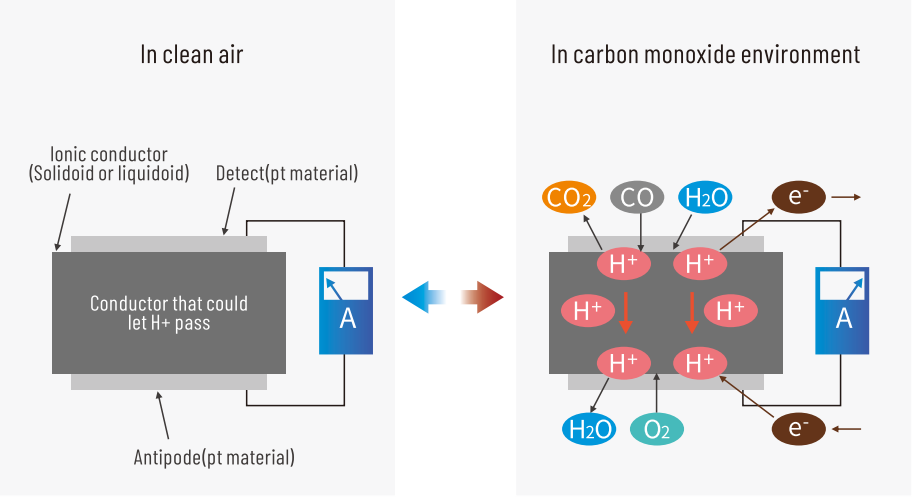
CO/CH4 Alarm Sensor and Detector

Cubic Sensor and Instrument Co.,Ltd.

Cubic Electrochemical Technology

E C D

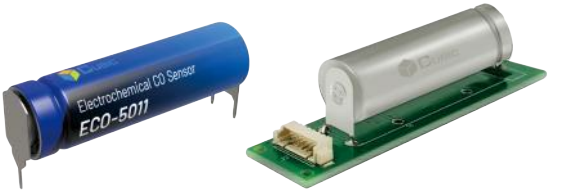
Carbon monoxide and oxygen undergo corresponding redox reactions on the working electrode and the counter electrode and release charges to form currents.
The generated current is proportional to CO concentration and follows Faraday's law.
The CO concentration can be determined by measuring the magnitude of the current.



Electrochemical CO Sensor Series

Features

- Excellent selectivity to CO and best-in-class cross interference
- High linear output characteristics for CO measurement
- Low power consumption, applicable for battery-operated
- Long lifetime over 8years
- Full compliance with UL2034, EN50291 and ROHS requirements

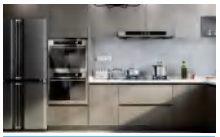


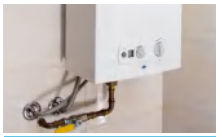
ECO-5011 ECO-5011A

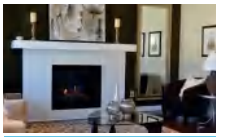
Specifications

Item No.	ECO-5011	ECO-5011A
Target Gas	Carbon monoxide (CO)	
Working Principle	Electrochemical technology	
Measurement Range	0~10000ppm	0~1000ppm(ECO-5011A-01)
		0~10000ppm(ECO-5011A-02)
Output	1.5-3nA/ppm	UART TTL(3.3V)
Repeatability	±2% of reading	
Resolution	0.5ppm	
Response Time (T_{90})	<60s	
Working Temperature	-20°C~60°C	
Storage Temperature	-20°C~60°C	
Relative Humidity	5~99%RH(non-condensing)	
Working Pressure Range	100 kPa±10%	
Lifetime	10 years	
Weight	12g	20g
Dimension	D13.8*50.8mm	D13.8*60.0mm

Applications

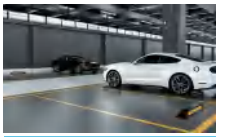

Kitchen


Water Heater


Indoor Fireplace


Mine


Fire


Parking Garage

- Residential and commercial CO detectors
- Fire early alarm
- Industrial safety alarm
- Ventilation control for indoor parking garages

Cubic Core Technology

NDIR

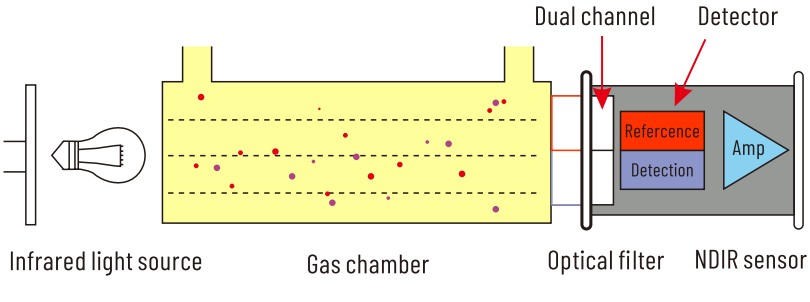
Non-dispersive Infrared(NDIR) Principle
Dual beam design

Molecules like carbon dioxide (CO_2), methane (CH_4), propane (C_3H_8) and methyl bromide (CH_3Br) can all be directly measured in air by monitoring a specific spectral absorption wavelength in the infrared range.

