 149 F.
	Low temperature range:-25 ... 40℃/-13 ... 104 F.
One-piece, stainless steel shell converter	Standard temperature range:-40 ... 55℃/-40 ... 104 F.
	Low temperature range:-25 ... 40℃/-13 ... 104 F.
Fractional converter	Standard temperature range:-40 ... 65℃/-40 ... 149 F.
	Low temperature range:-20 ... 65℃/-4 ... 149 F.
explosion proof type	Refer to the temperature limit of explosion proof certificate.
Process temperature	
Standard temperature range (flanged connection)	
Safe area	-70...+230℃ / -94...+446°F
Explosion proof area	-50...+230℃ / -58...+446°F
High temperature range	-50...+400℃ / -58...+752°F
Low temperature range	-200...+40℃ / -328...+104°F

Operating conditions

Standard temperature (sanitary connection)		
Safe area	-70...+150℃ / -94...+302°F	
Explosion proof area	-50...+150℃ / -58...+302°F	
Nominal pressure of 20℃		
Measuring tube	SS 316 / 316L	Hastelloy alloy® C22 / S31803
FM/PED 97/23/EC	-1...100barg / -14.5...1450 psig	-1...200barg / -14.5...2900 psig
CRN/ASME B31.3	-1...100barg / -14.5...1450 psig	be pending
Fluid characteristics		
Permissible measuring medium	Liquid, gas, slurry	
Allowable gas content (volume)	Contact the manufacturing factory to obtain the corresponding information	
Allowable solid content (volume)	Contact the manufacturing factory to obtain the corresponding information	
Protection level (based on EN 60529)	IP67，NEMA 4X	
Installation conditions		
Inlet/outlet straight pipe section	No requirements	

Material quality

Stainless steel (316/316L) instrument	
Measuring tube/sleeve joint	Stainless steel AISI 316/316L (1.4401/1.4404) double certification.
flange	Stainless steel AISI 316/316L (1.4404/1.4404) double certification.
crane span structure	Stainless steel AISI 304/304L (1.4301/1.4307) double certification
	Or AISI 316/316L (1.4401/1.4404) double authentication.
shell	Stainless steel AISI 304/304L (1.4301/1.4307)/
	Stainless steel AISI 316/316L (1.4401/1.4404) double certification.
Stainless steel (S31803) instrument	
Measuring tube/sleeve joint	Stainless steel UNS 31803 (1.4462)
flange	Stainless steel UNS 31803 (1.4462)
crane span structure	Stainless steel AISI 304/304L (1.4301/1.4037) double certification
	Or AISI 316/316L (1.4401/1.4404) double authentication.
shell	Stainless steel AISI 316/316L (1.401/1.4404) double certification.
Hastelloy® instrument	
Measuring tube/flange convex surface	Hastelloy® C22
Flange (backing)	Stainless steel AISI 316/316L (1.4401/1.4404) double certification.
crane span structure	Stainless steel AISI 316/316L (1.4401/1.4404) double certification.
shell	Stainless steel AISI 316L (1.4404) double certification
Heating jacket type	
Heating pipe and heat preservation jacket	Stainless steel AISI 316 (1.4401)
All types	Cast aluminum (polyurethane coating)
Split junction box	Optional stainless steel 316L (1.4401)

Technical parameter

flange	
DIN (EN 1092-1 2007)	DN10...300 / PN 16...160
ASME (B616.5)	½ ...12"/ ASME 150...1500
JIS (2220 2001)	10A...300A / 10...20K (10K The maximum allowable temperature is 300℃ / 572°F)
Sanitary type (08...50)	
Tri-clover	¾ ...3"
Clamping DIN 32676	DN15...80
Clamping ISO 2852	1...3"
DIN 11864-2 A type	DN15...80
External thread DIN 11851	DN15...80
External thread SMS	1...3"

ATEX (in compliance with 94/9/EC) temperature limit

With or without heating jacket/insulation OPTIMASS 6000 / 6000F			
Ambient temperature T_{amb} ℃	**Medium temperature T_m ℃**	**Temperature grade**	**Maximum surface temperature℃**
-40...40	-50...40	T6	T80
	-50...150	T3	T190
	-50...230	T2-T1	T270
-40...55	-50...40	T6	T80
	-50...150	T3	T190
	-50...230	T2-T1	T270
-40...65	-50...40	T6	T80
	-50...150	T3	T190
	-50...230	T2-T1	T270
low form			
-20...65	-200...40	T6-T1	T80
With aluminum converter housing, with or without heating jacket/insulation			
-40...40	-50...40	T6	T80
	-50...150	T3	T190
	-50...230	T2-T1	T270
-40...50	-50...40	T6	T80
	-50...150	T3	T190
	-50...230	T2-T1	T270
-40...65	-50...65	T4-T1	T105
low form			
-40...65	-200...40	T6-T1	T80
Housing with SS converter, with or without heating jacket/insulation			
-40...40	-50...40	T6	T80
	-50...150	T3	T190
	-50...230	T2-T1	T270

ATEX (according to 94/9/EC) temperature limit

-40...50	-50...40	T6	T80
	-50...150	T3	T190
	-50...230	T2-T1	T270
-40...60	-50...65	T4-T1	T100
low form			
-25...+60	-200...40	T6-T1	T80
High temperature type			
With aluminum junction box, heating jacket and insulation.			
-40...40	-50...40	T6	T80
	-50...230	T2	T270
	-50...400	T1	T440
-40...55	-50...40	T6	T80
	-50...230	T2	T270
	-50...400	T1	T440
-40...60	-50...40	T6	T80
	-50...230	T2	T270
	-50...400	T1	T440
-40...55	-50...350	T1	T390
With stainless steel junction box, thermal insulation jacket and insulation layer			
Ambient temperatureT_{amb}℃	**Medium temperatureT_m℃**	**Temperature grade**	**Maximum surface temperature℃**
-40...40	-50...40	T6	T80
	-50...230	T2	T270
	-50...400	T1	T440
-40...50	-50...40	T6	T80
	-50...230	T2	T270
	-50...400	T1	T440
-40...55	-50...40	T6	T80
	-50...230	T2	T270
	-50....400	T1	T440
-40...60	-50...350	T1	T390
With cast aluminum or stainless steel junction box, insulation layer but no insulation jacket.			
-40...40	-50...40	T6	T80
	-50...230	T2	T270
	-50...400	T1	T440
-40...55	-50...40	T6	T80
	-50...230	T2	T270
	-50...400	T1	T440
-40...65	-50...40	T6	T80
	-50...230	T2	T270
	-50...400	T1	T440

