ACU20FC Differential Pressure Mass Flow Controller/Flowmeter

Introduction

ACCU(Beijing Accu Flow Technology Co., Ltd.) specializes in manufacturing gas/liquid mass flow meters and controllers. The instruments are designed according to the actual working conditions and needs of customers, and are widely used in various occasions such as industrial process control, gas and liquid analysis, and flow measurement. It plays an important role in scientific research and production in various fields such as semiconductor and integrated circuit industry, special materials discipline, chemical industry, petroleum industry, medicine, environmental protection, and vacuum.
ACCU insists on continuous innovation, keeping up with the times, developing new products, and obtaining multiple invention patents, which keeps us at an advanced level in core technology.



▲ACU20FC-LC Mass Flow Controller

Performance and Principle

ACU20FC is a high-precision series differential pressure flow controller/flow meter, which adopts the principle of differential pressure mass measurement without thermal drift and response lag. It can simultaneously display and output instantaneous flow rate, cumulative flow rate, pressure, temperature, etc. When control functions are required, electromagnetic proportional control valves and built-in PID adjustment functions can also be installed.

Unlike thermal mass flow meters, the ACU20FC series mass flow meters do not have an additional "specific heat capacity" error when using gas conversion coefficients. So, even if the measured gas is different from the calibration gas at the factory, it will not affect the measurement accuracy.

Compared with traditional differential pressure flow controllers, the ACU20FC series has more sensitive sensors and a large touchable display screen, greatly improving both accuracy and operation methods.

Applied to laboratories and industrial environments

The ACU20FC series high-precision differential pressure flow meter/controller has a measurement accuracy of ±0.5%, which is sufficient to meet the needs of most customers. It can be used for various experiments in laboratories and complex industrial environments. In order to adapt to complex industrial environments, we also have some models that support IP67 dust and waterproof rating, as well as IICT4 intrinsic safety explosion-proof. In addition to the standard analog input/output interface, it also supports the 485/232 interface, and the communication protocol is the standard modbus RTU protocol.

Applications

vacuum	coating	solar energy
semiconductor coal metallurgy	petroleum and petrochemical	
gas production and distribution environment protection		various analyzers

Features

- Accuracy can reach ± 0.5% F.S.
- Repeatability can reach ± 0.2% F.S.
- Fast response speed and adjustment speed
- Touchable display screen
- Directly measuring mass flow rate
- Simultaneously displaying instantaneous and cumulative flow rate, pressure, and temperature
- Integrated PID controller to regulate flow rate
- No preheating required, no response lag during measurement
- Differential pressure principle
- No thermal drift, negligible temperature and time drift
- Long term stability 0.1% F.S./year
- No heat capacity additional error, does notaffect accuracy

Specifications

		High accuracy mass flow controller	High accuracy mass flow meter
Technical specifications	Range	0~(2SCCM...3000SLM)	
	Measurement and control range	controller valve control range50:1	flow meter range ratio100:1
	Accuracy	±0.5%F.S（full scale)	
	Linearity	±0.25%F.S.	
	Repeatability	±0.2%F.S.	
	Stability	<±0.1%F.S.	
	Response time	<0.2s	<0.1s
	Temperature coefficient	±0.025%F.S./℃	
	Working temperature	10～50℃	
	Working pressure	working differential pressure：0.1~0.5Mpa	working pressure drop<0.01Mpa
	Max. operating pressure	1MPa	
	Leakage rate	$1X10^{-9}$ Pa m^3/S	
Mechanical parts	Base material	stainless steel	
	Connector	φ8、φ10、φ12，LOK，VCR，flange installation，etc	
	Sealing material	Vilton，NBR，FFKM，EPDM，Metal Seal，etc	
	Shell protection level	IP40	
	Installation position	horizontal installation	
Electrical properties	Monochrome LED display screen	simultaneously displaying flow, setting	
	Electrical connections	DB9 hole, RJ11	
	Display status	with display, without display	
	Digital output	Modbus protocol（RS232/485），ProfiBus protocol，EtherCAT protocol、Profinet protocol、FF protocol，etc	
	Analog output	0～5V、4-20mA、1-5V	
	Power supply	±15VDC，24VDC	

