On-Board Volumetric Flow Detector

FP-4135

The FP-4135 On-Board Volumetric Flow Detector is the high-precision positive displacement flow detector to measure the fuel flow rate of liquids such as gasoline, light oil and kerosene combined with the Ono Sokki DF-2200 On-Board Flow Meter or the FM series Digital Flow meter.

Because the flow rate range is as wide as 0.1 to 200 L/h (measurement range ratio 2000:0), it can measure from very low flow rate in an idling state to large amount of flow rate in a high-load state when a fuel with a low heating value such as alcohol is used.

Also, since the flow detecting part is compact and its operating temperature range is -30 to +100°C, it can be installed inside an engine to measure the actual driving fuel efficiency.

Features

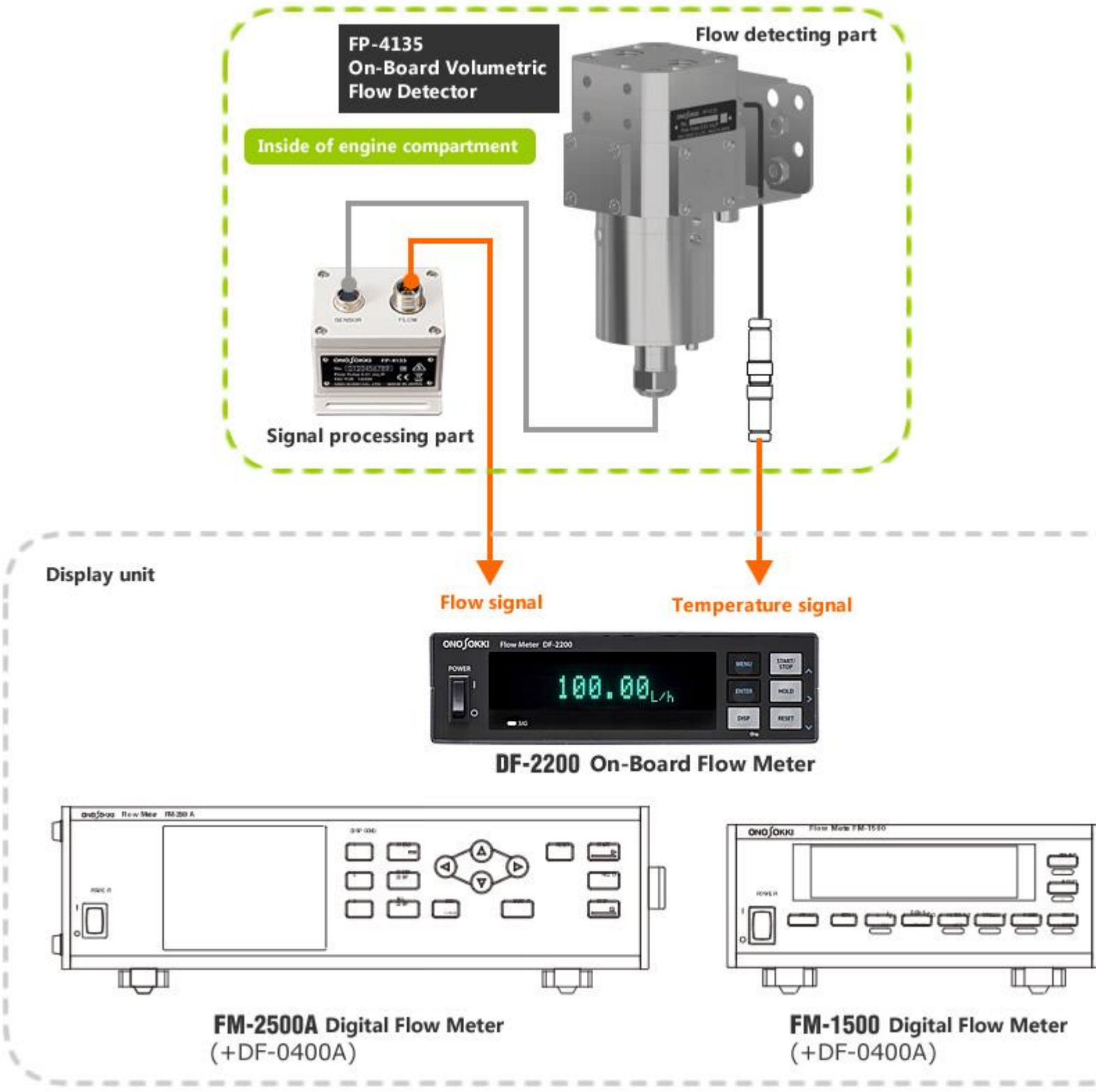
- **High precision**
  Measurement range : 0.1 to 200 L/h
  Accuracy : ±0.2 %
  Resolution : 0.01 mL

