AS30 Series
Mass Air Flow Sensor

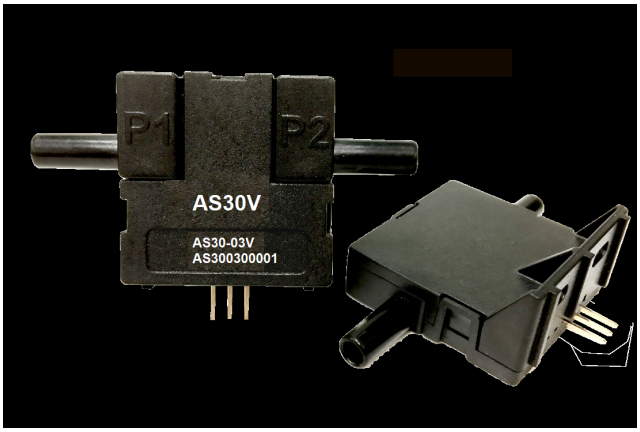
Your Engineering Partner

DESCRIPTION

AS-30 features third-generation thermal flow die, benefiting from the latest innovations in microfabrication. The sensor die uses a pair of thermopiles to detect changes in temperature gradient caused by mass flow, delivering excellent signal-to-noise, and repeatability. The “solid state” thermal isolation structure on the sensor die eliminates the need for surface cavity or fragile membrane used in competing technologies, making the sensor resistant to clogging and pressure shock.

The AS30 series includes the analog output AS30V and the digital I²C output AS30D.

The supported max flow rate ranges from 200 sccm to 10 SLM. The sensors are temperature compensated over the temperature range of 0 to 50 °C. The linearized output provides maximum flexibility and ease-of-use.



APPLICATIONS

- Oxygen concentrators
- Nebulizers
- CPAP equipment
- Leak detection
- Spectroscopy
- Mass flow controller
- Fuel cell control
- Environmental monitoring

FEATURES

- Unsurpassed performance in a robust and cost effective package
- “Solid state” sensing core (no surface cavity or fragile membrane) resistant to clogging and pressure shock
- Highly accurate (4% reading typ.)
- Fast response time (5 ms typ.)
- Linear output and temperature compensation
- Long-term stability with minimal null drift

MAXIMUM RATINGS

- Operating Temperature: -25 to 85 °C
- Calibrated Temperature Range: 0 to 50 °C
- Storage Temperature: -40 to 90 °C
- Humidity: 0 to 100% RH, non-condensing
- Shock: 100 g peak (5 drops, 3 axis)
- Operating Pressure: 25 psi

SPECIFICATIONS

Test Conditions: Vin=10±0.01VDC, Ta=25°C. Relative Humidity: 40%<RH<60%					
SPECIFICATIONS	**MIN**	**TYP**	**MAX**	**UNIT**	**CONDITIONS**
AS30-01	0		200	sccm	
AS30-02	0		1000	sccm	
AS30-03	0		2000	sccm	
AS30-04	0		3000	sccm	
AS30-05	0		4000	sccm	
AS30-08	0		10	SLM	
Output Voltage (V)[2]	1 to 5			VDC	
Null Voltage (V)	0.95	1	1.05	VDC	
Output Count (D)	256 to 16124			Count	
Null Count (D)	156		356	Count	
Null Drift			0.2	% F.S.	Per year
Repeatability		0.1		% F.S.	
Accuracy[3]		1%		F.S.	0 to 25% F.S.
		4%		Reading	25 to 100% F.S.
Resolution (D)		14		Bit	
Response Time[4]		5		mSec	
Supply Voltage (V)	6	10	16	Vdc	10V recommended
Supply Voltage (D)	4.75	10	16	Vdc	10V recommended
Current		21	26	mA	
Wetted Materials	Silicon carbide, epoxy, PPE+PE, FR4, and silicone as static seal				

- SLM: standard liter per minute. Standard conditions: 0 °C and 1 atmosphere.
- V refers to the analog version of AS30, and D refers to the digital I2C version.
- Maximum deviation in output from nominal over the entire calibrated flow range and temperature range. Errors include offset, full scale span, linearity, flow hysteresis, repeatability and temperature effects over the compensated temperature range.
- 10% to 90% rise time of the flow sensor to electrically respond to any mass flow change. May be affected by the pneumatic interface.

