

FS10xx/FS2012 High-Performance MEMS Flow Sensor Module Family



FEATURES AND BENEFITS

- Gas or liquid flow
- MEMS thermopile sensing
- Silicon-carbide coating over MEMS flow sensor
- Robust solid isolation technology
- No cavity in MEMS element to cause clogging
- Resistant to vibration and pressure shock
- High accuracy
- Fast response time
- High sensitivity
- Food-grade compatible version
- Easy cleaning and sterilization
- 3 to 5 V DC supply, (5V for FS2012)

IDT mass flow sensor modules measure gas or liquid flow across a sensing surface using the thermo-transfer (calorimetric) principle. The flow sensor utilizes a series of MEMS thermocouples which provides excellent signal-to-noise ratio. The solid thermal isolation of the active MEMS sensing element along with the silicon-carbide film coating offers excellent abrasive wear resistance and long-term reliability.

IDT offers an uncalibrated millivolt output version (FS1012) uncalibrated with amplification circuit (FS102x) and fully-calibrated and linearized (FS2012) modules for either gas or liquid with typical accuracy down to 2% of reading.

These mass flow sensors are ideal for use in the industrial process, healthcare and medical, and automotive markets.

TYPICAL APPLICATIONS

Industrial Process	Healthcare and Medical	Automotive
Process controls and monitoring	Medical infusion pumps	Mass air flow module
Oil and gas leak detection	CPAP and respiratory devices	Diesel fuel flow
HVAC and air-control systems	Breathalyzer	Brake fluid flow
Liquid dispensing and metering systems	Oxygen concentrators	Cabin air quality control



FS1012/2012 High-Performance MEMS Flow Sensor Modules

	FS1012 (Millivolt Output)	FS102x (Uncalibrated, Amplified Output)	FS2012 (Fully-Calibrated)
Supply Voltage	3 to 5 V DC (Heater)	5V DC	5V DC
Gas Flow Range	0 to 2 Liter/Min (FS1012-1020-NG) 0 to 10 Liter/Min (FS1012-1100-NG)	—	0 to 2 Liter/Min (FS2012-1020-NG) 0 to 10 Liter/Min (FS2012-1100-NG)
Liquid Flow Range	0 to 0.5 Liter/Min (FS1012-1001-LQ) 0 to 1 Liter/Min (FS1012-1002-LQ)	0 to 3 Liter/Min (FS1023) 0 to 7 Liter/Min (FS1025) 0 to 10 Liter/Min (FS1027)	0 to 0.5 Liter/Min (FS2012-1001-LQ) 0 to 1 Liter/Min (FS2012-1002-LQ)
Flow Accuracy	—	—	±2% (Typical)
Output	Analog (millivolts)	Analog (0 to 5V DC)	Digital I ² C and Analog (0 to 5 V DC)
Current Consumption	10mA at 3V DC (Heater Current)	11mA	30mA at 5V DC
Module Size	53.35 × 24.0 mm, 6-pin header	25 × 58 mm, 6-pin connector	53.35 × 24.0 mm, 6-pin header

FIGURE 1: FS1012 SINGLE-ENDED APPLICATION CIRCUIT DIAGRAM

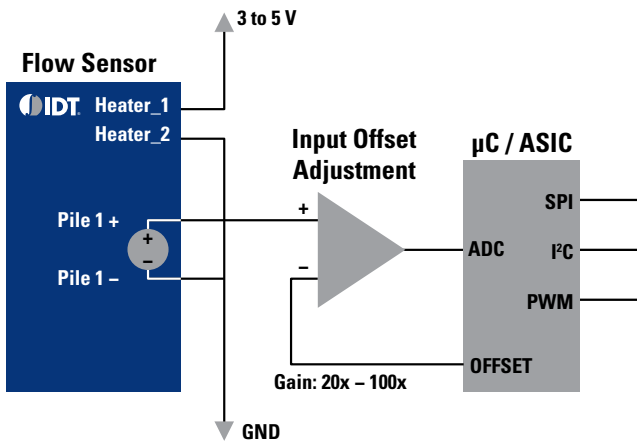
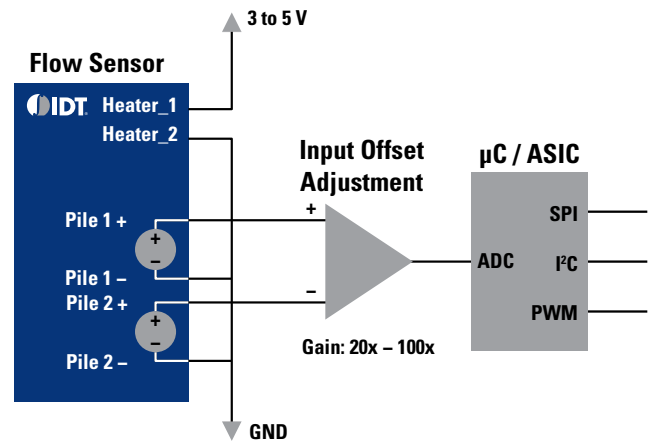


FIGURE 2: FS1012 DIFFERENTIAL APPLICATION CIRCUIT DIAGRAM



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