CROWCON

Detecting Gas Saving Lives

Open Path Laser Product
L-TEK OP200

www.crowcon.com www.crowcon.com.cn

A HALMA COMPANY

UK:
Tel: +44 (0) 1235 557700
Fax: +44 (0) 1235 557718
Email: sales@crowcon.com

US:
Tel: 800 527 6926
Fax: +1 513 957 1044
Email: salesusa@crowcon.com

SG:
Tel: +65 6745 2936
Fax: +65 6745 0467
Email: singaporesales@crowcon.com

Middle East & India:
Tel: +971 (0) 4345 1980

Crowcon Detection Instruments (Beijing) Ltd.
Tel: +86 10 67870335
Fax: +86 10 67874879
Email: saleschina@crowcon.com

Crowcon Chinese website
www.crowcon.com.cn

WeChat ID
Crowcon_China

TikTok ID
Crowcon_Beijing

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Advantages of measuring methane based on the TDLAS principle

Long–distance active monitoring mode

The unique directionality and long–distance telemetry capabilities of lasers are used to realize long–distance active monitoring, and the original passive monitoring mode relying on diffusion or pumping is changed, and there is no need to wait for the leakage gas to diffuse to the monitoring equipment, and the traditional passive monitoring method is upgraded to the long–distance telemetry active monitoring mode.

Low maintenance costs

For sensors with conventional measuring principles, high concentration gas affects the sensitivity and service life of the sensor. TDLAS testing devices do not require direct High accuracy, no false alarmsot cause poisoning or aging. Its parts are semiconductors, optical glass and other materials with long life and stable performance, so its product life is 5–10 times as long as traditional equipment, this reduce the maintenance cost caused by frequent replacement of parts.

High accuracy, no false alarms

Due to the fingerprint nature of the laser radiation wavelength, the absorption spectral line of the specific wavelength of the measured gas is selected, so as to avoid the cross–interference of other gas components, so the distinctive feature of TDLAS detection technology is that it has good fingerprint, completely eliminates the false alarm, does not need to be re–checked, and simplifies safety management.

Fast response time

The response time of gas sensing equipment is critical, TDLAS detection equipment can have millisecond measurement response time, which is 1000 times faster than the response time of catalytic combustion and electrochemical technology and improve production safety.

Laser gas sensor compared to other combustible gas sensors

	Semiconductor type	Thermally catalytic type	Ultrasonic type	NDIR type	TDLAS type
Area detection	NO	NO	Short distance	Short distance	200m Wide coverage (up to 200m)
Detection method	Point	Point	Plane	Point, line	Point, line, plane
Sensitivity	Low, 0.1%	Low, 0.1%	Low, 0.1 kg/s	≦0.1%	High sensitivity, 0.0001%
Lifetime	2	2–3	≧5	≧5	Long lifetime, ≧10
Selectivity	Poor	Poor	General	Poor(Only suitable for high–pressure gases)	Excellent (Sensitive to a single gas)
Stability	Poor	Poor	Poor	General	Excellent (Calibration free and less susceptible to environmental impact)
Cost factors	Lowest	Low	High	High	High*

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TDLAS measurement principle

TDLAS (Tunable Diode Laser Absorption Spectroscopy) technology utilizes the characteristics of target gas molecules absorbing specific wavelengths of laser light intensity, which can measure the concentration of target gas in the gas to be tested. It can monitor methane leakage, hydrogen sulfide, hydrogen chloride, and oil gas volatilization as needed.

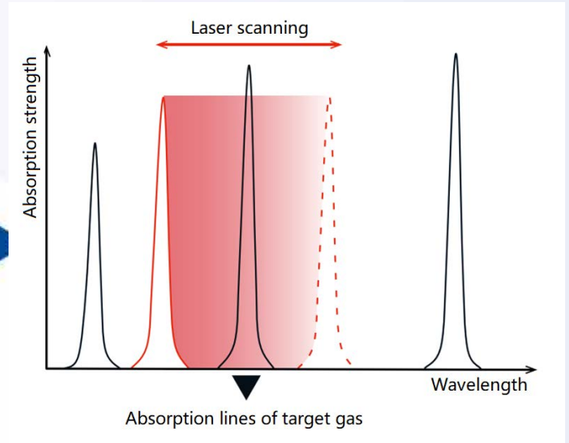
Technical characteristics

- High security, long-distance safety detection
- High sensitivity, able to detect small leaks
- High accuracy, not disturbed by other gases
- Easy maintenance, no need for frequent calibration
- Faster response
- Longer lifetime

Measurement method

TDLAS (Tunable Diode Laser Absorption Spectroscopy) technology utilizes the characteristics of target gas molecules absorbing specific wavelengths of laser light intensity, which can measure the concentration of target gas in the gas to be tested. It can monitor methane leakage, hydrogen sulfide, hydrogen chloride, and oil gas volatilization as needed.

The laser emits a specific wavelength of laser light through the internal control circuit, the laser passes through the detection area and reaches the reflective surface (process facilities, ground, etc.) and is reflected back to the detector in the equipment, if there is a characteristic gas to be detected in the detection area, the laser reacts with the gas and is absorbed, the higher the gas concentration, the greater the absorption, the light intensity detected by the detector in the equipment changes, and the light intensity information is fed back to the control circuit for processing. The detector measures the absorption rate according to the laser light reflected back to determine whether there is leakage, and the gas unit is PPM.M



L-TEK OP200 open path laser methane

Product description

The open path laser methane telemetry uses TDLAS (Tunable Diode Laser Absorption Spectroscopy) technology, can be used for methane and methane-containing gas concentration monitoring in the target area according to the absorption characteristics of methane gas to specific wavelength lasers. The product has strong adaptability against light interference. Under sunlight interference, there will be no optical path blocking faults or alarm signals, and all functions and detection performance will not be affected. In addition, it has excellent weather environment or complex background gas tolerance and resistance to steam interference. Long service life and simple operation method. Widely used in gas transmission pipelines, large combustible gas storage areas, oil transmission pipelines, etc.

Features

- ppm level high sensitivity measurement function
- Alarm status indication and can be clearly distinguished
- Explosion proof design, suitable for installation in hazardous areas
- Protection level reaches IP68
- Resistant to complex background gas environment
- Strong adaptability to light intensity attenuation, when the light intensity attenuation is 90%, the telemetry can run continuously without false alarm signal
- Strong adaptability of optical path occlusion, when 90% of the effective area of the reflector is occluded, the telemetry can operate continuously without false alarm signals
- The optical path deflection adaptability is strong, and the maximum allowable deflection angle is 0.1° under the condition of maximum optical path length

Product parameters

Detectable gas	Methane (CH4)	Working voltage	220VAC
Detection distance	Standard: 150m; Customized: 200m	Material	Stainless steel 304
Response time	T90<1s	Laser safety level	Measuring laser: class I Indicating laser: class III
Sensitivity	±5ppm.m	Explosion-proof mark	Ex d II C T6
Detection range	0 ~ 50000ppm.m 0 ~ 100%LEL.m	Ingress protection	IP68
		Luminous flux attenuation adaptability	⩽90%
Detection error	Linearity error: ±5%FSD	The allowable deflection angle of the light beam	0.1°
	Repetition error: ±5%FSD	Light beam occlusion fault reporting time	⩽30s
Operating temperature	-40℃ ~ 70℃	Calibration	Long-term calibration free
Operating humidity	98%RH (non-condensing)	Other functions	Status indication, audible and visual alarm