



Gas Flow Sensor



ENG

Kelly Pneumatics, Inc. offers a Gas Flow Sensor for high volume flow rates of Air and Oxygen. The sensor automatically compensates for temperature changes in the measured gas and outputs accurate readings of mass flow and temperature via I2C digital communication or an analog voltage.

The Gas Flow Sensor outputs flow for Air and Oxygen from 0-300 SLPM, with an accuracy of 2% of reading, and offers a flow sample response time of 2 milliseconds. An internal microprocessor measures signals from an internal thermistor and hot wire anemometer to linearize flow measurements, and allows for numerous settings for flow and temperature output readings. The compact, lightweight design is perfect for OEM applications, especially medical, semiconductor, and gas analyzer products.

Product Features

- High Accuracy of $\pm 2\%$ of reading (or 0.05 SLPM)
- 2 Millisecond Response time
- Linearized Analog Output
- I2C Digital Communication to Read Flow or Temperature, and Change Settings
- Temperature Compensating
- Microcontroller Design for Customization

Microcontroller Features

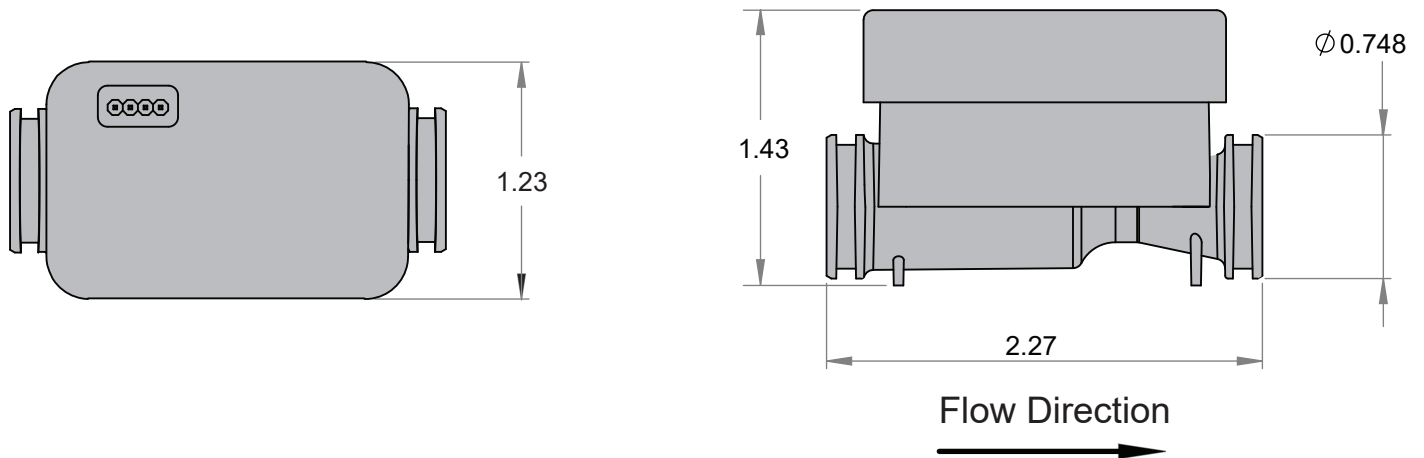
The unit has an internal microprocessor which can be used to dynamically change settings. Digital Commands allow switching between flow measurements in either Air or Oxygen, as well as reading the current gas temperature. I2C commands can also change the units of flow measurement between Standard Liters per Minute (SLPM) or Pound Mass per Minute (lb/min). These preferences can also be saved to internal EEPROM to avoid initialization on startup. Using a microcontroller also means custom software versions are available per your application's requirements.

