

Volumetric Flow Detector

with pressure loss compensation function

FP-2140S



ONOSOKKI

FP-2140S

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Overview

The FP-2140S provides a wide range of flow measurement from 0.05 to 200 L/h and its available for measuring from a very low flow of HEV engine to a high flow in a high loading area.

- Pressure loss compensation type that drives the flow detector with a motor so that the free piston inserted into the detector's bypass tube is located at the neutral position.(zero difference of pressure)
- Control is optimized with PID and feed forward, and reading value accuracy of $\pm 0.2\%$ is achieved in all measurement range.

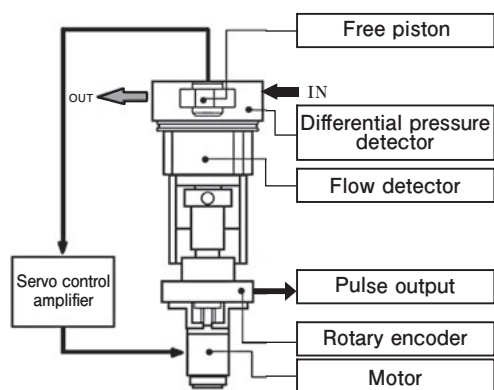
Feature

- High resolution $\rightarrow 0.01 \text{ mL/P}$
- Low pressure loss \rightarrow Detection sensitivity of differential pressure 10 Pa or less
- Ultra wide range $\rightarrow 0.05$ to 200L/h

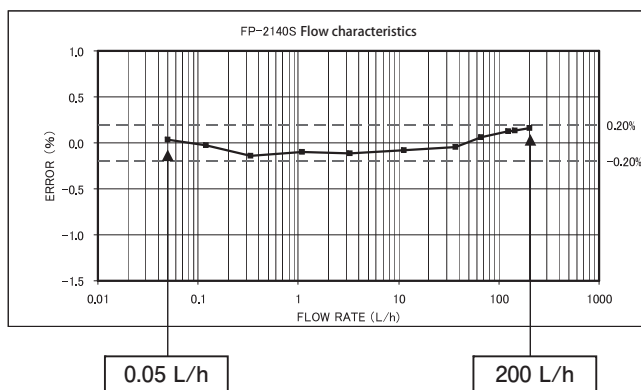
Advantages to Customers

- Highly accurate data can be obtained in short period of time.
- No pressure device is required for the detector.
- One unit covers the measurement flow area from 0.05 to 200 L/h (FP-213S + FP-2140H).

Structural principle schematic



Achieved high accuracy of $\pm 0.2\%$ in all measurement range



Applicable flow meter, sensor and cable

* The flow meter of the FP-2140S: FM-2500A + DF-0400A only.



Flow signal cable (for FP-2140S)	FP-0015 (5 m) FP-0016 (10 m) FP-0017 (20 m)
Temperature signal cable	FP-0025 (5 m) FP-0026 (10 m) FP-0027 (20 m)
Pressure signal cable	FP-0035 (5 m) FP-0036 (10 m) FP-0037 (20 m)

FM-2500A+DF-0400A



Comparison table with previous models

		FP-213S	FP-213	FP-2140H	FP-2240H	FP-2140S
Measurement items	Flow	○	○	○	○	○
	Temperature	option	option	-	○	option
	Pressure	option	option	-	○	option
Fluids Available	Gasoline	○	○	○	○	○
	Light oil	○	○	○	○	○
	Kerosene	○	○	○	○	○
	General petroleum-based hydraulic oil	*1	○	○	○	*1
Alcoholic fuel		option				
Flow measurement range (L/h)		0.06 to 60		0.3 to 120 (*max. 300)		0.05 to 200
Measurement accuracy(% RD)		± 0.5 *FP-213: $\pm 0.0009 \text{ L/h}$ or less (0.06 to 0.18 L/h)		± 0.2		
Pressure loss(kPa)		0.01 or less (excluding filter)	8 or less(when gasoline 40 L/h)	2 or less (when gasoline 60 L/h)		0.01 or less (excluding filter)
Minimum resolution(mL/P)		0.01		0.1		0.01

* In the case of high viscosity fluid, pressure loss compensation may become insufficient in high flow area.