An NDIR sensor design can be simplified into its core components:

- A gas chamber that allows air and gas molecules to naturally diffuse into and out of the chamber
- A light source that emits light into the gas chamber
- A photodetector and optical filter that measures the increase or decrease of light intensity at a specific light wavelength
- An amplifier circuit to measure the output light intensity measurement signal from the photodetector

CO_2 molecules inside the gas chamber will only absorb a specific wavelength of the light. The filter allows only the specific wavelength corresponded to pass through it. One detector measures the intensity of infrared light that is related to the intensity of CO_2 and can be described through the Lambert-Beer's Law. The other detector is as for reference. The change in sensor signal reflects the change in gas concentration.



NDIR CH_4 Fuel Gas Sensor

Features

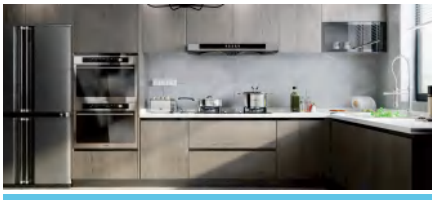
- Dual-channel detection NDIR technology
- High accuracy and sensitivity to methane gas
- High accuracy over full temperature range
- Long-term stability
- Short recovering time from high-concentration ambient
- Compact and easy to install
- Long lifespan over 10 years

Specifications

Detecting Principle	Non-dispersive Infrared Technology(NDIR)
Measurement Range	0~100%LEL
Accuracy	0~50%LEL: +5%LEL; 50%~100%LEL: +10% of reading
Response Time	T_{90}≤30s
Working Temperature	-20°C~60°C
Storage Temperature	-40°C~85°C
Working Humidity	0~95%RH (non-condensing)
Storage Humidity	0~95%RH (non-condensing)
Alarm Point	Default 10% LEL optional from 5%~25%
Power Supply	DC 4.75V~5.25V
Average Working Current	<1mA (without heater)/<50mA (with heater)
Dimension	40mm*33mm*10.3mm
Communication Port	UART, IIC, PWM
Lifespan	>10 years

Applications

Fire



Kitchen

Camper

- Residential and commercial CH_4 detectors
- Fire early alarm
- Industrial safety alarm

CH_4+CO Combined Alarm Detector

CH4+CO Combined Alarm Detector
AM4301

Multi Gas Integration

Long Term Stability

Anti-Cross Interference

Wi-Fi&Bluetooth Optional

Long Life Span

CH4+CO Combined Alarm Detector-AM4301 Key Parameters	
Target Gas	CH4, CO
Technology	NDIR-CH4, Electrochemistry-CO
Alarm Target	CH4: 3500ppm±2000ppm CO: 220ppm±20ppm
Disarm the Alarm	CH4: 2500ppm±2000ppm CO: 180ppm±20ppm
Preheating Time	180s±10s
Working Temperature	-10°C~40°C
Working Humidity	0~93%RH (non-condensing)
Storage Temperature	-10°C~55°C
Storage Humidity	0~95%RH (non-condensing)
Working Voltage	DC23V±5%
Working Current	<100mA
Alarm Mode	Audio & Visual Alarm
Alarm Sound Level	⩾70dB@1m
Dimension	94*94*36mm
Life Time	>10 years
Certification Compliance	GB/T 34004-2017

CO Alarm Detector and CH_4 Alarm Detector

CH_4 Alarm Detector
AM5301

GB15322.2-2019 Certificated

CO Alarm Detector
AM4302

UL2034, EN50291 and CE Compliant

High Accuracy

Flammable Proof Enclosure

Quick Response

Easy Operation

Long Life Span

Audio&Visual Alarm

CH_4 Alarm Detector-AM5301 Key Parameters	
Target Gas	CH_4
Technology	NDIR
Sampling	Diffusion
Alarm Trigger Point	5%LEL~25%LEL adjustable (default setting 10%LEL)
Measurement Range	0%~100%LEL
Accuracy	3%LEL
Warm Up	10s
Response Time	T_{90}<30s
Network	NB IoT (Customized) Wi-Fi or 4G (optional)
Information Storage	200pcs alarm messages, 100pcs error messages
Working Voltage	AC220V±10%
Alarm Mode	Audio&Visual Alarm (Customized) App Alarm (Optional)
Alarm Sound Level	70dB~115dB@1meter
Working Temperature	-25°C~55°C
Working Humidity	<90%RH (non-condensing)
Dimension	ϕ84*H33.5mm
Life Time	>10 years
Installation Position	Wall Amounting

CO Alarm Detector-AM4302 Key Parameters	
Target Gas	CO
Technology	Electrochemical
Sampling	Diffusion
Alarm Trigger Point	CO Concentration: 31~70ppm, 60~240mins CO Concentration: 71~150ppm, 10~50mins CO Concentration: 151~400ppm, 4~15mins CO Concentration: >400ppm, within 30s
Measurement Range	0~10000ppm
Warm Up	<180s
Response Time	<60s
Working Voltage	DC3V
Alarm Mode	4 short beeps-silent for 5 seconds-4 short beeps (0.5 second interval), red LED flashing
Alarm Sound Level	⩾85dB@3meter
Working Temperature	-20°C~60°C
Working Humidity	5~99%RH (non-condensing)
Storage Temperature	-20°C~60°C
Dimension	84*84*33.5mm
Life Time	>10 years
Installation Position	Wall Amounting