

Flow measurement system FS-2100 series introduction

■ Overview

The fuel flow meter FS-213 consists of a flow rate detector and a fuel filter.

I am using a Max Machinery positive displacement piston flow meter MODEL P213/295F.

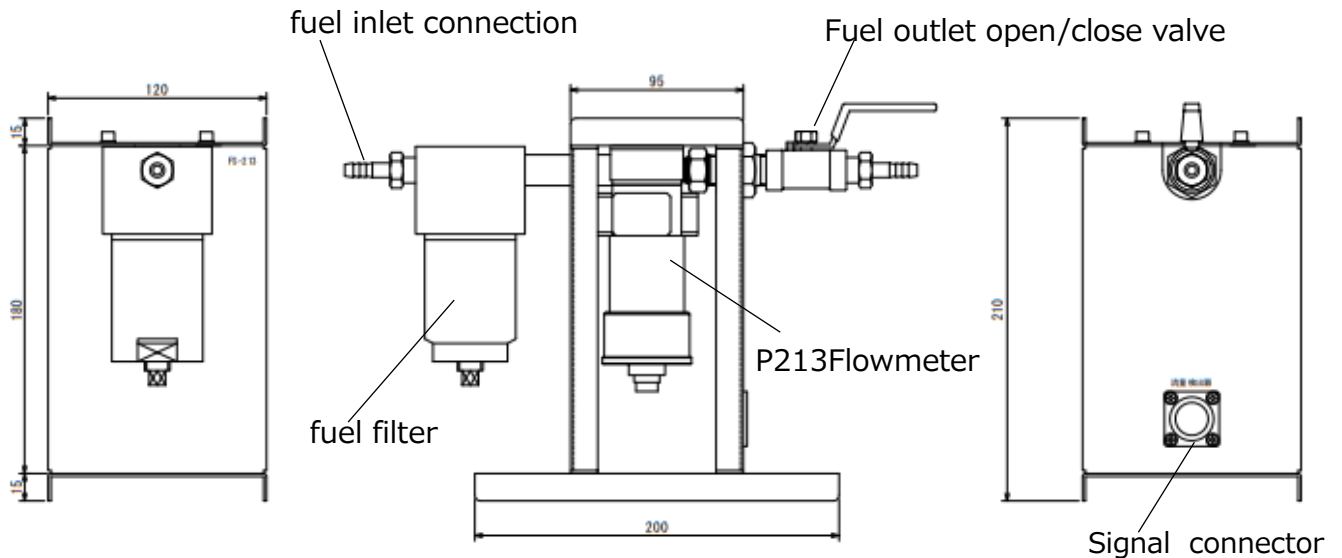
■ Flow meter P210/P000 series model list

Flow measurement range	standard	Explosion proof	high pressure
0.03~108L/h (0.5~1800cc/min)	P213/295F	P213/EX295FS	P002F
0.3~600L/h (0.005~10L/min)	P214/295F	P214/EX295FS	P214-591/295F
3~2100L/h (0.05~35L/min)	P215/295F	P215/EX295FS	
0.0003~12L/h (0.005~200cc/min)	P001F		

■ Flow meter FS-213 standard specifications (Built-in flow meter P213/295F)