Model No.& Ranges

			
Model No.	ACU20FC-LC	ACU20FC-MC	ACU20FC-BC
Ranges	0~(2SCCM...30SLM)	0~(30SLM...300SLM)	0~(300SLM...3000SLM)
			
Model No.	ACU20FC-LM	ACU20FC-MM	ACU20FC-BM
Ranges	0~(2SCCM...30SLM)	0~(30SLM...300SLM)	0~(300SLM...3000SLM)

Model chart

ACU20F C L C M N 200L A1 B1 5 8 V C

Serial number

Range select

C	Differential Pressure
CR	DP Low Loss Valve

Display

N	Without display
X	With display

Input signals

A1	0~5VDC
A2	4~20mA
A3	1~5VDC

Communication

8	RS485
2	RS232

L	Low
M	Middle
B	Big
H	Huge

Ranges

002C	2 SCCM	L
030L	30 SLM	
050L	50 SLM	M
100L	300 SLM	
300L	300 SLM	
500L	500 SLM	B
1000L	1000 SLM	
3000L	3000 SLM	
4000L	4000 SLM	H
5000L	5000 SLM	
6000L	6000 SLM	

Output signals

B1	0~5VDC
B2	4~20mA
B3	1~5VDC

Sealing material

P	FFKM
V	Vilton
N	NBR
E	EPDM
Y	Others

Product type

C	Mass flow controller
M	Mass flow meter

Power

5	±15VDC
4	24VDC

Connectors

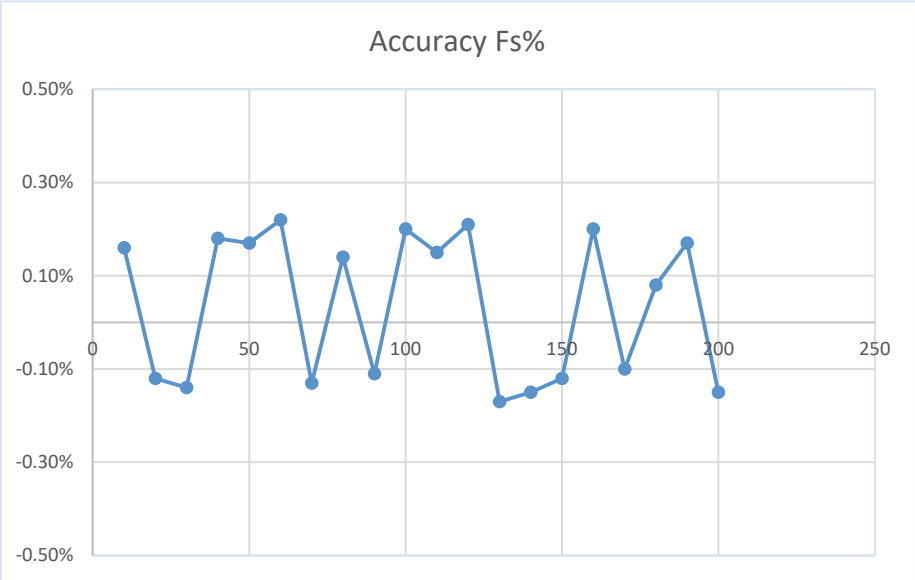
C	φ8
D	φ10
E	φ12
Y	others, contact with manufacturer

