YUA

Fast · Accurate · Managing

0.1 Nm/s

Low measurement limit
1:2500 Turndown ratio

The Explosion-proof Certification applicable to various harsh working conditions

01010

Full-digital Signal Processing
Eliminates zero point drift

Intelligent diagnosis prevent the sensor from being polluted and damaged



F211x-Ex & F212x-Ex Series

Thermal Mass Flow Meter

Explosion-proof Thermal Mass Flow Meter

THERMAL MASS FLOW METER

Product Overview

F211x-Ex & F212x-Ex flow meter is based on thermal measurement technology. It can measure the standard flow, mass flow, consumption, and gas temperature directly.

Explosion-proof structure design, having certificate issued by the state: Explosion-proof class: Ex db IIC T6 Gb / Ex tb IIIC T80°C Db Protection code: IP67

No moving parts, stable signal, vibration proof, high reliability, long-term measuring accuracy

Full-digital signal processing is used instead of the conventional analog bridge design, resulting in a wider range and more accurate measurement.

The low measuring limit can reach 0.1Nm/s, and the turndown ratio can reach 1:2500. It has a wider measuring range than common flow meters on the market, making it suitable for measuring extremely volatile flow, low-flow bypass, and the gas consumption of single equipment.

With the innovative, intelligent diagnosis technology, it can sense the sensor pollution online and protect the sensor from overheating

Product Advantages

Low Measuring Lower Limit

The low measuring limit can reach 0.1 Nm/s

Full-digital Signal Processing

Eliminates zero point drift and provides highly accurate measurements

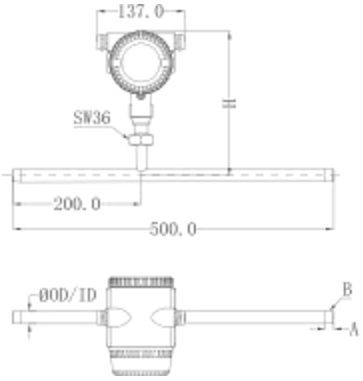
The Explosion-proof Certification

Ex db IIC T6 Gb
Ex tb IIIC T80°C Db

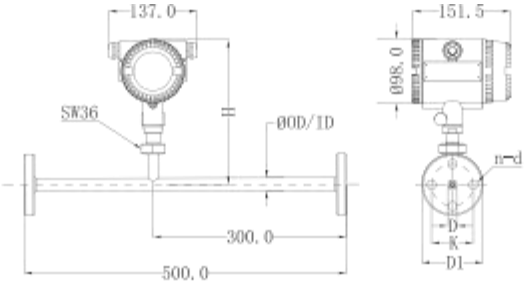
Protection Code IP67

- Full-digital signal processing, higher accuracy, long-term stability
- Based on the thermal flow measurement principle, it's not required to compensate gas pressure and temperature, integrated temperature measurement
- With an ultra-wide 1:2500 turndown ratio, the measuring range is from 0.1 Nm/s to 250 Nm/s
- Explosion-proof class: Ex db IIC T6 Gb / Ex tb IIIC T80°CDb
  Protection code: IP67
- The capacitive touch 2.0" IPS LCD with an ultra-wide view
- Bluetooth function for wireless flowmeter configuration and data transmission
- Standard Modbus RTU (RS485) interface, 4 to 20 mA current and pulse output
- Insert type F211x-Ex: Suitable for pipes with diameters from DN20 to DN1000, and can be installed under pressure via a 1/2" ball valve.
- Pipe type F212x-Ex:
  Pipe size: DN15, DN20, DN32, DN40, DN50, DN65, DN80
  The process for connection: R-type thread, Flange EN1092-1, ANSI / B16.5

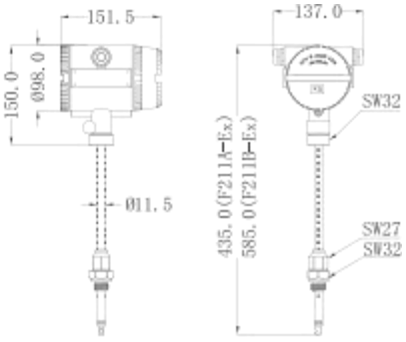
Product Dimensions



F212x-Ex
Thread-type dimension schematic



F212x-Ex
Flange-type dimension schematic



F211x-Ex
Dimension diagram

F212x-Ex Detailed dimension of thread-type

DN	Inch	A Thread length (mm)	B Male thread (mm)	H Pipe center to top of housing (mm)
15	1/2	≥13.2	R1/2"	226
20	3/4	≥14.5	R3/4"	225
25	1	≥16.8	R1"	224
32	1 1/4	≥19.1	R1 1/4"	226
40	1 1/2	≥19.1	R1 1/2"	226
50	2	≥23.4	R2"	226