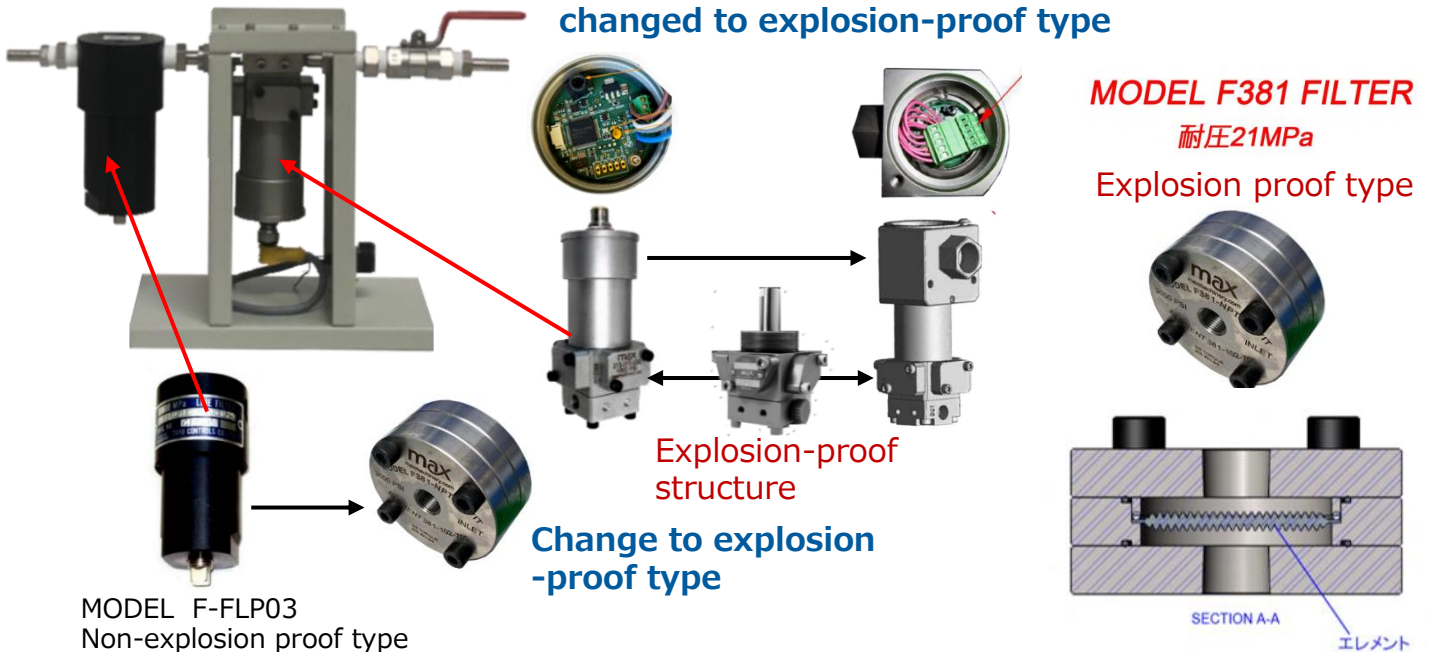
Item	specification
Flow detector	MODEL P213 flow detection、 Explosion-proof structure
emissions	0.87cc/Rev
flow range	0.5~1800cc/min (0.03~108L/h)
accuracy	Reading value $\pm 0.2\%$ or less Viscosity 3.0cps, calibration liquid kerosene
Reproducibility	$\pm 0.1\%$ or less
Minimum resolution	0.001mL
Maximum working pressure	21Mpa
Liquid & Temperature	All organic liquids except water/aqueous solutions -40~90°C
Liquid viscosity used	0.5~1000cps
pressure loss	fluid viscosity 3CPS 0.68kpa=100cc/min 1.37kpa=300cc/min 3.5KPa=500cc/min=30 L/h
input/output connections	stainless steel hose nipple Outer diameter 9mm
structural parts	Body: SUS303, ベアリング : SUS440C、 Seal Material: Viton Metering piston, crankshaft: SUS303
Mass/external dimensions	約 3.8kg W120×H210×D200 (mm) including fuel filter
mounting fuel filter	MODEL F-FLP03-10SW stainless steel or MODEL F381 Element stainless steel 10 microns
Transmitter part	MODEL 295F Frequency output specification CPU arithmetic processing
Configuration	Hall element sensor + CPU board Non-explosion proof
Explosion proof (option)	MODEL EX295F
Power supply	Supply voltage: 5-26VDC Supply current: 25-50mA
Flow detection method	Rotation speed of magnet due to magnetic coupling
Liquid temperature used	-40 to 80°C when ambient temperature is 20°C
output update	1ms
pulse output	Single-phase output 1000 pulses/cc or A-phase/B-phase selection
Read signal correction	Signal compensates for inherent flow variation characteristics.
anti-dither buffer	It may occur at low flow rate with micro-vibration and liquid sound. prevent unintentional output errors. (Prevention of backflow output during 1/2 rotation)
signal filtering	Output signal 0.6ms to 250ms arbitrarily set (9 point setting)
Inspection/accuracy calibration	Inspection and general calibration services are provided by the Quality Control Department.