Maximum pipeline working load (stainless steel 316/316L)

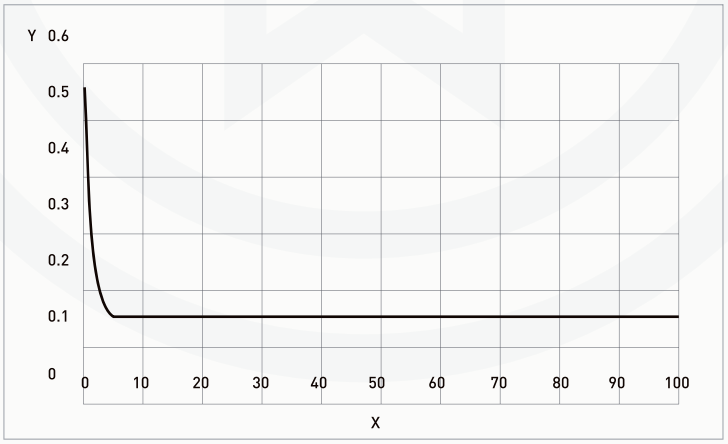
Flange		S08/S10	S15	S25	S50	S80	S100	S150	S200	S250
20℃	40 barg	15 kN	25 kN	38 kN	48 kN	99 kN	130 kN	250 kN	300 kN	350 kN
	100 barg	12 kN	17 kN	19 kN	15 kN	20 kN	100 kN	150 kN	150 kN	200 kN
230℃	32 barg	7 kN	12 kN	18 kN	25 kN	45 kN	60 kN	150 kN	200 kN	250 kN
	60 barg	5 kN					20 kN			
400℃	27.4barg	5 kN	6 kN	10 kN	12 kN	20 kN	50 kN	80 kN	100 kN	150 kN
	40 barg	4 kN	5 kN				20 kN			
Sanitary type (all connection methods)										
150℃	10 barg	10 kN	9 kN	12 kN	12 kN	18 kN	N/A	N/A	N/A	N/A

Maximum pipeline working load (Hastelloy and stainless steel UNS S31803)

Flange (excluding CRN)		H08/H10	H15	H25	H50	H80	D100	D150	D200
20℃	200 barg	12 kN	17 kN	19 kN	15 kN	20 kN	100 kN	150 kN	
230℃	145 barg	5 kN				20 kN			
Flange (CRN connection)									
20℃	200 barg	12 kN	17 kN	19 kN	15 kN	20 kN	60 kN	30 kN	10 kN
230℃	145 barg	5 kN					20 kN		

At 20℃, the maximum load of D200 is 180barg.
At 230℃, the maximum load of D100 and D150 is 120barg. The maximum load of D200 is 110barg.
By means of butt welding, the axial load of DN08... 50 is calculated by testing on more than 40 groups of 316L process pipelines.
By means of butt welding, the axial load of DN80... 250 is calculated by testing on more than 60 groups of 316L process pipelines.
This load is only the maximum allowable steady-state load. If the load is variable (i.e. tension or compression), the maximum allowable load value should be reduced.
For exact values, please contact the manufacturer.

Measurement accuracy



X Nominal flow capacity (%) Y Measurement accuracy (%)

Measurement accuracy

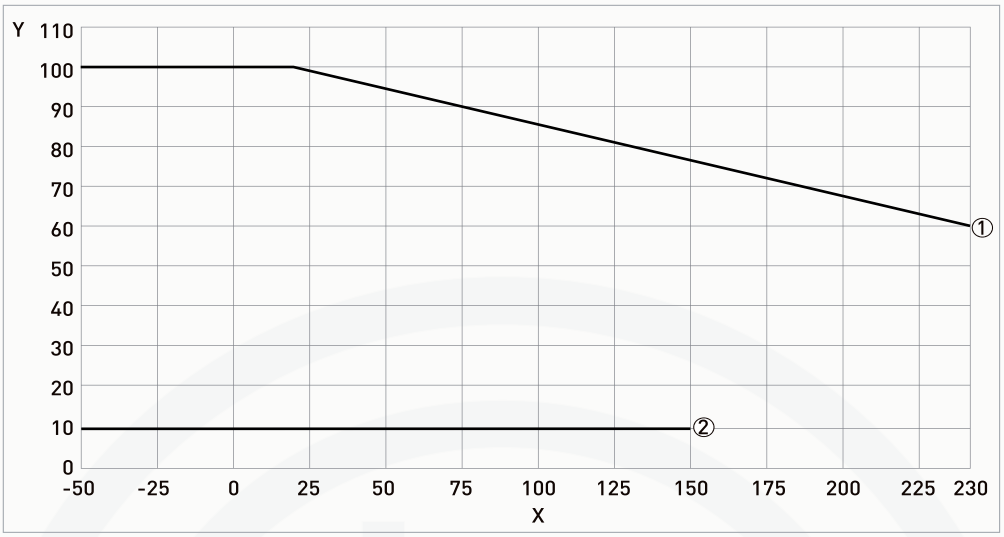
The measurement error is obtained by calculation accuracy and zero stability.

Benchmark condition

Medium	Water
temperature	+20℃/+68°F
operating pressure	1 barg / 14.5 psig

Pressure/Temperature Grade of Stainless Steel 316 Instrument (Metric)

Standard temperature range

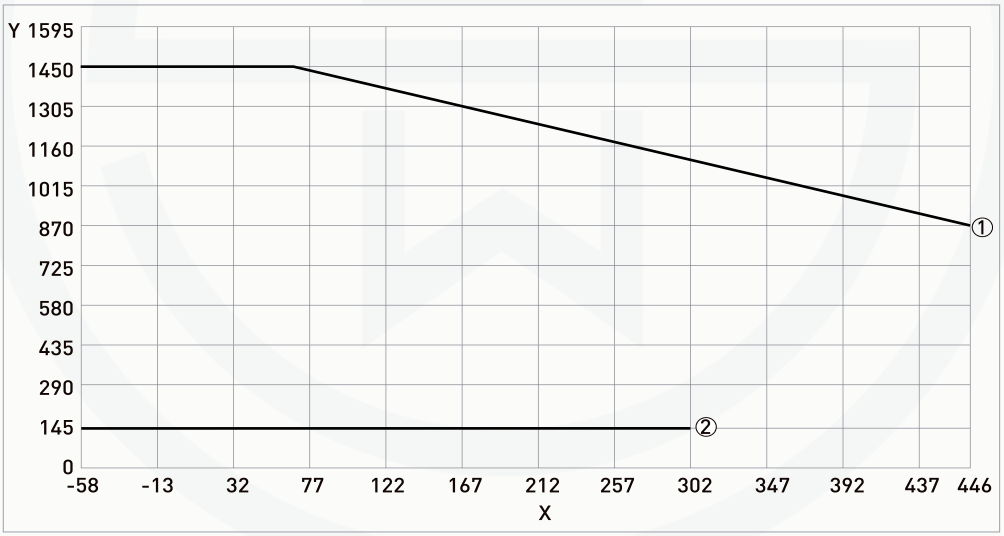


X Temperature ℃ Y Pressure barg

① PED Certified measuring tube ② Sanitary connection

Pressure/Temperature Grade of Stainless Steel 316 Instrument (English system)