- **Wide temperature range**
  Designed to support temperature variation in an engine room, and environmental test
  Wide temperature range from -30 to 100 ℃

- **Compact body**
  Built-in temperature sensor which is required for fuel consumption measurement and downsized filter enable 70% reduction in volume. (Compared to main unit of the FP-2140H of Ono Sokki, excluding signal processing part.)

- **Supports wide variety of fuels**
  It can measure a variety of fuels including gasoline, alcohol, and light oil etc. as standard.

System Configuration



Specification

	FP-4135 On-Board Volumetric Flow Detector
Measurement item	Flow / temperature
Detection method	Flow：Positive displacement （piston method） Temperature： Resistance temperature detector （Pt100 Ω）
Measurable liquid	Gasoline, light oil, kerosene, class-A heavy oil, engine oil, petroleum-based general hydraulic oil, methanol, ethanol, mixture of alcohol and gasoline, and brake oil Please note that this equipment might not be used in the depositing condition.
Material for contacting liquid part **(flow detecting part)**	Main unit/side board/ con rod/ crank shaft/ pin/ upper board：SUS303 Bearing case：SUS316 Piston ：SUS303（hard chrome plating） Bearing/crankpin：SUS440C Magnet：neodymium magnet （Ni-plated） O-ring：Special fluororubber Filter：SUS304
Material for contacting liquid part **(temperature detecting part)**	SUS316
Measurement range	Flow rate measurement range：0.1 to 200 L/h Temperature：-30 to 100 ℃
Measurement accuracy	Flow rate：within ± 0.2 % of reading （measurement condition：20℃, 50%RH, Cleansol HS） Temperature：Class A
Pressure loss	4 kPa or less/at 60 L/h（gasoline）
Minimum resolution	0.01 mL
Filter （built-in a detector）※	Filtering capacity：33 μm（inlet side）, 770 μm（outlet side）
Applicable display unit	DF-2200 On-Board Flow Meter FM-2500A Digital flow meter ＋ DF-0400A FP series measurement module for detector FM-1500 Digital flow meter ＋ DF-0400A FP series measurement module for detector
Output signal （flow rate）	Cable：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）
Output signal（temperature）		Cable：FP-0025（5 m）/FP-0026（10 m）/FP-0027（20 m） Connector：R03-PB3F（cable side） R03-JB3M（sensor side）
Inlet/Outlet port		Rc1/4
General specification	**Operating maximum pressure**	8 MPa
	Operating temperature range	Flow rate detecting part：-30 to 100 ℃（environment temperature, liquid temperature, with no condensation） Signal processing part：-30 to 70 ℃（environment temperature）
	Operating humidity range	5 to 80 %RH（with no condensation）
	Storage temperature range	Flow rate detecting part：-40 to 110 ℃（environment temperature, liquid temperature, with no condensation） Signal processing part：-40 to 80 ℃（environment temperature）
	Vibration resistance （conducted）	Acceleration rms value：27.3 m/s^2 10 to 1000 Hz random vibration 1 hour for each direction of each 3 axis
	Shock resistance （not-conducted）	Acceleration peak value：500 m/s^2 Both directions in the direction of the 3 axes: total of 18 times, 3 times each for ±X/Y/Z Sine half-wave: Operating time 11 ms
	Input power supply voltage	12 VDC •Power is supplied from the Ono Sokki DF-2200 On-Board Flow Meter or the FM Series Digital Flow Meter
	Mass	Flow detecting part：approx.2.0 kg Flow detecting part：approx.0.4 kg
	Accessory	Instruction manual
Conforming standard	**CE marking**	EMC Directive：2014/30/EU standard　EN61326-1 RoHs Directive：2011/65/EU standard　EN50581

*When using it on a bench top engine bench, it is possible to extend the filter cleaning maintenance period by installing an external filter on the primary side of the flow meter. (Please contact us for the filter.)