External view of fuel flow meter FS-213(standard type)



External dimensions W120×H210×D200 (mm)

Fuel flow meter FS-213 → **Fuel flow meter FS-213EX**
changed to explosion-proof type



MODEL F-FLP03
Non-explosion proof type

Fuel filter specification

Item	specification	
model	F-FLP03-10SW	F381
Structural part material	Body: Stainless steel Non-explosion proof	Body: SUS303 Seal (O-ring) Viton Standard Explosion proof
Connection diameter	3/8PT	3/8NPT
element	10 micron stainless steel	Stainless steel woven mesh 10 microns
Maximum working pressure	4Mpa	21Mpa
Liquid used	fuel oil	all organic liquids
Maximum flow	15L/min	70L/min(at 3CP)
maximum operating temperature	90℃	-20 to 150℃ (standard)
Mass/external dimensions	φ 60×H98mm	1.35kgW63.5×H41.3×D63.5

■ Overview

The flow indicator MODEL FC-100BM is a positive displacement piston flowmeter manufactured by Max Machinery. In combination, the instantaneous flow rate and integrated flow rate (switching type) are measured and displayed.

Achieves high-speed output that responds to changes in transient flow rate,

Analog output: Update time 0.1ms to 9999.9ms

Moving average 1 to 99 times

USB/CAN output 1ms update

■ Flow indicator FC-100BM specifications

New

Item	specification	
term-conforming flow meter	MODEL P213/295F and P210/P000 series, Single-phase pulse output 1000 pulses/cc or A-phase/B-phase (500 pulses) selection	
Input signal range	0.0006Hz~500KHz	
flow indicator	6-digit, red 7-segment LED character height 14.2mm	
Flow measurement display	Measurement method	Periodic calculation method
	unit of measure	mL/s, mL/min, L/h Selection
	decimal point position	No fractional part, 1 digit, 2 digits, 3 digits, 4 digits arbitrary setting
	update time	0.1 to 9.9 seconds Arbitrary setting
	moving average	1 to 9 times Arbitrary setting
	Over display	OL display
Flow rate analog output	output signal	0~100L/h=0~10V Arbitrary setting Output resolution 16bit
	update time	0.1ms~9999.9ms Arbitrary setting
	moving average	1~99 times Arbitrary setting
Accumulated flow measurement	Manual measurement method	Integrated flow rate from start to stop (when switching measurement mode)
Pulse input/output signal	pulse input	Display meter calibration frequency input: 0 to 27.778kHz
	pulse output	Pulse output signal when calibrating flowmeter P213/295F 1000 pulses/cc
Communication output	digital communication	USB communication
Measurement condition setting	Measurement program setting by setting button on the front panel and PC screen.	
usage environment	0~50°C humidity 30~80%RH ((no condensation))	
Power supply used	AC100V ±10% 50/60Hz Power consumption about 20VA	
Mass/external dimensions	1.3kg W250×H99×D200	
accessories	Power cable, analog output signal cable, USB cable, Flow meter connection cable, instruction manual,	