Standard temperature range

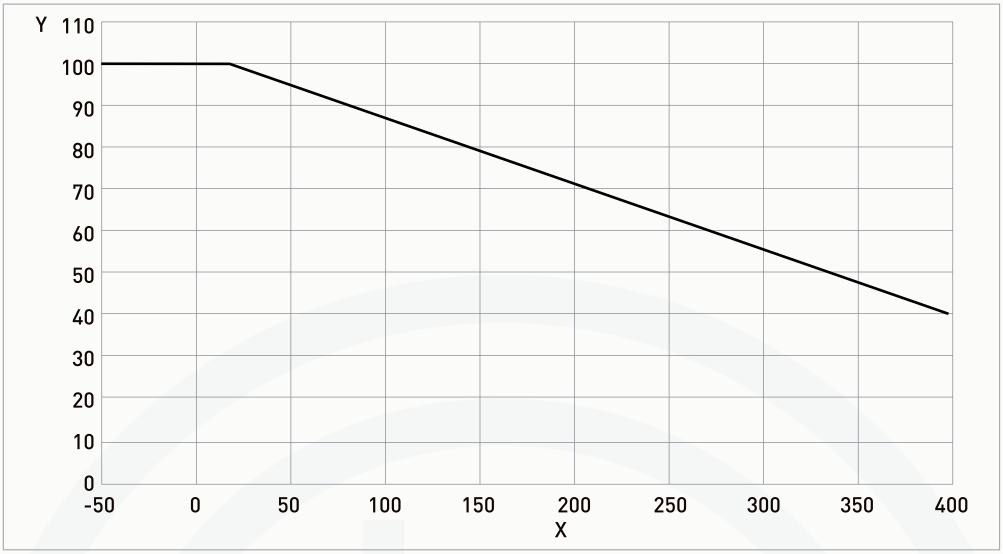


X Temperature ℃ Y Pressure barg

① PED Certified measuring tube ② Sanitary connection

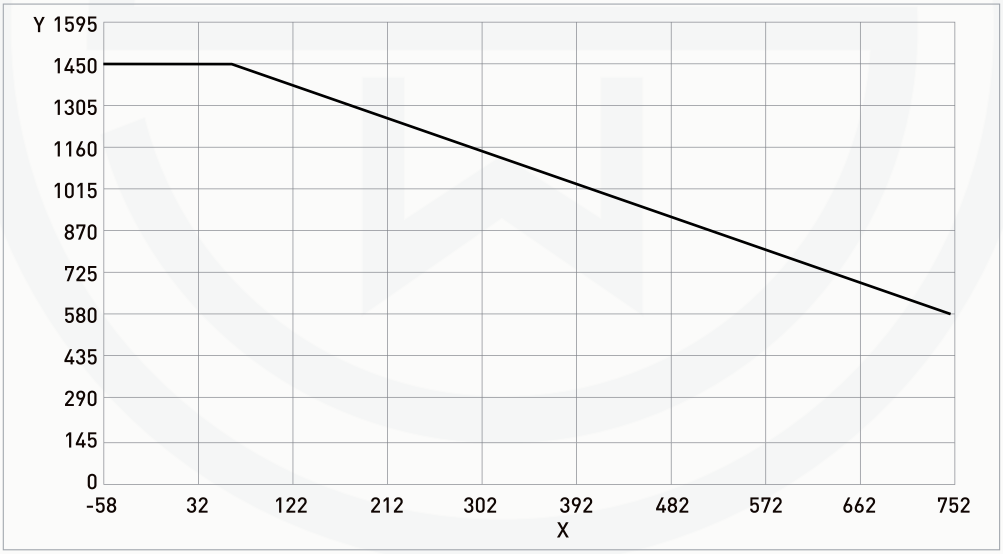
Stainless steel 316 material, PED certified instrument pressure/temperature rating (metric)

High temperature range



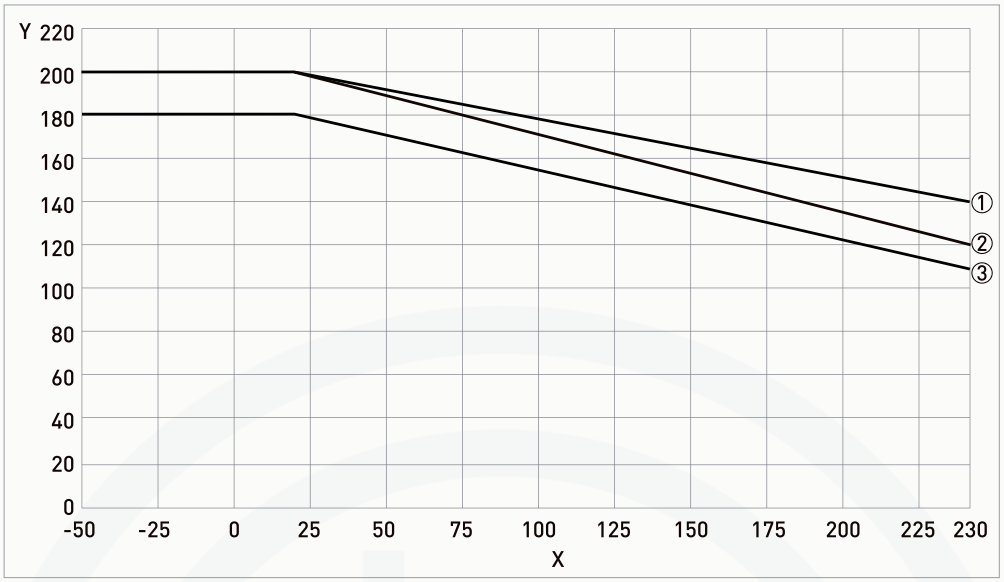
Stainless steel 316 material, PED certified instrument pressure/temperature rating (English system)