Specifications

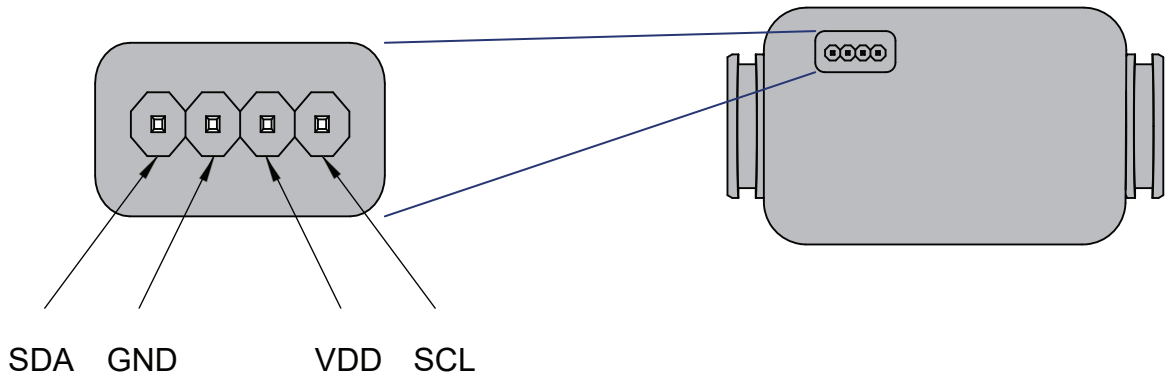
Gas Calibration	
Media	Air and Oxygen
Flow Performance	
Range	0 to 300 SLPM
Accuracy	2% of reading or 0.05 SLPM, whichever is greater, at 70 °F and 14.7 psia
Response Time	2 milliseconds
Temperature Measurement	
Range	0 to 50 °C (0 to 122 °F)
Accuracy	±1 °C (±1.8 °F) at flows >1 SLPM
Temperature Limits	
Operating	0 to 50 °C (0 to 122 °F)
Storage	-20 to 60 °C (-4 to 140 °F)
Power Requirement	
Supply Voltage (VDD)	5 volts ±10% (0.785 Watts Max Power Consumption at 300 SLPM)
Digital Communication Characteristics	
Interface	2-Wire I2C (see Application Note <i>I2C Details for KPI-DMFS-1</i> for more information)
Default Sensor Address	64 (0x40)
I2C Bus Clock Frequency	400 kHz
Analog Communication Characteristics	
Output Signal	0.2 to VREF (Output Signal is Ratiometric)
Flow Rate Equivalence	0 - 300 SLPM (Note: this can be customized for improved resolution)
Voltage Reference (VREF)	VDD - 5%
Resolution	16 Bits
Absolute Accuracy	± 2.5 mV

Dimensions

(All Dimensions in Inches)

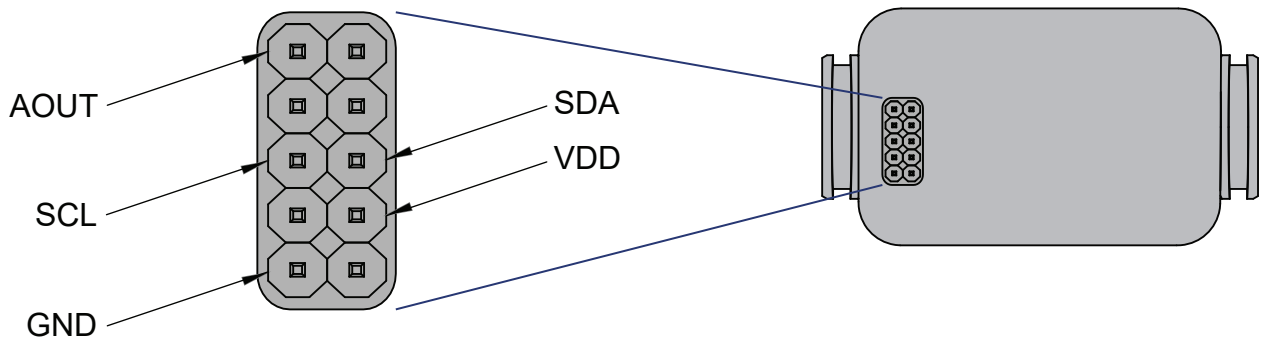


Pin Layout (Digital Output Version)



Pin Number	Label	Function
1	SDA	I2C Data
2	GND	Ground
3	VDD	Supply Voltage
4	SCL	I2C Clock

Pin Layout (Analog Output Version)



Pin Number	Label	Function
1	AOUT	Analog Output Signal
2		N/A
3		N/A
4		N/A
5	SCL	I2C Clock
6	SDA	I2C Data
7		N/A
8	VDD	Supply Voltage
9	GND	Ground
10		N/A