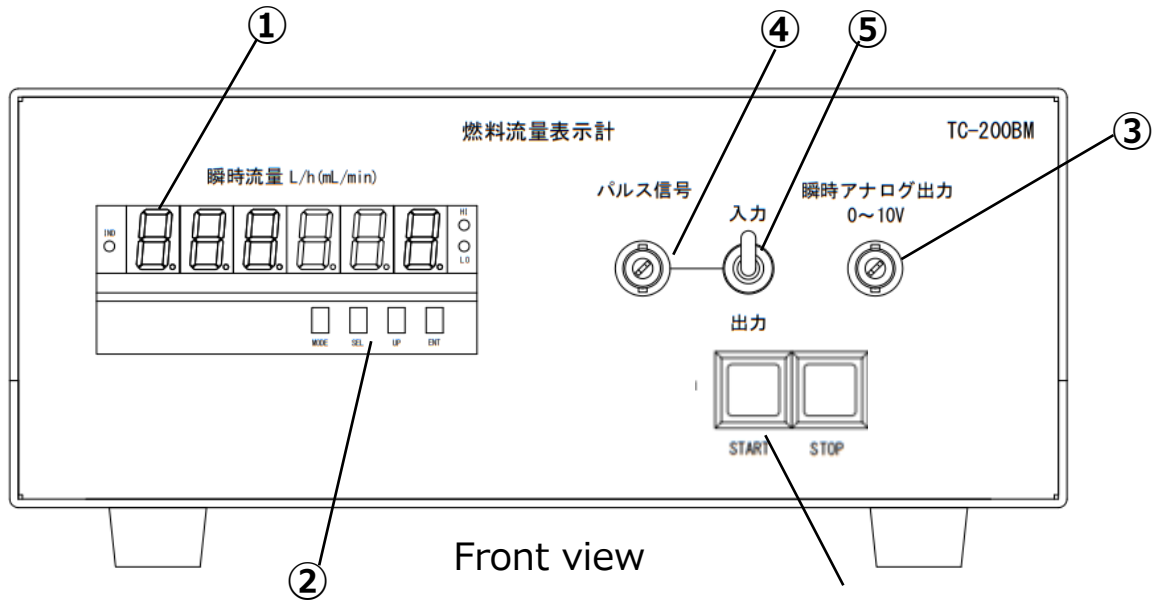
■ Configuration example

Flow indicator FC-200/100 series



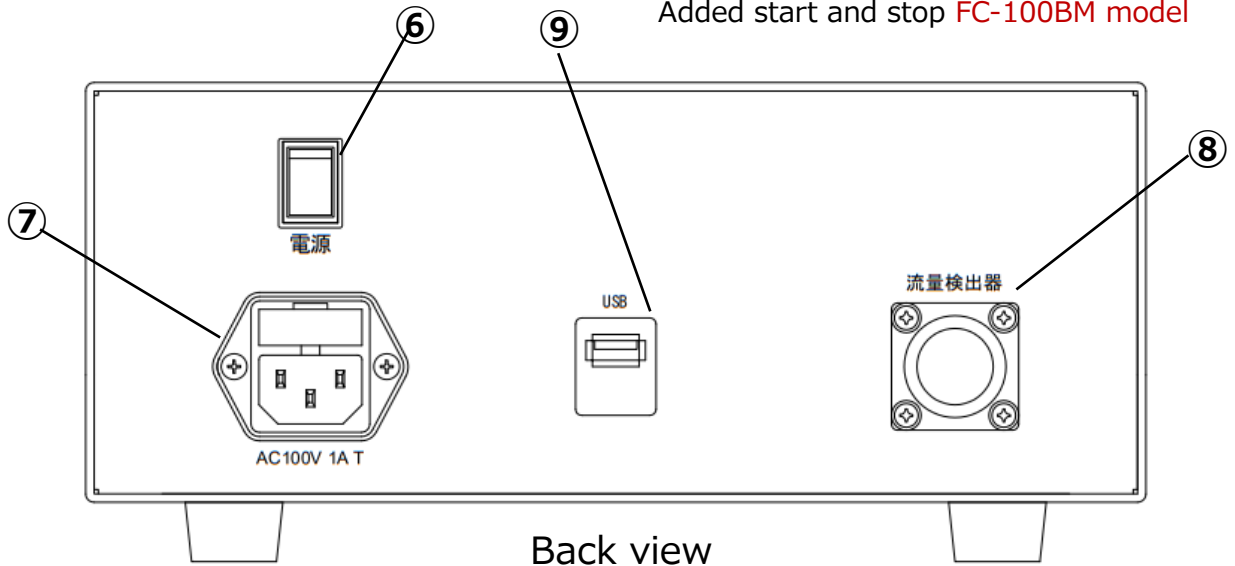
External view of instantaneous flowmeter FC-100BM

New



Front view

Integrated flow measurement on TC-200BM
 Added start and stop FC-100BM model



Back view

External dimensions W250×H99×D200(mm)