Pressurization

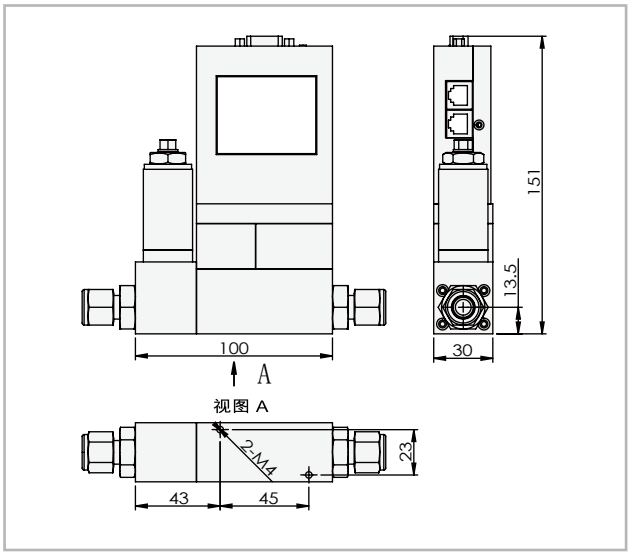
M	1MPa

Calibration test

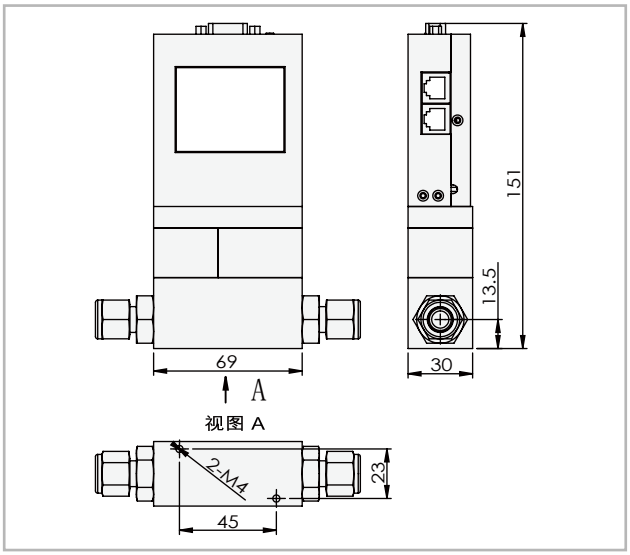
Qstd	Qv	Fs%
10	9.98	0.16%
20	20.02	-0.12%
30	30.04	-0.14%
40	39.93	0.18%
50	49.92	0.17%
60	59.87	0.22%
70	70.09	-0.13%
80	79.89	0.14%
90	90.10	-0.11%
100	99.80	0.20%
110	109.84	0.15%
120	119.75	0.21%
130	130.22	-0.17%
140	140.21	-0.15%
150	150.18	-0.12%
160	159.68	0.20%
170	170.17	-0.10%
180	179.86	0.08%
190	189.68	0.17%
200	200.30	-0.15%



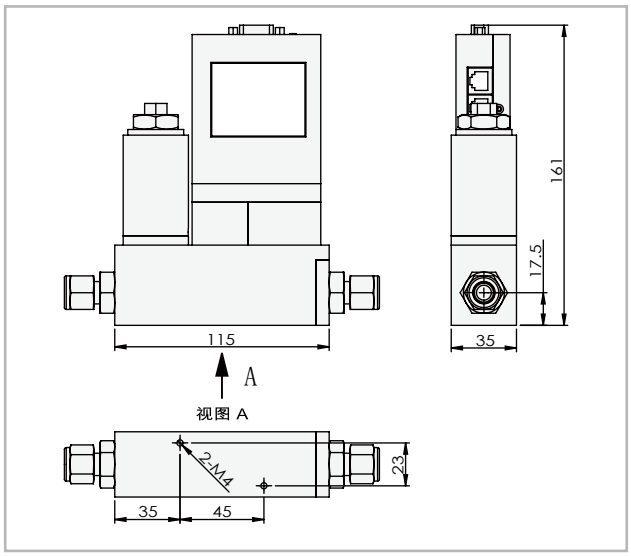
Dimensions (mm)