High temperature range



X Temperature ℃ Y Pressure barg

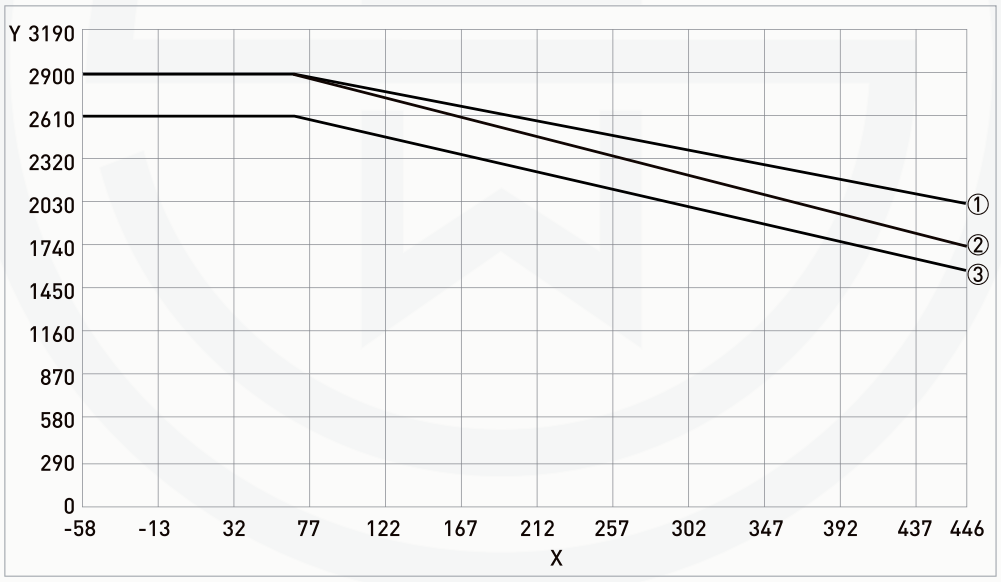
SS31803 and Hastelloy C material, PED certified instrument pressure/temperature rating (metric)



X Temperature ℃ Y Pressure barg

① PED/CRN H08...80 ② CRN D100...500 ③ CRN D200

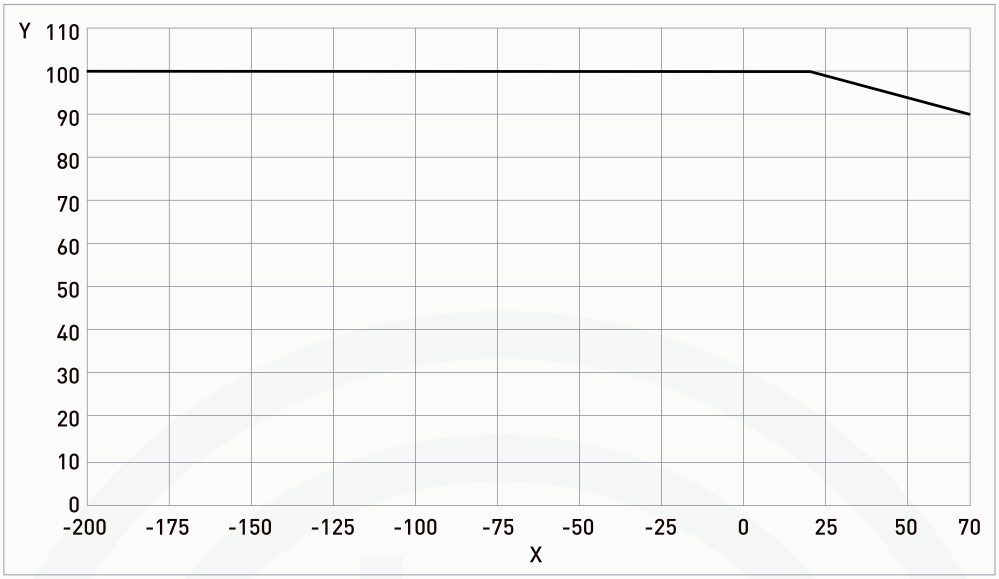
SS31803 and Hastelloy C material, PED certified instrument pressure/temperature rating (English system)



X Temperature ℃ Y Pressure psig

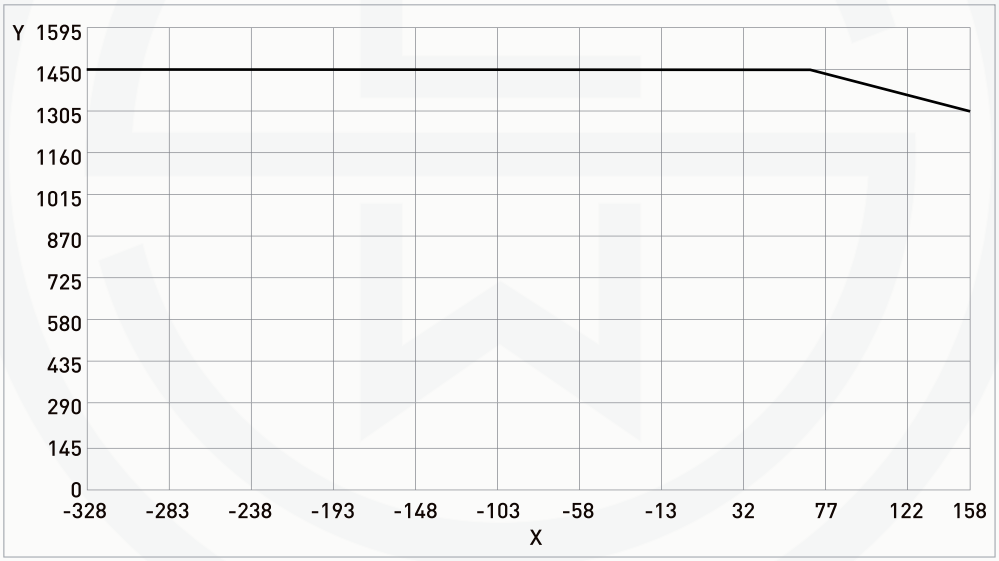
① PED/CRN H08...80 ② CRN D100...500 ③ CRN D200

SS316 material, PED certified instrument pressure/temperature rating (metric)



X Temperature ℃ Y Pressure psig

SS316 material, PED certified instrument pressure/temperature rating (English system)



X Temperature ℃ Y Pressure psig

Flange standard

- IN flange standard EN1092-1 2007 table G. 4.1 Material group 14E0
- ASME flange standard ASME B16. 52003 table material group 2.2
- JIS flange standard JIS 2220： 2001 table 1 division material group 022a
- The maximum allowable temperature of JIS 10K flange is 300℃/572℉

Fill:

The maximum working pressure is the lowest of the rated pressure of the flange or the rated pressure of the measuring pipe!
The factory recommends replacing the seal periodically to ensure the integrity of the connection.。

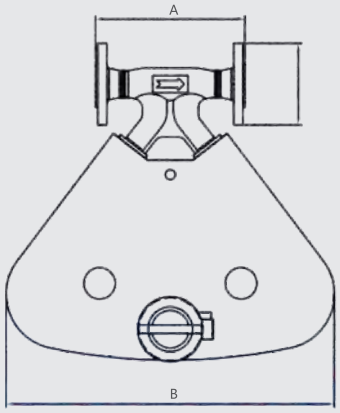
Measuring diameter and flow range

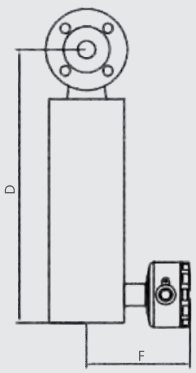
Flow measurement error: ε = ei% * flow +Eo

Model	latus rectum	Flow range (t/h)	Zero instability Eo
FM50-001	DN1.5	0-0.06	0.00001
FM50-003	DN3	0-0.12	0.00002
FM50-004	DN4	0-0.24	0.00004
FM50-006	DN6	0-0.8	0.00006
FM50-010	DN10	0-1.5	0.00011
FM50-015	DN15	0-3	0.00022
FM50-020	DN20	0-7	0.00053
FM50-025	DN25	0-12	0.009
FM50-032	DN32	0-21	0.0014
FM50-040	DN40	0-36	0.0025
FM50-050	DN50	0-60	0.0041
FM50-080	DN80	0-120	0.009
FM50-100	DN100	0-210	0.013
FM50-125	DN150	0-350	0.02
FM50-200	DN200	0-750	0.05

Measuremm

LNG Sensor





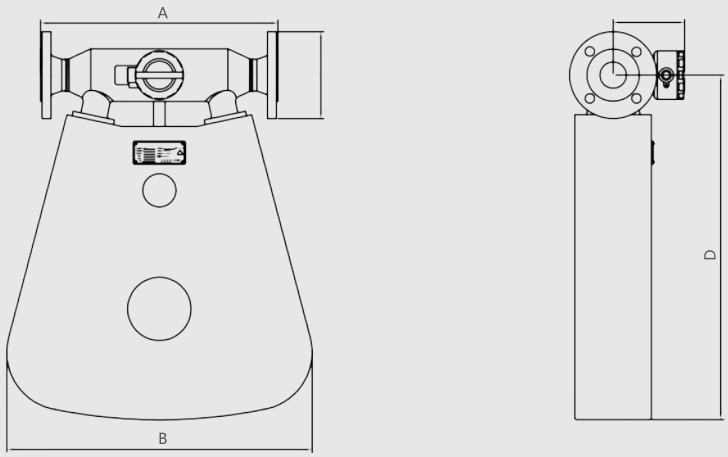
Dimensions and weight of LNG sensor:

model	latus rectum	A	B	C	D	F	weight (kg)
FM50 - 006	DN6	162	250	Φ95	210	120	4.5
FM50 - 015	DN15	191	340	Φ95	280	132	11
FM50 - 025	DN25	211	464	Φ115	393	146	15
FM50 - 032	DN32	294	455	Φ140	452	151	21
FM50 - 050	DN50	442	578	Φ165	654	166	40
FM50 - 080	DN80	538	606	Φ200	729	180	62
FM50 - 100	DN100	570	670	Φ235	796	220	64

Note: 1. The dimension A is the dimension with PN40 GB 9112 flange.
2. The temperature range of the sensor is code L.

Size mm

Sensor



Sensor dimensions and weight:

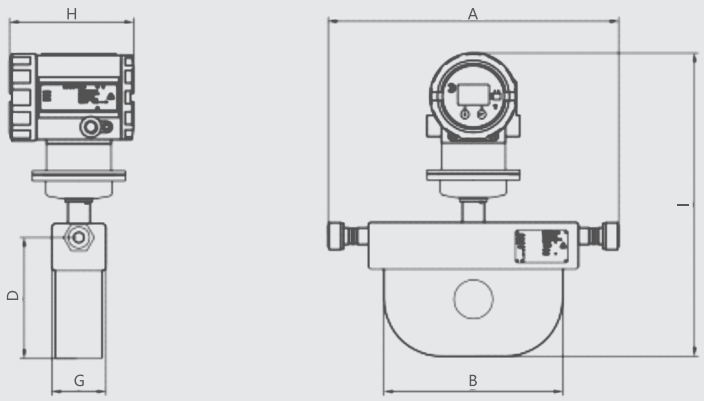
Model	latus rectum	A	B	C	D	E	weight (kg)
FM50 - 001	DN1.5	156	168	M20X1.5	128	120	3.5
FM50 - 003	DN3	136	234	M20X1.5	165	120	3.5
FM50 - 004	DN4	136	234	M20X1.5	165	120	3.5
FM50 - 006	DN6	162	250	Φ90	210	120	4.5
FM50 - 010	DN10	210	280	Φ90	254	120	10
FM50 - 015	DN15	240	384	Φ95	300	120	11
FM50 - 020	DN20	248	430	Φ105	392	120	12
FM50 - 025	DN25	264	440	Φ115	410	124	15
FM50 - 032	DN32	294	455	Φ140	452	124	21
FM50 - 040	DN40	320	540	Φ150	536	125	25
FM50 - 050	DN50	442	578	Φ165	654	135	40
FM50 - 080	DN80	538	606	Φ200	729	145	62
FM50 - 100	DN100	570	670	Φ235	796	152	64
FM50 - 150	DN150	840	803	Φ300	934	178	150
FM50 - 200	DN200	1063	907	Φ375	1175	230	300

Note: 1. For the thread matching standards M20X1.5 from FM50-001 to FM50-004, the remaining dimensions A are those with PN40 GB 9112 flange.