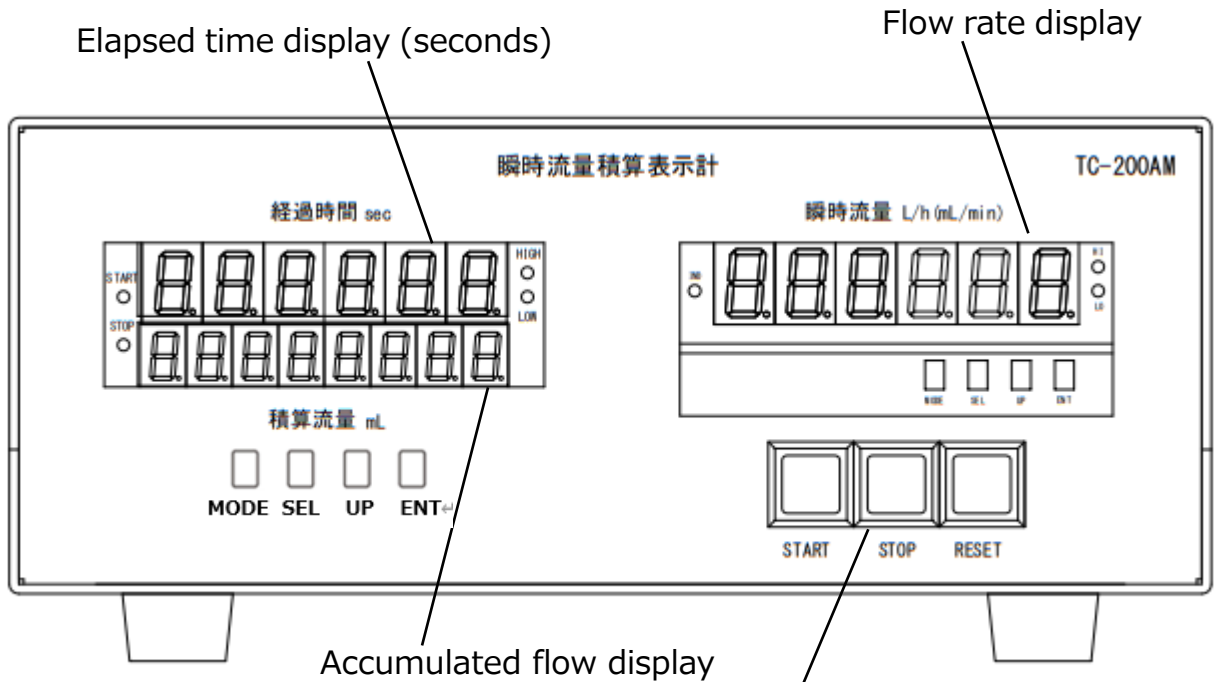
	Name	content
1	flow indicator	Character height 14.2mm red Display unit 6 digits
2	Measurement condition setting section	Flow rate measurement condition setting button Measurement mode, digit selection, numerical value setting, enter
3	Flow rate analog output	0~100L/h=0~10V
4	Pulse input/output signal	Single-phase 1000 pulses/cc
5	Pulse input/output selector switch	Frequency input during calibration 0~2.7778kHz(0~10L/h)
6	power switch	AC100V±10% Single-phase
7	Power input	AC100V±10% 1A Built-in fuse
8	flow meter connector	Electrical signal connector for flow meter FS-213
9	Communication connector	USB connector

A flow rate indicator that fulfills detailed requests

FC-100/200 シリーズ **New**

In addition to the Model TC series, more than 7 models of the FC series are available.

■ Flow rate integration indicator TC-200AM



TC-200AM functions added → FC-200AM
Scheduled to be released in January 2023

Integrated flow measurement operation switch

	Name	Contents
1	Instantaneous flow rate indicator	Character height 14.2 mm Red LED 6 digits Instantaneous.
2	Accumulated flow indicator	Character height 10.4 mm LED red 8 digits
3	Elapsed time display	Character height 14.2 LED red 6 digits
4	Integrated flow measurement operation switch	START switch STOP switch RESET switch