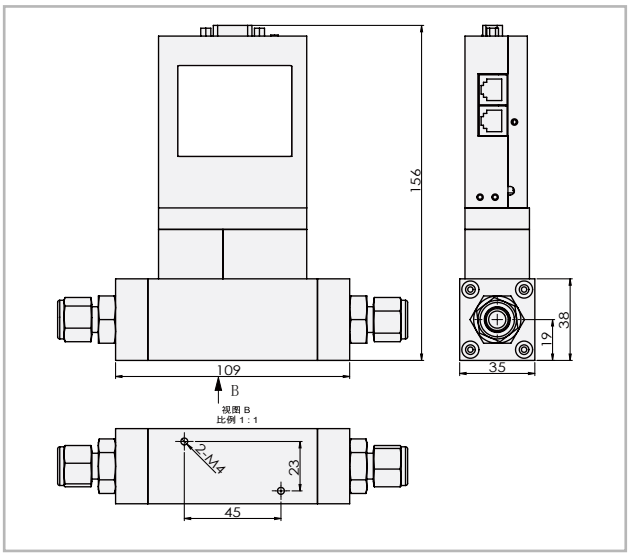
▲ACU20FC-LC Differential pressure mass flow controller (low range)



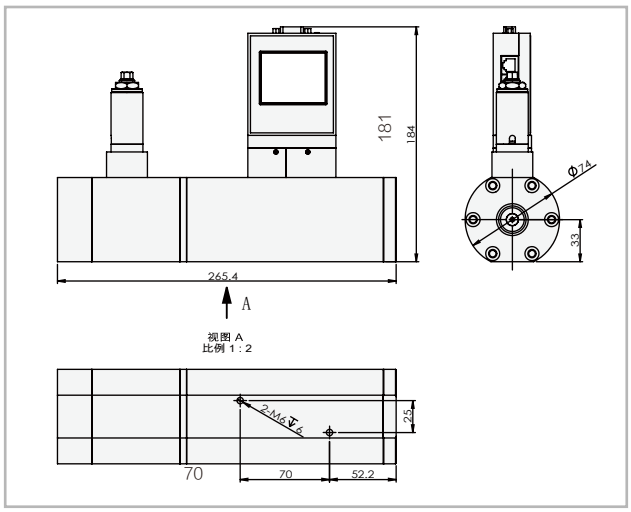
▲ACU20FC-LM Differential pressure mass flow meter (low range)



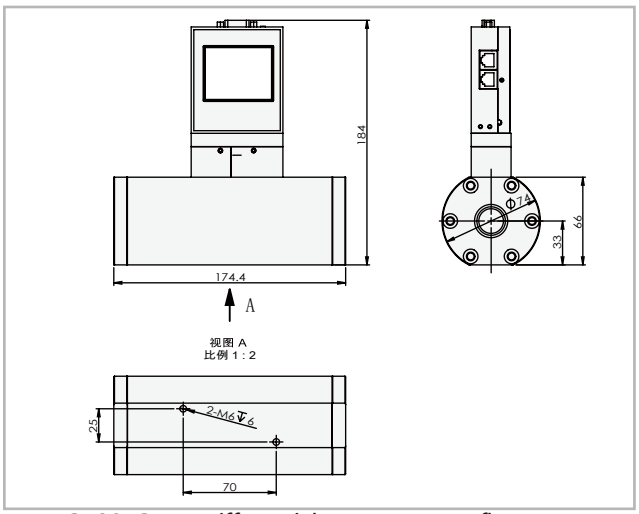
▲ACU20FC-MC Differential pressure mass flow controller (middle range)



▲ACU20FC-MM MMDifferential pressure mass flow meter (middle range)



▲ACU20FC-BC Differential pressure mass flow controller (big range)



▲ACU20FC-BM Differential pressure mass flow meter (big range)