F212x-Ex Detailed dimension of flange-type

DN	(Inch)	D Pipe inner diameter (mm)	D1 Flange outer diameter (mm)	K Screw hole center distance (mm)	H Pipe center to top of housing (mm)	n Number of flange holes	d Screw ole diameter (mm)
15	1/2	15	95	65	226	4	14
20	3/4	20	105	75	225	4	14
25	1	25	115	85	224	4	14
32	1 1/4	32	140	100	226	4	18
40	1 1/2	40	150	110	226	4	18
50	2	50	165	125	226	4	18

Measuring Range

F211x-Ex Measuring Range

(Inch)	DN	ID (mm)	Min Flow (Nm³/h)	Max Flow -Std (Nm³/h)	Max Flow -High (Nm³/h)
3/4	20	20	0.1	135	282
1	25	25	0.2	212	441
1 1/4	32	32	0.3	347	723
1 1/2	40	40	0.5	542	1131
2	50	50	0.7	848	1767
2 1/2	65	65	1.2	1433	2986
3	80	80	1.8	2171	4523
4	100	100	2.8	3392	7068
5	125	125	4.4	5301	11044
6	150	150	6.4	7634	15904
8	200	200	11.3	13571	28274
10	250	250	17.7	21205	44178
12	300	300	25.4	30536	63617

* For more pipe sizes and flow ranges, please consult sales

F212x-Ex Measuring Range

(Inch)	DN	ID (mm)	Min Flow (Nm³/h)	Max Flow (Nm³/h)
1/2	15	15	0.06	76
3/4	20	20	0.1	135
1	25	25	0.2	212
1 1/4	32	32	0.3	347
1 1/2	40	40	0.5	542
2	50	50	0.7	848
2 1/2	65	65	1.2	1433
3	80	80	1.8	2171

* For more pipe sizes and flow ranges, please consult sales

Technical Data

Flow

Measuring Range	0(0.1) … 250 Nm/s
Accuracy	±(1.5% RD + 0.3% FS) [1% RD Option]
Sampling Rate	> 20 Samples/sec
Medium	Compressed air, nitrogen, oxygen, carbon dioxide and other non-condensing gases
Reference Condition	20 °C, 1 bar(a) -ISO 1217 (Configurable)

Output

4~20 mA Output (Standard)	Flow rate/Temperature (Configurable)
Pulse Output (Standard)	Consumption/Alarm
Digital Output (Standard)	Modbus RTU (RS485)
Wireless Communication	Bluetooth (Standard) Wi-SUN / IOT-4G (Option, choose one of two)
Connector	Wiring Terminal

Power

Power	18 … 30VDC 5W @ 24VDC

Display

Display	2.0" IPS LCD with capacitive touch

Operating Environment

Environment Temperature	-30 … +60 °C
Medium Temperature	-40 … +80 °C
Operating Pressure	F211x-Ex: 0 … 1.7 MPa(a) F212x-Ex: 0 … 1.7 MPa(a) (4.0 / 6.3 MPa.a Option)

Explosion-proof Class & Protection Code

Explosion-proof Class	Ex db IICT6 Gb/Ex tb IIICT80°C Db
Protection Code	IP67

Other

Process Connection	G1/2" (ISO 228-1) (F211x-Ex Insert type)
EMC	Compliant with IEC 61326-1
Pole / Pipe Section Material	SUS304 (Standard) SUS316 (Option)

