



P09 Dual-Channel Automotive PM2.5 Sensor

The MAXMAC P09 Dual-Channel Automotive PM2.5 Sensor is a particulate matter sensing module developed for in-vehicle cabin air quality management. It supports dual air sampling from both outside air and cabin air, providing reliable PM2.5 concentration data for HVAC fresh/recirculated air control, air purification, and healthy cabin systems.

The sensor supports 9-16V automotive power supply and CAN communication, with wide-temperature operation from -40°C to 85°C for long-term stable use in complex vehicle environments. The P09 adopts a flat structural design, making it suitable for installation in vehicle body spaces, HVAC ducts, sampling pipes, and cabin air quality monitoring positions.

With a 0-999 $\mu\text{g}/\text{m}^3$ measurement range, 1 $\mu\text{g}/\text{m}^3$ resolution, low-noise operation, and fast response, the P09 helps vehicles compare outdoor pollution levels with in-cabin air conditions in real time and link fresh/recirculated air switching, purification strategies, and cabin air quality alerts.

Key benefits:

- Automotive-grade wide-temperature design for complex cabin and outdoor environments
- Dual-channel PM2.5 detection for outside-air and in-cabin air comparison
- Flat structural design for vehicle body and duct space installation
- 0-999 $\mu\text{g}/\text{m}^3$ PM2.5 measurement range
- <10 s response time for fast HVAC strategy linkage
- CAN communication interface for vehicle network integration
- Low-noise operation for cabin comfort applications
- Service life ≥ 20000 h for long-term stable operation

Typical applications:

- Outside-air and in-cabin dual-channel PM2.5 monitoring systems
- Automatic fresh/recirculated air control for vehicle HVAC
- Intelligent cabin air quality display and warning
- In-vehicle air purifier linkage control
- Healthy cabin systems for new energy vehicles
- Air quality management for passenger cars, commercial vehicles, and shared mobility

Standard Specification

Item	Description
Product name	P09 Dual-Channel Automotive PM2.5 Sensor
Detection target	PM2.5 particulate matter
Operating voltage	9-16 VDC
Operating current	80 mA @ 13.5 VDC
Operating temperature	-40°C to 85°C
Operating humidity	5%-95%RH, non-condensing
Storage temperature	-40°C to 85°C
Storage humidity	5%-95%RH, non-condensing
Service life	≥ 20000 h
Noise	< 25 dB(A) @ 50 cm
Measuring range	0-999 $\mu\text{g}/\text{m}^3$
Resolution	1 $\mu\text{g}/\text{m}^3$
Accuracy	± 15 $\mu\text{g}/\text{m}^3$ or $\pm 15\%$
Response time	< 10 s
Overall dimensions	113.6 mm \times 84.3 mm \times 25 mm
Main body dimensions	113.6 mm \times 71.6 mm \times 25 mm
Communication	CAN

Note:

Main body dimensions are basic structural dimensions and do not include inlet/outlet tube installation dimensions.

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