2. The temperature range of the sensor is coded as N and H. See the next page for CNG dimensions.

Size mm

CNG flowmeter

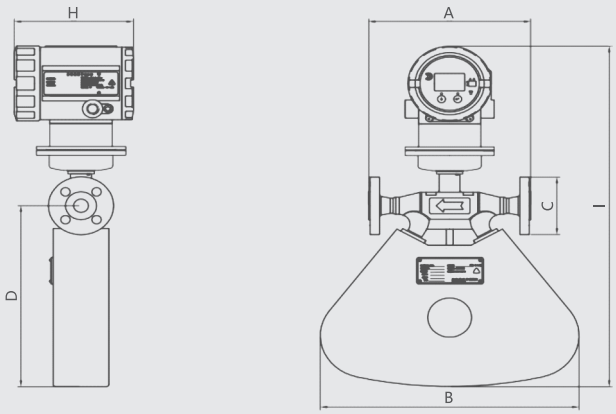


Overall dimensions and weight of CNG flowmeter:

model	latus rectum	A	B	D	G	H	I	weight (kg)
FM50-015	DN15	415	255	173	77	176	432	9.5

Note: 1. When the CNG flowmeter is installed separately, the size of "I" is 290 mm.
2. Process connection: Swagelok compatible size 12 VCO connector by default.

Integrated flowmeter



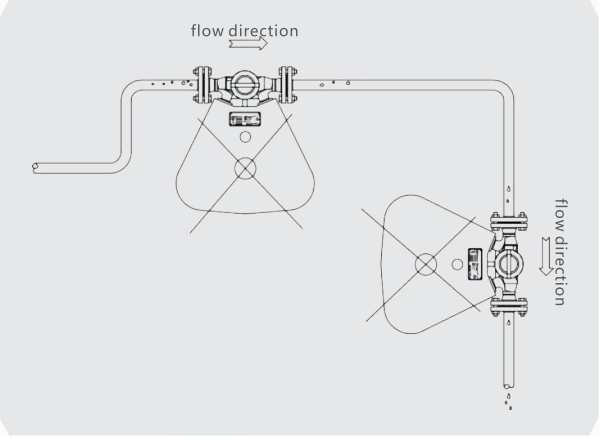
Overall dimensions and weight of sensor:

model	latus rectum	A	B	C	D	H	I	weight (kg)
FM50-015	DN15	240	384	Φ95	300	176	565	14.5
FM50-020	DN20	248	430	Φ105	392	176	655	15.5
FM50-025	DN25	264	440	Φ115	410	176	680	18.5
FM50-032	DN32	294	455	Φ140	452	176	725	24.5
FM50-040	DN40	320	540	Φ150	536	176	812	28.5
FM50-050	DN50	442	578	Φ165	654	176	934	43.5
FM50-080	DN80	538	606	Φ200	729	176	1027	65.5
FM50-100	DN100	570	670	Φ235	796	176	1096	67.5
FM50-150	DN150	840	803	Φ300	934	176	1199	150
FM50-200	DN200	1063	907	Φ375	1175	176	1520	330

Note: 1. The dimension A is the dimension with PN40 GB 9112 flange.
2. The temperature range of the sensor is code Y.。

Installation conditions and location

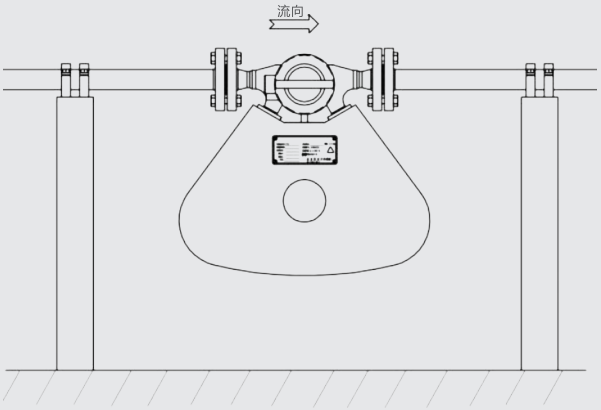
There is no cavitation phenomenon after the installation of process pipelines or instruments.
To protect the pipeline, it is recommended that when the sensor is too heavy, there should be stable support near the flange of the process pipeline on both sides (approximately 2-10 times the pipe diameter).
When bubbles are entrained in the sensor measurement tube, measurement errors may occur, and the following installation positions should be avoided:
The installation of the flowmeter at the highest point of the pipeline can cause air accumulation.
The flowmeter is directly installed at the outlet of the downward vent pipeline.
The transmitter should be installed in an area that is easy to operate and view, paying attention to waterproofing and high temperature.



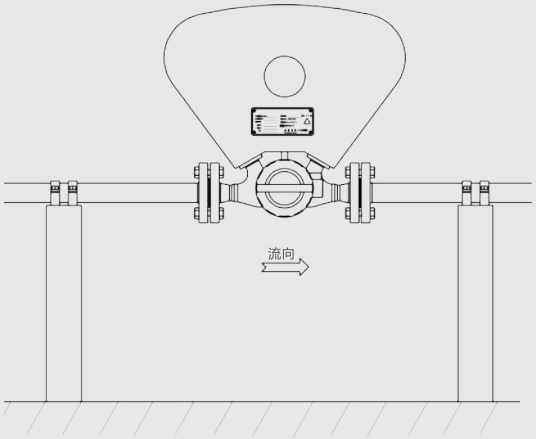
Installation direction

Recommended sensor installation method

To ensure the reliability of measurement, the installation method of the instrument should consider The following factors:
① When measuring liquid with a mass flow meter, it is recommended to install the casing downwards,
As shown in the figure, prevent gas from gathering inside the sensor vibration tube.

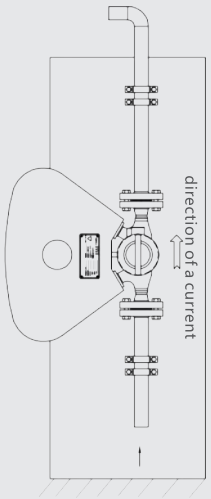


② When the mass flowmeter measures gas, it is suggested that the shell should be installed upward.
As shown in fig. 8.4, prevent liquid from accumulating in the sensor vibrating tube.。



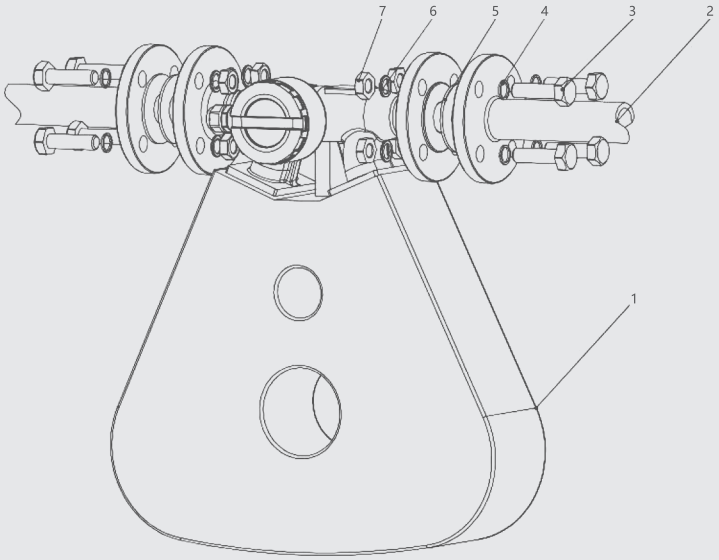
Installation direction

③ When the medium to be measured is suspension, it is suggested that the sensor should be installed with flag. As shown in Figure 8.5, the flow direction of the medium is from bottom to top through the sensor.

