

# FS10xx/FS2012 High-Performance MEMS Flow Sensor Module Family



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 markets.

### Typical Applications

Industrial Process	Healthcare and Medical
Process controls and monitoring	Medical infusion pumps
Oil and gas leak detection	CPAP and respiratory devices
HVAC and air-control systems	Breathalyzer
Liquid dispensing and metering systems	Oxygen concentrators

### IDT ADVANTAGES

- 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)

## FS10xx/FS2012 High-Performance MEMS Flow Sensor Module Family

	FS1012 (Millivolt Output)	FS102x (Uncalibrated, Amplified Output)	FS2012 (Fully-Calibrated)
<b>Supply Voltage</b>	3 to 5 V DC (Heater)	5V DC	5V DC
<b>Gas Flow Range</b>	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)
<b>Liquid Flow Range</b>	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)
<b>Flow Accuracy</b>	—	—	±2% (Typical)
<b>Output</b>	Analog (millivolts)	Analog (0 to 5V DC)	Digital I <sup>2</sup> C and Analog (0 to 5 V DC)
<b>Current Consumption</b>	10mA at 3V DC (Heater Current)	11mA	30mA at 5V DC
<b>Module Size</b>	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

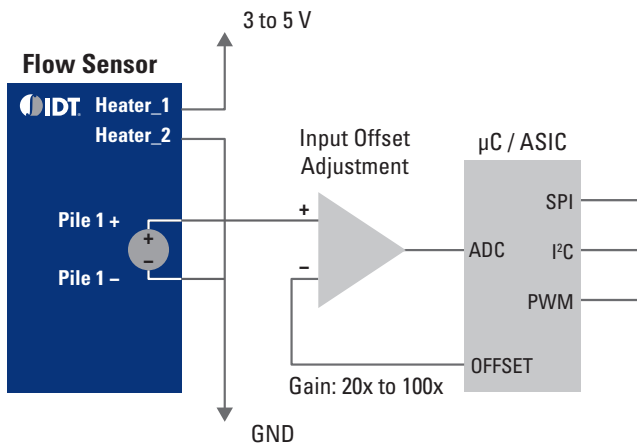
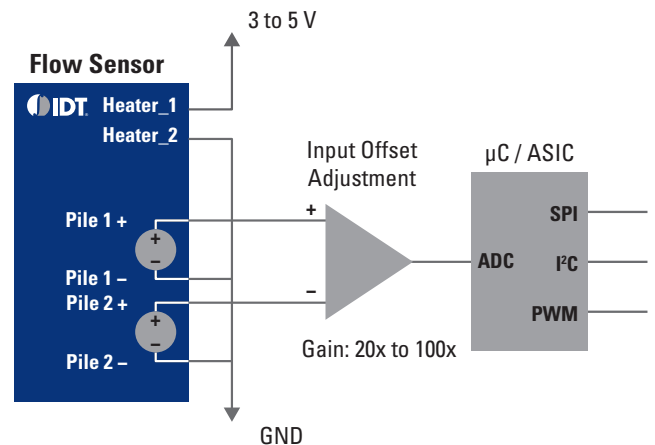


Figure 2: FS1012 Differential Application Circuit Diagram



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