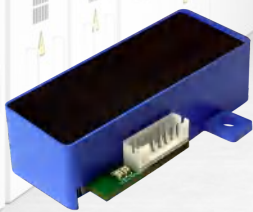


SF₆ Gas Online Monitoring and Alarming System Solution

SF₆

O₂



SF₆ Gas Sensor



SF₆ Gas Detector



SF₆ System Control Cabinet

Cubic Core Technology

NDIR

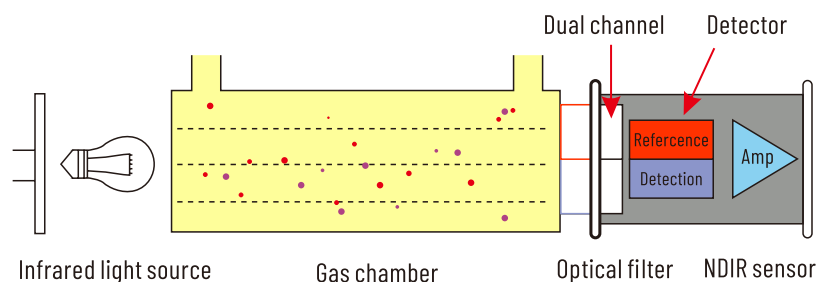
Non-dispersive Infrared(NDIR) Principle Dual beam design

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 for reference. The change in sensor signal reflects the change in gas concentration.





SF₆ Gas Online Monitoring and Alarming System Solution

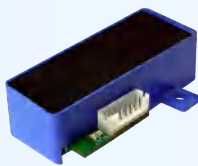
The SF₆ online monitoring and alarming system solution is composed of SF₆ system control cabinet and multiple SF₆ gas detectors. Integrated with Cubic self-developed SF₆ sensor core, it mainly detects SF₆ gas concentration, O₂ concentration, ambient temperature and humidity in real-time. It can realize multiple types of functions including Passive Infrared (PIR) motion detection, audible and visual alarm. Meanwhile it could automatically trigger ventilation system to reduce SF₆ leakage risk.

Features

- High selectivity and sensitivity for SF₆ gas
- High accuracy over full temperature range
- Excellent anti-cross interference performance
- Fast response T₉₀<30s
- Flexible output option, easily integrate with customer system
- Long life span over 10 years
- Complete solution from sensor core to turnkey level

Highlight Functions

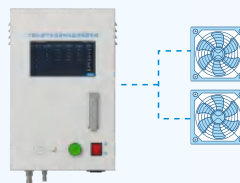
- Audible and visual alarm
- Ventilation fan automatic control
- PIR-based motion detection
- RS485/Wi-Fi communication
- Automatic data storage for more than 10 years



Cubic self-developed SF₆ sensor core



Audible and visual alarm



Ventilation fan automatic control

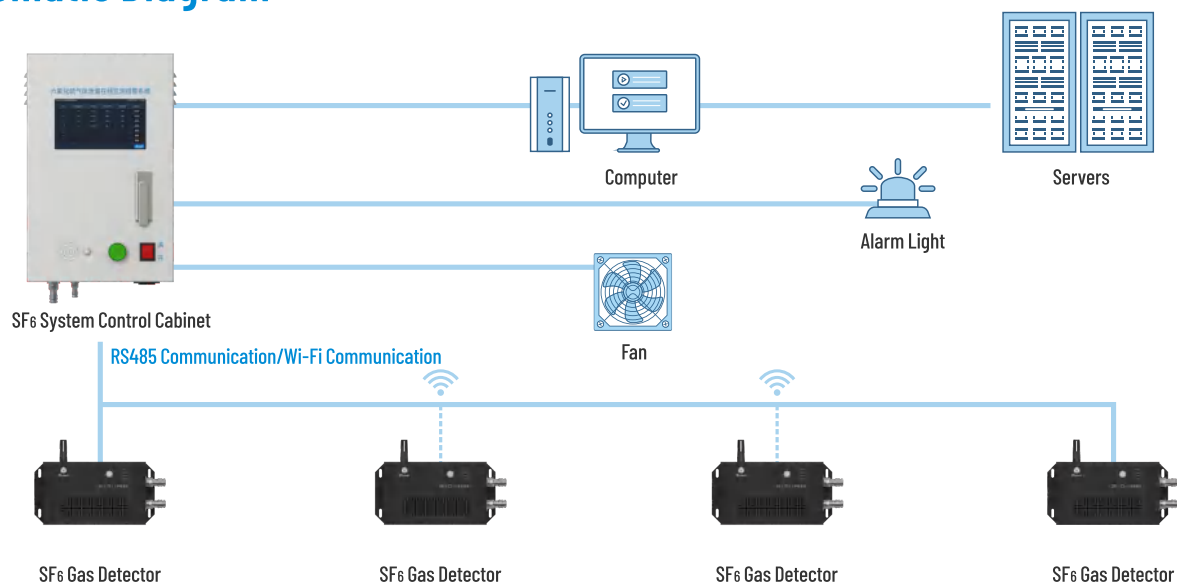


PIR-based motion detection

Main Technical Specifications

SF ₆ Gas Online Monitoring and Alarming System	
SF ₆ Range	0~1500ppm(customizable)
SF ₆ Resolution	1ppm
SF ₆ Accuracy	±2%F.S.
O ₂ Range	0~25%vol(customizable)
O ₂ Resolution	0.1%vol
O ₂ Accuracy	±0.5%vol
SF ₆ Alarm Threshold	1000ppm (adjustable)
O ₂ Alarm Threshold	18%vol(adjustable)
Response Time	T ₉₀ <60s
Supply Voltage	200V±10%(50Hz±1%)
Communication Method	RS485/Wi-Fi

Schematic Diagram



Applications

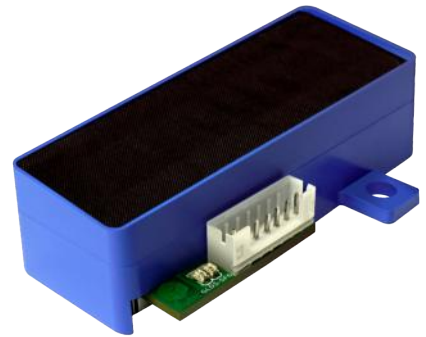
SF₆ gas online monitoring and alarming system is mainly used in power plants, substations, GIS rooms, switch rooms, etc.



NDIR SF6 Sensor Series

Features

- Excellent selectivity to SF6, no cross gas interference or poisoning
- Matrix calibration to ensure high accuracy over full temperature
- Fast Response($T_{90}<30s$) for better life-saving application
- Auto baseline calibration algorithm, low drift
- Long lifespan over 10years



Specifications

Target Gas	Sulfur Hexafluoride (SF6)
Working Principle	NDIR (non-dispersive infrared) technology
Measurement Range	0~1500ppm
Resolution	1 ppm
Accuracy	±2%FS
Repeatability	≤±1%FS
Response Time	$T_{90}<30s$ (diffusion)
Preheating Time	≤15s
Output	① Modbus-RTU ② TTL/OC digital output
Working Condition	-20°C~60°C, 0~95%RH (non-condensing)
Storage Condition	-30°C~70°C, 0~95%RH (non-condensing)
Power Supply	5V~9V DC, ripple wave<100mV
Average Working Current	≤130mA
Lifetime	10+ years
Dimension	L63.2*W38.5*H19.2 mm

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

Applications

- Gas insulated switchgears (GIS/HGIS) combination appliances
- SF6 gas leakage online monitoring
- High voltage electrical cabinet
- Industrial process control