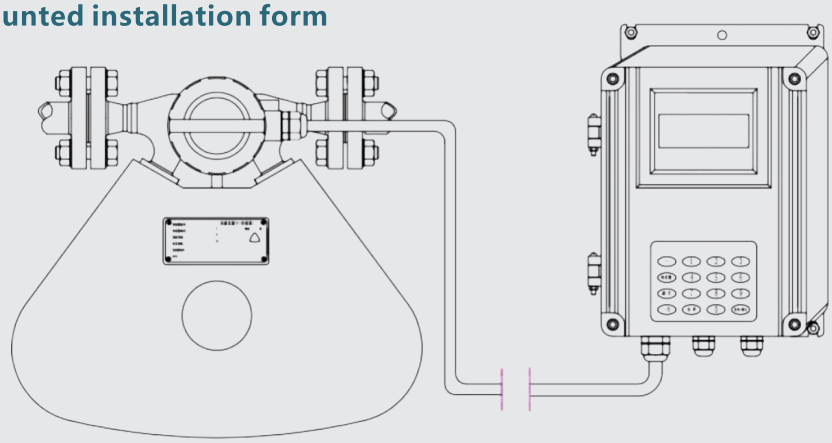


Installation diagram

1-Sensor
2-Piping
3-Screw
4-Gasket
5-Gasket
6-Spring Pad
7-Nut

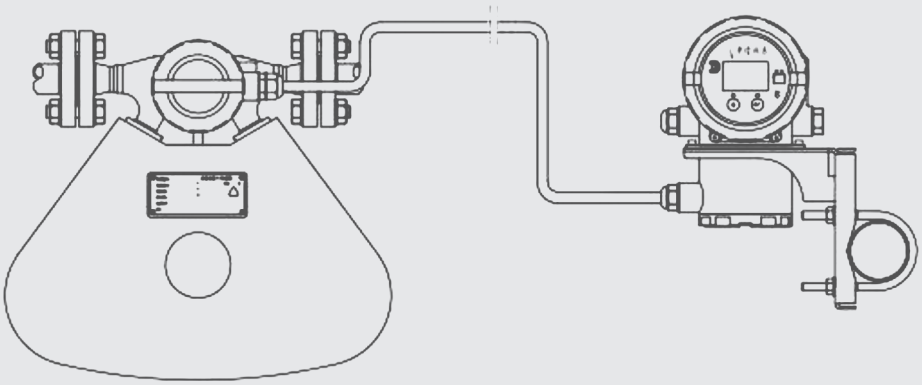


Remote wall-mounted installation form



Installation diagram

On-site display of split installation form



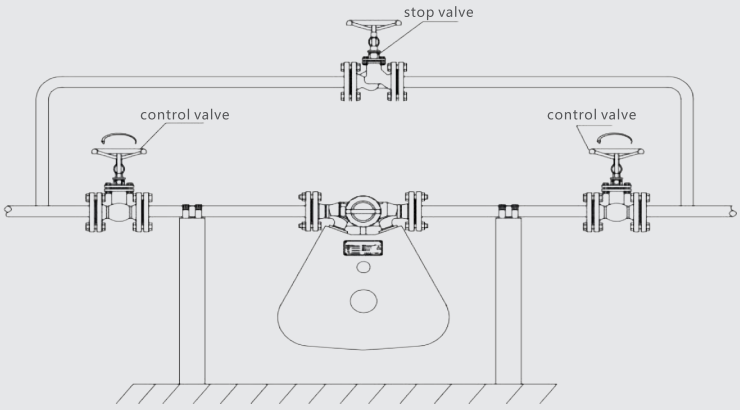
Other precautions for installation

(1), the installation position should avoid electromagnetic interference. The installation positions of sensors and transmitters and the laying of cables should be as far away as possible from the equipment that is easy to generate strong electromagnetic fields, such as high-power motors, transformer facilities, frequency conversion equipment, etc.

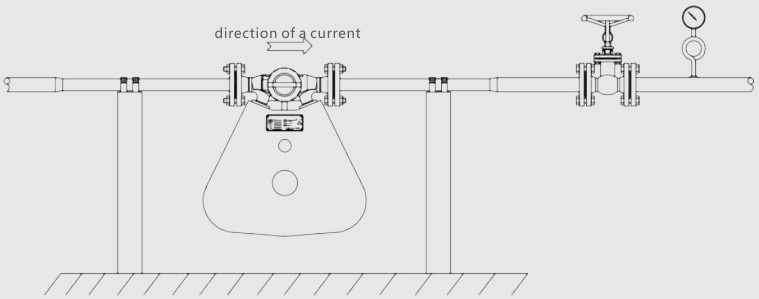
(2), the process pipeline should be centered, and the flanges on both sides should be parallel. It is forbidden to use the sensor to straighten the upstream and downstream process pipelines, otherwise it will affect the measurement and even damage the sensor. In addition, the process pipelines on both sides near the flange (about 2 ~ 10 times the diameter) should have solid support.

③ Butterfly valves cannot be installed on the inlet side of the sensor.

④ On the upstream and downstream pipelines of the sensor, it is suggested to install stop valves and bypasses to facilitate zero calibration and routine maintenance, and to ensure that the sensor can be in a full pipe state when it is not working. Use the regulating valve downstream of the sensor for flow control.



When measuring the easily vaporized medium, it is suggested to install a pressure gauge downstream of the flowmeter to check the downstream pressure. If the downstream of the flowmeter needs to be enlarged, it is suggested that the process pipe downstream of the flowmeter keep a certain distance with the same caliber, and it is suggested that a valve be installed downstream of the sensor to adjust the appropriate back pressure to prevent vaporization or cavitation. If the medium is vaporized or cavitated in the flowmeter, the measurement accuracy will be affected, and the sensor will not work normally in severe cases.



Wiring diagram

Group l (left detection):

White meets LC+, yellow meets LC-,and the shield is cut off.

Group r (right detection):

Gray meets RC+, purple meets RC-,and the shield is cut off.

