CUBIC

Li-battery Thermal Runaway Detection Integrated Sensor

Cubic ATRS-1032 is a lithium-ion battery thermal runaway monitoring sensor based on light scattering and MEMS thermal conductivity (TC) technologies. The ATRS-1032 is specifically designed to effectively monitor the concentration of particulate matter and H_2 released during the early stages of thermal runaway while transmitting warning signals to the battery management system (BMS).

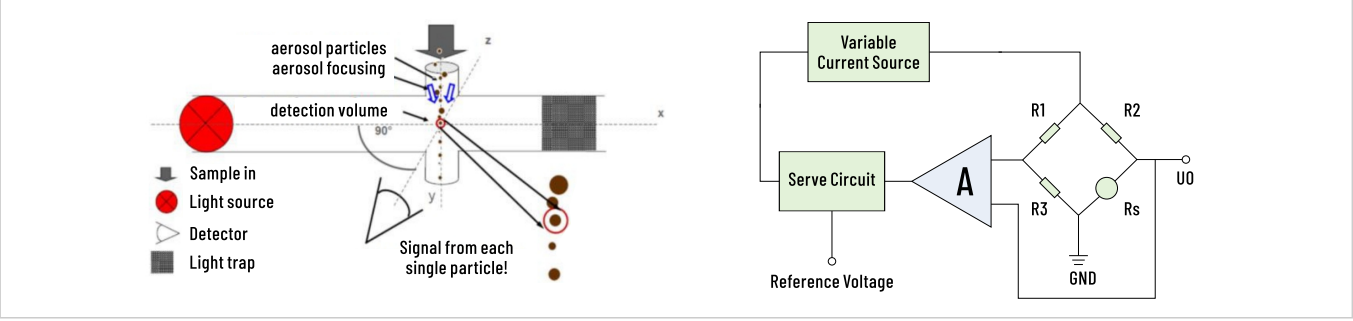
Features and applications

ATRS-1032 features fast response time, less cross interference with other gases, low power consumption, and high reliability, widely used for applications of electrical vehicle and energy storage system.

Working principle

Light Scattering Dispersive (LSD): The light emitted by LED converges through the lens and meets dust to generate scattered light. The scattered light is detected by the detector after converging through the lens, and the concentration of dust is calculated according to the size of the pulse signal.

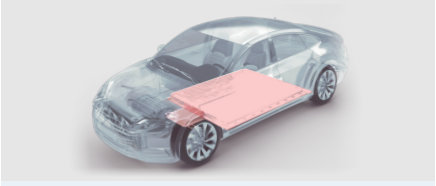
Thermal Conductivity (TC): The changing resistance value is converted into an unbalanced voltage output by the Wheatstone Bridge, and the change in the output voltage reflects the change in the thermal conductivity of the gas to be measured, thereby detecting the gas concentration.



Features

- Fast response time (<1s)
- Less cross interference with other gases
- Low power consumption
- Innovated combined sensing components for more reliable monitoring

Applications



Electric vehicle thermal runaway

BESS thermal runaway

Specifications

Detection Category	H_2, Particular Matter
Operating Principle	H_2: MEMS Thermal Conductivity Particular Matter: Light Scattering
Measurement Range	PM: 0~10,000μg/m^3 H_2: 0~4%vol
Measurement Accuracy	PM: ≤±15%@5000μg/m^3, 25°C H_2: ± (10% of reading +0.1%vol)
Response Time	< 1s
Average Working Current	Normal Working Mode: ≤ 60mA Low Power Mode: ≤ 100μA
Design Lifetime	>15 Years
Working Condition	−40°C~+85°C; 0~95%RH (non-condensing)
Storage Condition	−40°C~ +95°C; 0~95%RH (non-condensing)
Power Supply	9~32VDC (Rated voltage +12VDC/+24VDC)
Communication	CAN

* For details of technical parameters, please refer to the specification sheet.

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