Order Information

Model	Process Conn.	Digital Output	Analog Output	Wireless Comm.	Flow range	Gas type	Accuracy	Monitor	Description
F211A-Ex									Explosion-proof Thermal Mass FlowMeter, Insert type, 250 mm pole length (Suitable for pipe diameter up to DN250)
F211B-Ex									Explosion-proof Thermal Mass FlowMeter, Insert type, 400 mm pole length (Suitable for pipe diameter up to DN600)
F211C-Ex									Explosion-proof Thermal Mass FlowMeter, Insert type, 600 mm pole length (Suitable for pipe diameter up to DN1000)
	1								ISO G1/2" Screw
		1							Modbus RTU (RS485)
			1						4 … 20 mA + Pulse Output
				V0013 0001					None (Defalt)
				S1701 0010					IOT-4G Module
				S1701 0023					Built-in Wi-SUN Sub-module, 470 frequency band, mainly suitable for China
				S1701 0024					Built-in Wi-SUN Sub-module, 915 frequency band, mainly suitable for Asia, America and Australia
				S1701 0025					Built- in Wi-SUN Sub-module, 868 frequency band, mainly suitable for Europe and the Middle East
					V0205 0002				Standard Range (0~120 Nm/s)
					V0205 0003				Extended Range (0~250 Nm/s)
						V0202 0001			Air
						V0202 0002			Oxygen (O_2)
						V0202 0003			Nitrogen (N_2)
						V0202 0004			Hydrogen (H_2), Real Gas Calibration
						V0202 0005			Nitroous Oxide (N_2O)
						V0202 0006			Carbon Dioxide (CO_2)
						V0202 0007			Natural Gas (NG)
						V0202 0008			Argon (Ar)
						V0202 0009			Helium (He), Real Gas Calibration
						V0202 0010			Other Specified Gases (Specify Gas or Gas Mix)
							V0204 0001		Standard Accuracy Calibration ±(1.5% RD + 0.3% FS)
							V0204 0002		High Accuracy Calibration ±(1% RD + 0.3% FS)
								S0105 0003	Integrated display. The capacitive touch 2.0" IPS LCD with an ultra-wide view
								S0105 0003A	Split display. The capacitive touch 2.0" IPS LCD with an ultra-wide view

* For more pole length, please consult sales
* Portable protective case is available as an option. Please consult sales staff for details
* Built-in 4G or Wi-SUN module, not compatible with explosion-proof function
* There are difference in regulations and standards between contuntries and regions. Please select according to the local Wi-SUN frequency band

Order Information

Model	Digital Output	Analog output	Wireless Comm.	Process Connection	Gas type	Accuracy	Monitor	Description
F212A-Ex								Explosion-proof Thermal Mass Flow Meter, Inline type, Max pressure: 1.7 MPa(a)
F212B-Ex								Explosion-proof Thermal Mass Flow Meter, Inline type, Max pressure: 4.0 MPa(a)
F212C-Ex								Explosion-proof Thermal Mass Flow Meter, Inline type, Max pressure: 6.3 MPa(a)
	1							Modbus RTU (RS485)
		1						4 … 20 mA + Pulse output
			V0013 0001					None (Defalt)
			S1701 0010					IOT-4G Module
			S1701 0023					Built-in Wi-SUN Sub-module, 470 frequency band, mainly applicable to China
			S1701 0024					Built-in Wi-SUN Sub-module, 915 frequency band, mainly suitable for Asia, America and Australia
			S1701 0025					Built- in Wi-SUN Sub-module, 868 frequency band, mainly suitable for Europe and the Middle East
				V0207 0001				R thread (ISO-7-1), DN15, 1/2"
				V0207 0002				R thread (ISO-7-1) , DN20, 3/4"
				V0207 0003				R thread (ISO-7-1), DN25, 1"
				V0207 0004				R thread (ISO-7-1), DN32, 1.25"
				V0207 0005				R thread (ISO-7-1), DN40, 1.5"
				V0207 0006				R thread (ISO-7-1), DN50, 2"
				V0207 0023				R thread (ISO-7-1), DN65, 2.5"
				FLG-15				Flange (EN 1092-1), DN15, 1/2"
				FLG-20				Flange (EN 1092-1), DN20, 3/4"
				FLG-25				Flange (EN 1092-1), DN25, 1"
				FLG-32				Flange (EN 1092-1), DN32, 1.25"
				FLG-40				Flange (EN 1092-1), DN40, 1.5"
				FLG-50				Flange (EN 1092-1), DN50, 2"
				FLG-65				Flange (EN 1092-1), DN65, 2.5"
				FLG-80				Flange (EN 1092-1), DN80, 3"
					V0202 0001			Air
					V0202 0002			Oxygen (O_2)
					V0202 0003			Nitrogen (N_2)
					V0202 0004			Hydrogen (H_2), Real Gas Calibration
					V0202 0005			Nitroous Oxide (N_2O)
					V0202 0006			Carbon Dioxide (CO_2)
					V0202 0007			Natural Gas (NG)
					V0202 0008			Argon (Ar)
					V0202 0009			Helium (He), Real Gas Calibration
					V0202 0010			Other Specified Gases (Specify Gas or Gas Mix)
						V0204 0001		Standard Accuracy Calibration ±(1.5% RD + 0.3% FS)
						V0204 0002		High Accuracy Calibration ±(1% RD + 0.3% FS)
							S0105 0003	Integrated display. The capacitive touch 2.0" IPS LCD with an ultra-wide view
							S0105 0003A	Split display. The capacitive touch 2.0" IPS LCD with an ultra-wide view

* Built-in 4G or Wi-SUN module, not compatible with explosion-proof function
* There are difference in regulations and standards between contuntries and regions. Please select according to the local Wi-SUN frequency band