FP-S series

Pressure Loss Compensated Flow Detector

ONO SOKKI

High accuracy with minimized pressure loss

FP-2130S

FP-2140S

Pressure Loss Compensated Flow Detector

Minimizing pressure loss due to flow detector installation

The Volumetric Flow Detector FP-2130S, FP-2140S are volumetric flow detectors, used in combination with the Digital Flow Meter FM/DF series, for precision measurement of fuel flow such as gasoline, light oil and kerosene.

When a flow detector is installed in a pipe, the detector itself can cause pressure loss. Because of this, it may change the fuel supply condition to the engine, potentially affecting engine combustion. The pressure loss compensated flow detector reduces the pressure loss inherent to the detector itself and minimizes its impact on the operating environment.
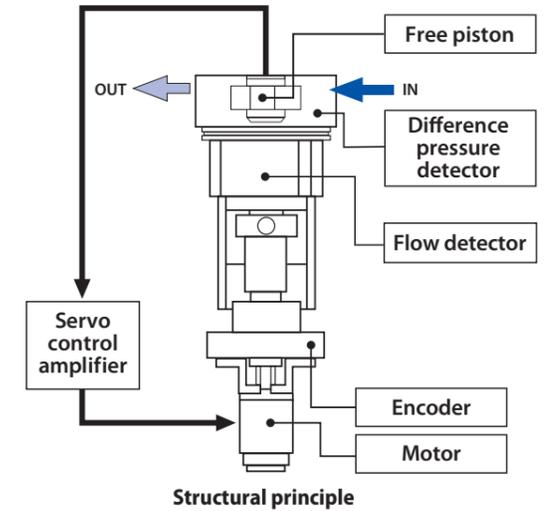
FP-2130S

FP-2140S

Low pressure loss compensation (10 Pa or less)

The pressure loss compensation function continuously controls via a servo mechanism, so that the differential pressure between the inlet and outlet becomes zero. It keeps the pressure loss at 10 Pa or less and compensates for the impact of pressure loss caused by installing a flow detector. These detectors are suitable for those who want to evaluate engine performance by measuring the minute flow rate of a small engine and making the fuel supply pressure as close as possible to the actual vehicle state.

Structural principle

Wide measurement range

FP-2130S Measurement range: 0.06 to 60 L/h
FP-2140S Measurement range: 0.05 to 200 L/h

From motorcycle idling to the high-load range of alcohol-fueled engines, flow measurement can be performed by a single detector.
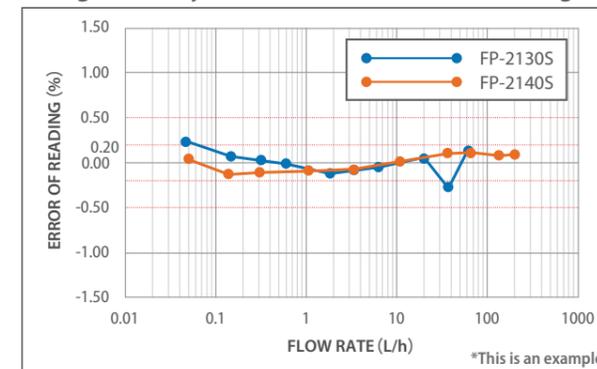
FP-2140S

High accuracy: ±0.2 % of reading over the entire range 0.05 to 200 L/h.h
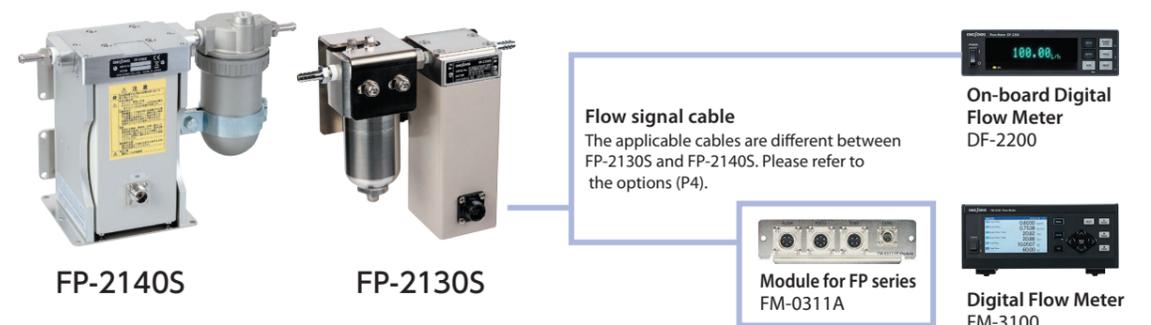
FP-2130S

High resolution (option)
More compact, lightweight than FP-2140S

High accuracy over the entire measurement range

System configurations

FP-2140S   FP-2130S

Flow signal cable
The applicable cables are different between FP-2130S and FP-2140S. Please refer to the options (P4).