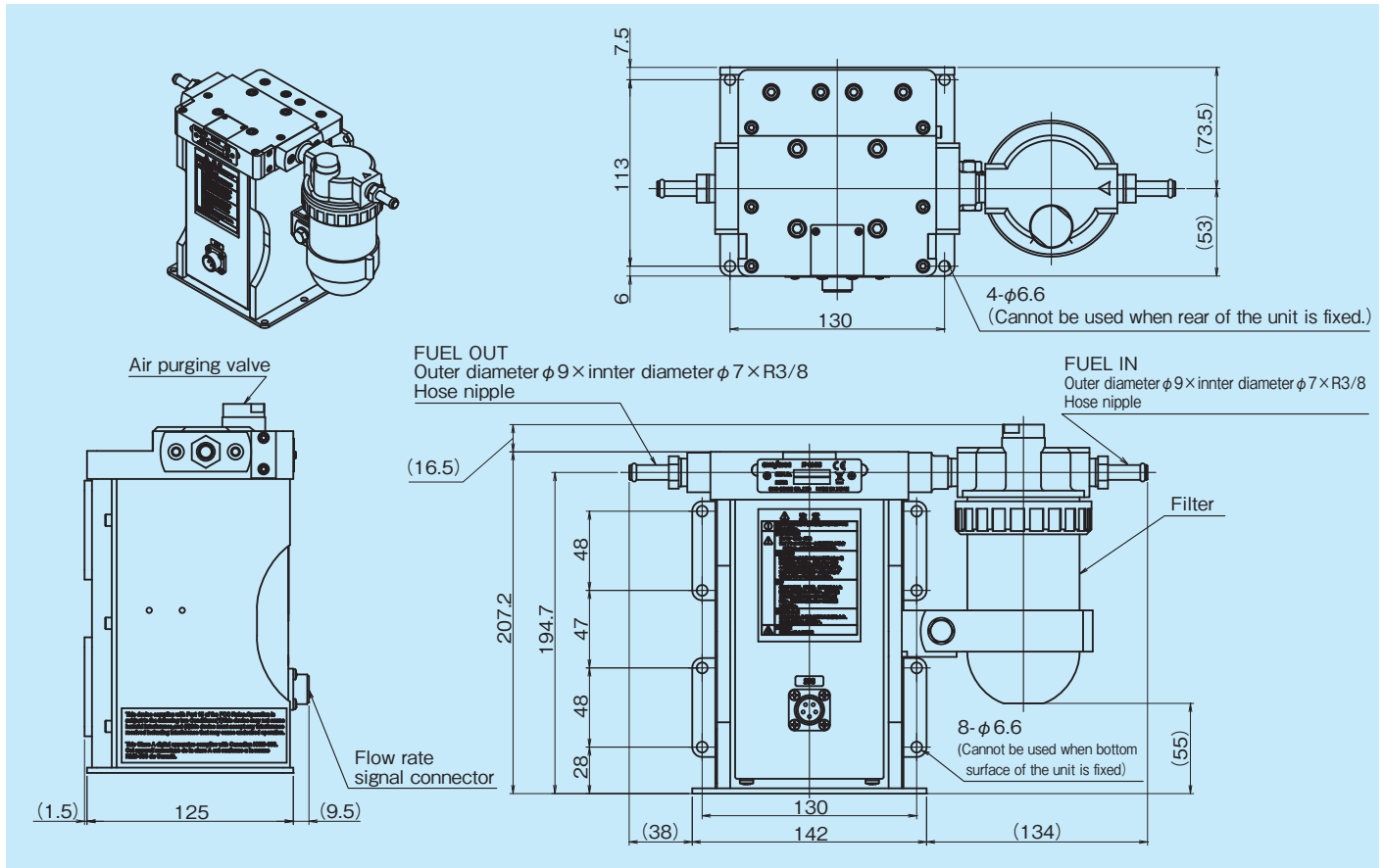
■ Specification of the FP-2140S

Measurement items	Flow (temperature, pressure: option)
Detection type	Volumetric (piston)
Fluids available	<ul style="list-style-type: none"> •Standard specification: Gasoline, light oil, kerosene* •Alcohol-enabled specification (option): Mixture of gasoline and methanol, ethanol (alcohol) <p>*The unit may become unusable due to filter clogging by extraction of wax component or unstable operation of the detecting unit when the liquid temperature is near 0 degrees.</p>
Measurement range	0.05 to 200 L/h
Measurement accuracy	±0.2 % or less of readings
Pressure loss	Detection accuracy of differential pressure: 10 Pa or less (excluding pressure loss at filter)
Line filter (accessories)	Filtering capability : 5 μm(model name: EH-1050) Replaceable filter element: 5 μm(model name: EH-015)
Applicable instrument	FM-2500A + DF-0400A
Output signals	<ul style="list-style-type: none"> •Cables: FP-0015 (5 m), FP-0016 (10 m), FP-0017 (20 m) •Connector: TC1108-21B10-5M-1 (detector side) / TC1108-12B10-5F8.3 (cable side)
Inlet/outlet joints	Liquid inlet: R3/8, Hose joint with outer diameter 9mm Liquid outlet : R3/8, Hose joint with outer diameter 9mm
