Honeywell

HPM Series
Particle Sensor

32322550
Issue A

Datasheet

DESCRIPTION

The Honeywell HPM Series Particle Sensor is a laser-based sensor which uses the light scattering method to detect and count particles in the concentration range of 0 µg/m^3 to 1,000 µg/m^3 in a given environment. A laser light source illuminates a particle as it is pulled through the detection chamber. As particles pass through the laser beam, the light source becomes obscured and is recorded on the photo or light detector. The light is then analyzed and converted to an electrical signal providing particulate size and quantity to calculate concentrations in real time. The Honeywell particle sensor provides information on the particle concentration for given particle concentration range.

VALUE TO CUSTOMERS

- Enables the ability to more accurately and cost-effectively monitor or control environmental particulate contaminates
- Industry-leading long life of 20,000 hours of continuous use essentially equates to seven years of product life (based on eight hours of operation per day)
- Proven EMC performance enables the ability to perform more accurately in a variety of tough industrial environments
- Enhanced reliability allows for use in harsh environments

DIFFERENTIATION

- Industry-leading long life of 20,000 hours provides stable operation and continuous use
- Proven EMC performance, based on IEC61000 stable operation, ±15% accuracy

FEATURES

- Laser-based light scattering particle sensing
- Concentration range: 0 µg/m^3 to 1,000 µg/m^3
- Fully calibrated
- EMC: Heavy industrial level IEC61000
- Response time: <6 s
- Supply current: 80 mA max.
- Output signal: UART (Universal Asynchronous Receiver/ Transmitter)
- PM2.5 output (PM10 output optional with additional programming)
- RoHS compliant

POTENTIAL INDUSTRIAL APPLICATIONS

- HVAC:
  - Air conditioners
  - Air quality monitors
  - Environmental monitoring
- Consumer products:
  - Air cleaners
  - Air conditioners
  - Air purifiers
  - Car air cleaners
  - Handheld air quality detectors

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Table 1. Specifications

Characteristic	Parameter
Operating principle	laser scattering
Detection[1]	PM2.5 or PM10
Output data[1]	PM2.5 in µg/m³ (PM10 in µg/m³ with additional programming)
Concentration range	0 µg/m³ to 1,000 µg/m³
Accuracy (at 25°C ±5°C): 0 µg/m³ to 100 µg/m³ 100 µg/m³ to 1000 µg/m³	 ±15 µg/m³ ±15 %
Response time	6 s
Supply voltage	5 V ±0.2V
Standby current (at 25°C ±5°C)	<20 mA
Supply current (at 25°C ±5°C)	<80 mA
Temperature: operating storage	 -10°C to 50°C [-14°F to 122°F] -30°C to 65°C [-22°F to 149°F]
Humidity (operating and storage)	0 %RH to 95 %RH non-condensing
Output protocol[2]	UART; baud rate: 9600, databits: 8, stopbits: 1, parity: no
Operating time: continuous mode intermittent mode	 20,000 hr depends on duty cycle
ESD	±4 kV contact, ±8 kV air per IEC 61000-4-2
Radiated immunity	1 V/m (80 MHz to 1000 MHz) per IEC 61000-4-3
Fast transient burst	±0.5 kV per IEC61000-4-4
Immunity to conducted disturbances radiated emissions	3 V per IEC61000-4-6
Radiated emissions	40 dB 30 MHz to 230 MHz; 47 dB 230 MHz to 1000 MHz per CISPR 14
Conducted emissions	0.15 MHz to 30 MHz in compliance with CISPR 14

[1] PM2.5 is particulate matter ≤2.5 µm in diameter; PM10 is particulate matter ≤10 µm in diameter.

[2] Contact Honeywell for other output options.
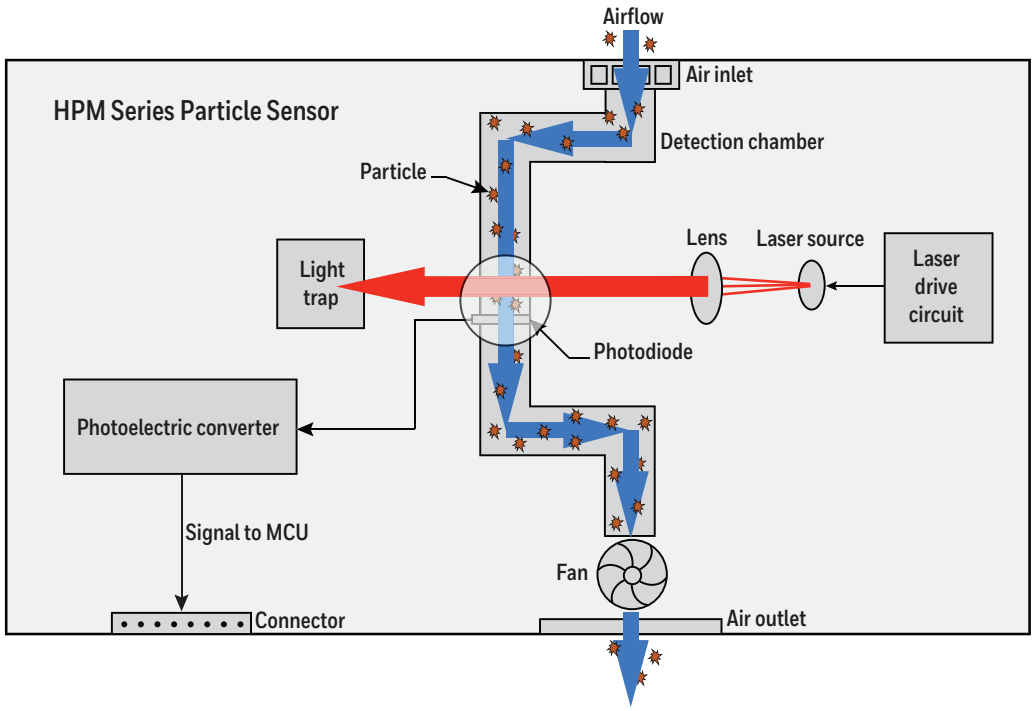
Figure 1. HPM Series Operation