YUA

Fast · Accurate · Managing

0.1 Nm/s

Low measurement limit
1:2500 Turndown ratio

01010

Full-digital Signal Processing
Eliminates zero point drift

Intelligent diagnosis prevent
the sensor from being
polluted and damaged



F211x - F212x Series

Thermal Mass Flow Meter

THERMAL MASS FLOW METER

Product Overview

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

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

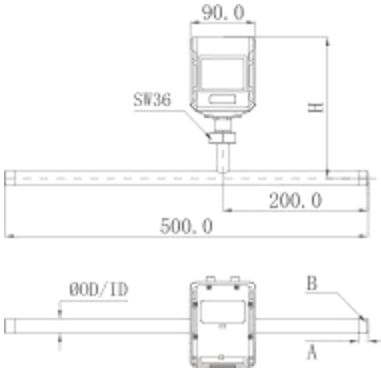
Smart Terminal
Mobile APP via Bluetooth to view data and do configuration remotely

30+ Points of Calibration
Overcome the nonlinear defects which occur in thermal measurement

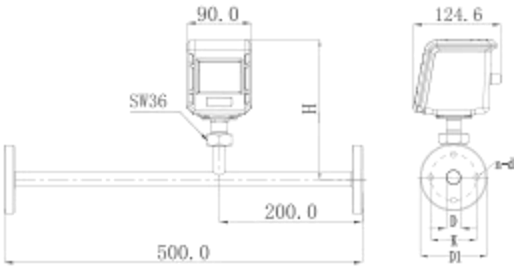
Installation under Pressure
Non-intrusive installation without downtime, almost zero pressure drop

- 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
- The fully isolated electrical structure can completely filter out field disturbance
- The capacitive touch 2.8" IPS LCD with an ultra-wide viewing angle
- Data logging function with max. 10,000,000 values
- 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: Suitable for pipes with diameters from DN20 to DN1000, and can be installed under pressure via a 1/2" ball valve.
- Pipe type F212x:
  Pipe size: DN15, DN20, DN32, DN40, DN50, DN65, DN80
  The process for connection: R-type thread, Flange EN1092-1, ANSI / B16.5

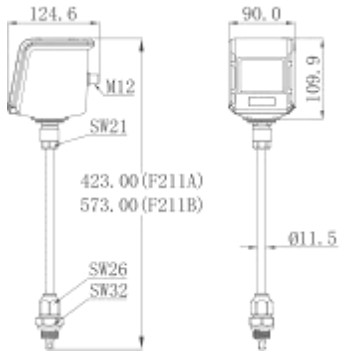
Product Dimensions



F212x Thread-type dimension schematic



F212x Flange-type dimension schematic



F211x dimension schematic

F212x 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"	177
20	3/4	≥14.5	R3/4"	176
25	1	≥16.8	R1"	175
32	1 1/4	≥19.1	R1 1/4"	177
40	1 1/2	≥19.1	R1 1/2"	177
50	2	≥23.4	R2"	177

F212x Detailed dimension of flange-type (PN16)

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	177	4	14
20	3/4	20	105	75	176	4	14
25	1	25	115	85	175	4	14
32	1 1/4	32	140	100	177	4	18
40	1 1/2	40	150	110	177	4	18
50	2	50	165	125	177	4	18

F212x Detailed dimension of flange-type (PN63)

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	105	75	177	4	14
20	3/4	20	130	90	176	4	14
25	1	25	140	100	175	4	18
32	1 1/4	32	155	110	177	4	18
40	1 1/2	40	170	125	177	4	22
50	2	50	180	135	177	4	22
65	2 1/2	65	185	145	177	8	18
80	3	80	200	160	177	8	18

Measuring Range

F211x Measuring Range

(Inch)	DN	ID (mm)	Min Flow (Nm^3/h)	Max Flow -Std (Nm^3/h)	Max Flow -High (Nm^3/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 Measuring Range

(Inch)	DN	ID (mm)	Min Flow (Nm^3/h)	Max Flow (Nm^3/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 & other non-condensing gases
Reference Conditions	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 (Choose one of three)	Bluetooth (Default) Wi-SUN (Option) IOT-4G (Option)
Connector	2 × 5pin M12, Female

Power

Power	18 … 30VDC 5W @ 24VDC

Display & Data log

Display	2.8" IPS LCD with capacitive touch
Data Log	max. 10,000,000 values

Operating Environment

Environment Temperature	-30 … +70 °C
Medium Temperature	-40 … 150 °C
Operating Pressure	F211x: 0 … 6.3 MPa(a) (>1.7 MPa.a High pressure jig required) F212x: 0 … 1.7 MPa(a) (4.0 / 6.3 MPa.a Option)

Other

Process Connection	G1/2" (ISO 228-1) (F211x 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									Thermal Mass Flow Meter, Insert type, 250 mm pole length (Suitable for pipe diameter DN20 ~ 250)
F211B									Thermal Mass Flow Meter, Insert type, 400 mm pole length (Suitable for pipe diameter DN20 ~ 600)
F211C									Thermal Mass Flow Meter, Insert type, 600 mm pole length (Suitable for pipe diameter DN20 ~ 1000)
	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 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
					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 0001	The capacitive touch 2.8" IPS LCD with an ultra-wide view + Data logging function
								S0105 0001A	Without LCD version

* For more pole length, please consult sales
* Portable protective case is available as an option. Please consult sales staff for details
* 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								Thermal Mass Flow Meter, Pipe type, Maximum pressure: 1.7 MPa(a)
F212B								Thermal Mass Flow Meter, Pipe type, Maximum pressure: 40 MPa(a)
F212C								Thermal Mass Flow Meter, Pipe type, Maximum 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 (GB/T-9119-2110), DN15, 1/2"
				FLG-20				Flange (GB/T-9119-2110), DN20, 3/4"
				FLG-25				Flange (GB/T-9119-2110), DN25, 1"
				FLG-32				Flange (GB/T-9119-2110), DN32, 1.25"
				FLG-40				Flange (GB/T-9119-2110), DN40, 1.5"
				FLG-50				Flange (GB/T-9119-2110), DN50, 2"
				FLG-65				Flange (GB/T-9119-2110), DN65, 2.5"
				FLG-80				Flange (GB/T-9119-2110), 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 0001	The capacitive touch 2.8" IPS LCD with an ultra-wide view + Data logging function
							S0105 0001A	Without LCD version

* There are difference in regulations and standards between contuntries and regions. Please select according to the local Wi-SUN frequency band