On-board Digital Flow Meter DF-2200

Module for FP series FM-0311A

Digital Flow Meter FM-3100

*Please contact us if you would like to add temperature sensors, pressure sensors, and density meters. Please note that density meters cause large pressure loss.

Specifications

		Pressure Loss Compensated Flow Detector		Fuel Density Meter
Model		FP-2130S	FP-2140S	FD-5110
Measurement items	Flow rate	○		—
	Temperature	Option (EH-0081 Temperature sensor)		○
	Pressure	Option (EH-0082 Pressure sensor)		—
	Density	—		○
Detection method		Volumetric type (Piston type)		Vibration type
Usable liquid	Standard specifications	Gasoline, light oil, kerosene, methanol, ethanol or mixture of alcohol and gasoline[*1]	Gasoline, light oil, kerosene [*1]	Gasoline, light oil, kerosene, general petroleum-based hydraulic oil, methanol, ethanol or mixture of alcohol and gasoline
	"Alcohol applicable (option)"	—	Gasoline, light oil, kerosene, methanol, ethanol or mixture of alcohol and gasoline(*1)	—
Measurement range	Flow rate	0.06 to 60 L/h	0.05 to 200 L/h	—
	Temperature	Option (0 to +100 ℃)		+10 to +65 ℃
	Pressure	Option (0 to 1000 kPa)		—
	Density	—		0.5000 to 2.0000 g/ cm^3
Accuracy	Flow rate	±0.5 % of reading (over the entire range 0.06 to 60 L/h)	±0.2 % of reading (over the entire range 0.05 to 200 L/h)	—
	Temperature	Option (PT100 Class A)		±0.1 ℃
	Pressure	Option (± 0. 25 %FS)		—
	Density	—		±0.0010 g/ cm^3
Pressure loss		0.01 kPa or less (excluding pressure loss at filter section)		18 kPa or less at 60 L/h (gasoline)
Minimum resolution		0.01 mL (0.001 mL (option))	0.01 mL	0.0001 g/ cm^3
Maximum operating pressure		980 kPa		1 MPa
Operating temperature		0 to +60 ℃		+10 to +65 ℃
Filter		EH-1060 provided as standard	EH-1050 provided as standard	—
Weight		Approx. 4.5 kg (including filter)	Approx. 9 kg (including filter)	Approx. 1.5 kg
Accessoriesc		Instruction manual, mounting bracket	Instruction manual, mounting bracket	Instruction manual
Signal cable		Please refer to the options below.		Please refer to the options below.
Applicable detectors		Digital Flow Meter DF-2200 FM-3100 / FM-0311A		FM-3100 / FM-0311A+FM-0312

*1: The instantaneous flow rate may fluctuate when the outlet is open to the atmosphere.

Options

Model name	Product name	Remarks
FP-0011	Flow signal cable, 5 m	FP-2130S: Connection cable for FM/DF series
FP-0012	Flow signal cable, 10 m	
FP-0014	Flow signal cable, 20 m	
FP-0015	Flow signal cable, 5 m	FP-2140S: Connection cable for FM/DF series
FP-0016	Flow signal cable, 10 m	
FP-0017	Flow signal cable, 20 m	
FP-0025	Temperature signal cable, 5 m	Connection cable for FM/DF series
FP-0026	Temperature signal cable, 10 m	
FP-0027	Temperature signal cable, 20 m	
FP-0035	Pressure signal cable, 5 m	Connection cable for FM/DF series
FP-0036	Pressure signal cable, 10 m	
FP-0037	Pressure signal cable, 20 m	
FD-0011	Density signal cable, 5 m	Connection cable for FM-3100
FD-0012	Density signal cable, 10 m	
FD-0013	Density signal cable, 20 m	

Model name	Product name	Remarks
—	FP-2140S Modification cost for alcohol applicable	Usable liquid: refer to the specifications
MF-015	Automatic Air Purging Tank	Tank capacity：approx. 0.7 L
EH-1050	Filter for volumetric flow detector	For FP-2140S/3140/3142, 980 kPa withstand pressure, element provided (paper, 5 μm)
EH-1060	Filter for volumetric flow detector	For FP-2130S, 980 kPa withstand pressure, element provided (sintered metal, 10 μm), alcohol applicable
EH-107A	Filter for volumetric flow detector	For FP-2140S/3140/3142 and alcohol applicable, 980 kPa withstand pressure, element provided (stainless steel wire mesh, 5 μm)
EH-015	Filter element for EH-1050	For EH-1050, 5μm (paper), one set for 5 pieces
—	Filter element for EH-1060	Sintered metal 10 μm, 1 pc
—	Filter element for EH-107A	Stainless steel wire mesh 5 μm, 1 pc
EH-0081	Temperature sensor	Refer to the above specifications.
EH-0082	Pressure sensor	Refer to the above specifications.
FD-0711	Mounting bracket for FD-5110	For wall-mounting