General specification	<ul style="list-style-type: none"> •Maximum operating pressure range: 980kPa •Operating temperature range: 0 to 50°C (ambient temperature), 0 to 60 °C (liquid temperature, no freezing) •Operating humidity range: 10 to 90 % RH (with no condensation) •Input power voltage: Supplied from measurement module of FM-2500A (DF-0400A) "FLOW"(DC12V). *when an exclusive cable used. •Weight: approx. 9 kg (including line filter) •Accessories: Line filter (integral structure with detector), instruction manual
CE marking	EN 61326-1:2006 Class A Group / EN61010-1:2010

■ Product List

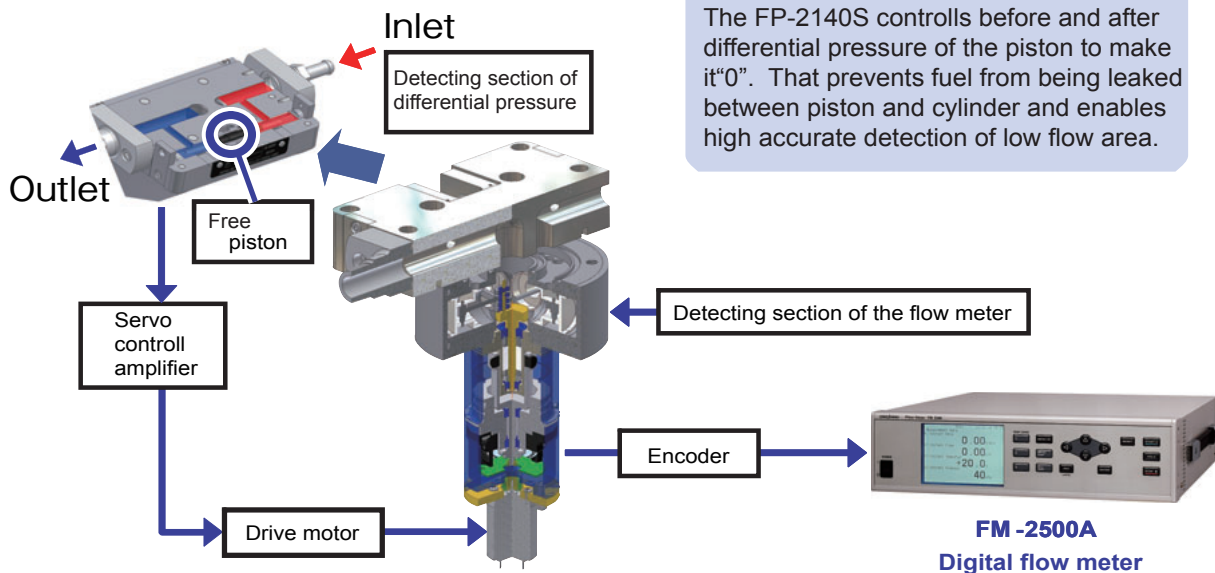
Product name	Model name	Specification
Flow detector	FP-2140S	0.05 to 200 l/h
Digital flow meter	FM-2500A	Display unit
Measurement module	DF-0400A	For FP series detector
GPIB board	FM-0263	For FM-2500A/FM-1500
DI / DO board	FM-0361	For FM-2500A
Remote box	FM-0200	For FM-2500A/FM-1500
Flow signal cable	FP-0015	5 m
	FP-0016	10 m
	FP-0017	20 m
Temperature signal cable	FP-0025	5 m
	FP-0026	10 m
	FP-0027	20 m
Pressure signal cable	FP-0035	5 m
	FP-0036	10 m
	FP-0037	20 m

Outer Dimensions



Application

Ultra wide range available from very low to high-load area with high resolution!



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*Outer appearance and specifications are subject to change without prior notice.
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