OUTPUT DESCRIPTION

For AS30V

Flow Rate = [(Vout - 1 V) / 4 V] x Full Scale Flow Rate

For example, for AS30-01V full scale flow rate is 200 sccm. When Vout reads 3 V, the Flow Rate is: [(3 V - 1 V)/4V x 200 sccm] =100 sccm

For AS30D

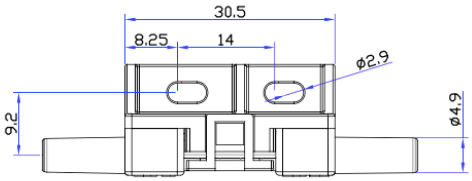
Flow Rate = [(Count - 256) / 15868] x Full Scale Flow Rate

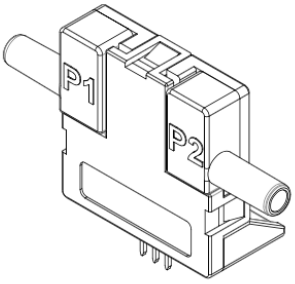
For example, for AS30-01D full scale rate is 200 sccm. When digital output reads 10000, the Flow Rate is:
[(10000 - 256)/15868 x 200 sccm] = 122.81 sccm

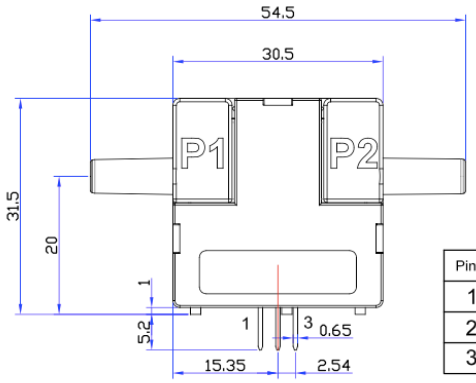
*Contact ACT for I²C communication app note

PACKAGE DIMENSIONS

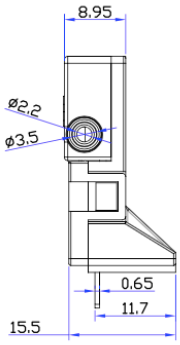
AS30V





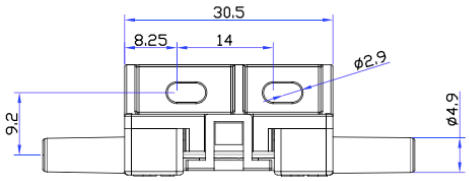


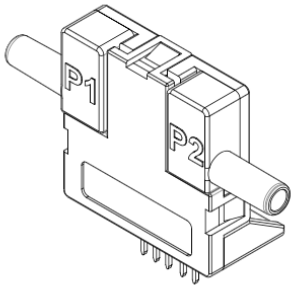
Pin #	Description
1	OUT
2	VDD
3	GND

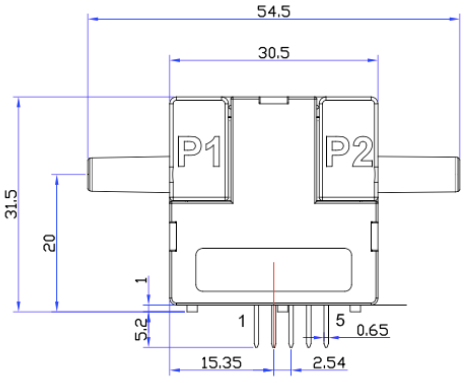


Unit: mm

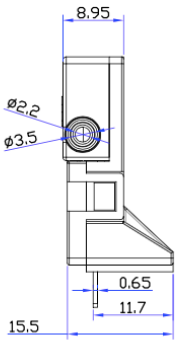
AS30D







Pin #	Description
1	OUT
2	VDD
3	VSS
4	SCL
5	SDA



ORDERING INFORMATION

PART NUMBER	SPECIFICATIONS
AS30-01V	200 sccm, 1 to 5 V, Linear
AS30-02V	1000 sccm, 1 to 5 V, Linear
AS30-03V	2000 sccm, 1 to 5 V, Linear
AS30-04V	3000 sccm, 1 to 5 V, Linear
AS30-05V	4000 sccm, 1 to 5V, Linear
AS30-08V	10 SLM, 1 to 5 V, Linear

Order I²C Digital Output models by specifying “D” instead of “V” in part numbers above. Please contact ACT or your local distributor to place an order.

CUSTOMIZATION OPTIONS

If the standard product described in this datasheet does not completely meet your needs, please contact ACT Sensors Private Limited to discuss other options. Help us understand your application and sensor requirements and we can work together to find the best overall solution.