Group d (drive):

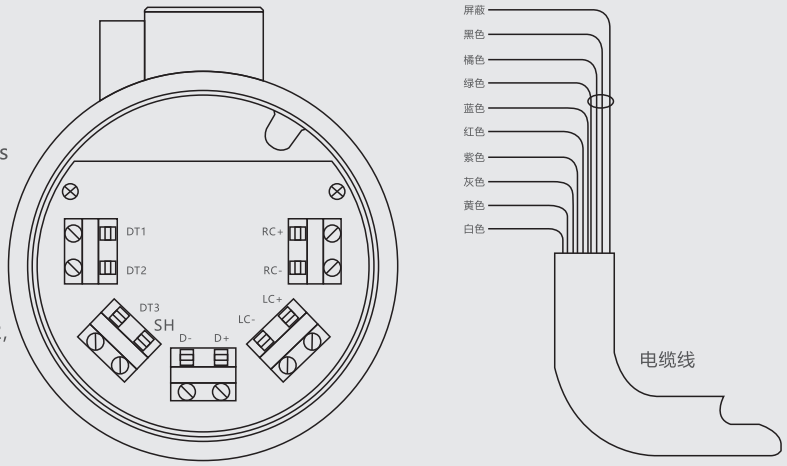
Red is connected with D+, blue is connected with D-,and the shield is cut off.

Group t (temperature):

Green and orange are connected with DT3 and DT2,

Black to DT1, LB-112 and LB-122 shielded wires to SH, then

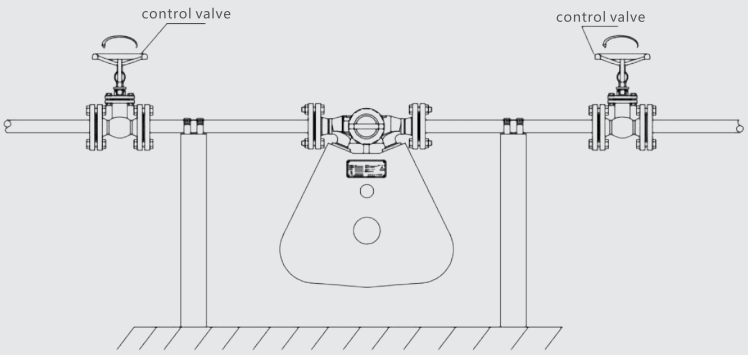
Other types of transmitters cut off the shielded wire connection.



Zero calibration

In order to ensure the measurement accuracy of the flowmeter, zero calibration should be performed after the sensor is installed. The method is as follows:

The sensor is filled with medium and flows for more than 5 minutes, and the transmitter is electrified and preheated for more than 20 minutes. If there is no abnormality in the sensor and the transmitter displays normally, zero calibration can be considered. During zero calibration, ensure that the upstream and downstream valves are closed and there is no leakage. Perform zero calibration after the fluid in the sensor is stable. Generally, the valve should be closed for 3 ~ 5 minutes before zero calibration.



FM50-Selection composition

Selection examples FM50	I	A	N	Z	A	G	S	0.002	X	1-10	N	E	A	N	U	G	O
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17

1.Instrument structure	I	U-shaped
2.input/output signal	A	OTwo outputs, one 4-20mA output, one RS-485 (Modbus RTU)
	B	Density and temperature output
	D	4-20mA+ switching output
	E	4~20mA
	F	4 to 20mA, HART protocol signal
	G	FF bus
	H	PF bus
	I	GPRS
3.Signal type	N	Analog signal processing
	O	digital signal processing
	T( )	other
4.Installation mode	X	Classification (including 7m communication cable)
	Y	Disk-mounted type
	Z	One body
5.Display language	A	English
	B	German
	C	Chinese
	T( )	other
6.Connection mode	G	Junction box M20x1.5
	H	Quick socket WY24(10P)
	I	M20x 1.5 with processor
7.Precision	S	0.10%
	R	0.15%
	Q	0.2%
	P	0.25%
	T( )	other
8.Density	M( )	Remarks density
9.working power supply	Z	Ac: AC220V (50~60Hz)
	X	Dc: DC24V
	Y	DC24V-110V and AC80-220V (50~60Hz)
10.Range range	R( )	Range (Note Range)
11.Explosion-proof requirements	A	Intrinsically safe explosion-proof
	B	Flameproof
	N	without
12.Process connection interface	E	flange
	F	screw thread
	H	lathedog
13.Pressure grade	A	1.6MPa
	B	4.0MPa
	C	6.3MPa
	H	10MPa

FM50-Selection composition

Selection examples FM50	I	A	N	Z	A	G	S	0.002	X	1-10	N	E	A	N	U	G	O
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17

13.Pressure grade	D	Class150		
	E	Class300		
	F	Class400		
	G	Class600		
	T( )	Other pressure levels		
14.temperature range	N	-50~+180℃		
	O	-50~+245℃		
15.Flange standard	S	GB9112		
	U	HG/T 20592		
	P	HG/T 20615		
	Q	NPT (DN10以下)		
	R	ANSI		
	N	GB/T9124.1		
	O	Other connection standards		
16.Flange connection specification	A	DN03		
	B	DN04		
	C	DN06		
	D	DN10		
	E	DN15		
	F	DN20		
	G	DN25		
	H	DN32		
	I	DN40		
	J	DN50		
	Z	DN65		
	K	DN80		
	L	DN100		
	Z1	DN125		
	M	DN150		
	N	DN200		
	O	DN250		
	P	DN300		
	Q	1"		
	R	2"		
	S	3"		
	T	4"		
	U	5"		
	V	6"		
	W	8"		
	X	10"		
	T( )	Other flange specifications		

FM50-Selection composition

Selection examples FM50	I	A	N	Z	A	G	S	0.002	X	1-10	N	E	A	N	U	G	O
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17

17.Measuring tube material	O	316L	
	P	Hastelloy alloy	
	Q	Titanium material	
	T( )	Other materials	
18.Measurement Applications	S	General applications	
	F	Low temperature without pre cooling	
	G	Heat tracing	

Description:

Indicates that FM50 mass flowmeter structure is U-shaped, two outputs, one 4-20mA output, one RS-485 (Modbus RTU), installation mode is integrated, display language is English, connection mode is junction box M20*1.5, 0.10% density: ±0.002g/cm3, 24VDC power supply, 1-10m³/h measurement range, no explosion proof, process interface flange, flange specification is DN25, pressure class is 1.6MPa, flange standard is HG/T 20592, temperature range is -50~+180℃, measuring tube material is 316L, Item 18 in the table is optional.

Product Certification

Compliance and approval; Rodwig flow meters meet key standards and certifications for process measurement technology; To ensure the highest reliability in such settings;