AiLF
advanced instrument

PRODUCT CATALOG

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埃尔法（山东）仪器有限公司
AILF (Shandong) Instruments Co., Ltd.

A Series
Inspection Vehicle

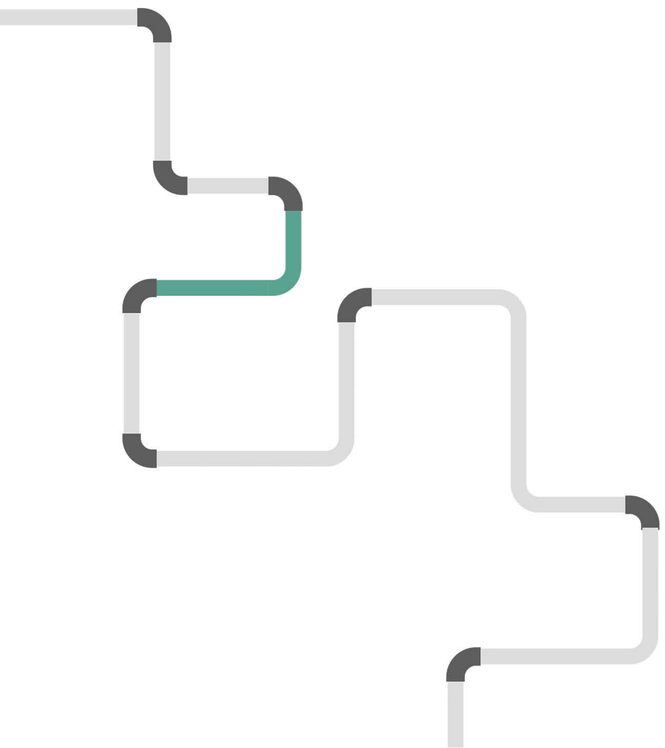
L Series
Remote Detector

P Series
Pan-tilt Monitoring

U Series
Inspection UAV

G Series
Portable Detector

C Series
Hand-held Detector



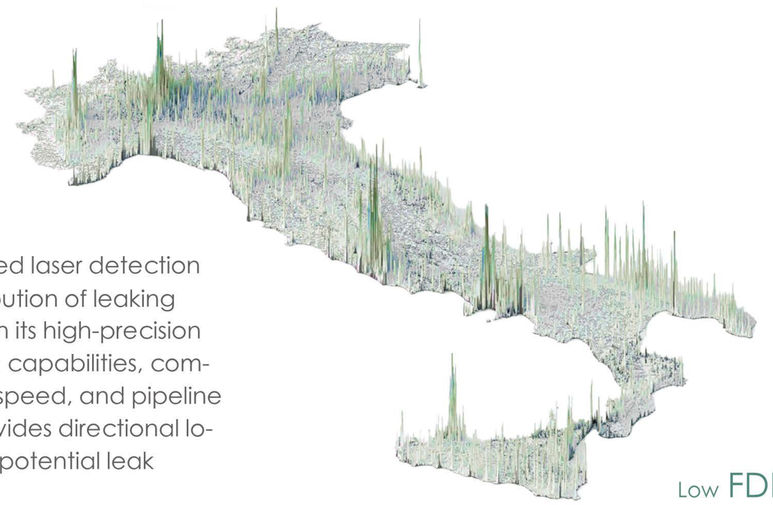
aOne
Intelligent Inspection Application

A Series

Inspection Vehicle

A10 Vehicle-mounted Laser Methane Leak Inspection System (R-Roof System, I-Front System)

A20 High Precision Vehicle-mounted Laser Natural Gas Leak Inspection System



NEW

Unlike traditional vehicle-mounted laser detection systems, **A20** captures the distribution of leaking gases in the atmosphere through its high-precision methane and ethane detection capabilities, combined with wind direction, wind speed, and pipeline network information data, it provides directional localization and early warning for potential leak points.

A20 With static detection limit low to 0.5 ppb AiLF's mid-infrared laser absorption spectroscopy technology ensures high sensitivity detection while enabling the maintainability of critical components. With a wide temperature range and low filtration requirements, it has truly achieved laboratory instrument performance with industrial field reliability.

Low FDR

Low False Detection Rate

It significantly reduces the false alarm rate with an AI-based false alarm filtering algorithm;

Inspection without stopping, parking for leaks;

Continuous data history allows for evaluating leakage risks;

Automatic route planning to catch distribution efficiently.

AI

High-precision positioning, panoramic imaging, and multi-parameter environmental information integration sensing;

Providing data support for intelligent AI algorithms.

A20 Main Unit

AiLF advanced instrument

A10R

A10R has an omnidirectional pan-tilt integrating a camera with a high-performance laser sensor, suitable for leak inspection of pipelines under sidewalks and green belts. The elevated installation on the roof prevents obstruction of the detection light and reduces false alarms.

A10I can absorb the surrounding air into vehicle's inner inspection chamber for analysis, to extract the tiny amount of methane concentration. It is applicable to identifying the floating gas of tiny leakage, as complementary with the Roof system.

A20

Model	A20	Detection Subject	Methane (CH4) | Ethane(C2H6)
Measuring Principle	Mid-infrared Laser Absorption Spectroscopy	Concentration Range	0-10,000 ppm(Methane) I 0-1,000ppm(Ethane)
Static Detection Limit	I ppb(Methane) I 0.5ppb(Ethane)	OperatingTemperature	-20 ~ 60 ° C
Response Time	1s	Main Unit Weight	12 kg
Main Unit Dimension	300 x 300 x 243 mm	Power Supply and Power Consumption	12V DC 120W
Positioning system accuracy	< Im	Data Display	Digit, Image, Geographic information image

A10R

Model	A10R	Detection Subject	Methane (CH4)
Measuring Principle	Laser Absorption Spectrum	Detection Laser Class	Class I Eye Safe
Static Detection Limit	5 ppm · m	Indication Laser Class	Class IIIR No direct sight or instrument observation
Response Time	0.025s	Enclosure Protection Class	IP66
Maximum Detection Distance	150 m	Operating Temperature	-40 ~ 60 ℃
Concentration Range	0~50,000 ppm · m	Operating Humidity	< 98%RH, no condensation
Rotary Movement of PTZ	Azimuth 360 ° continuously, elevation 120 °	Power Supply and Power Consumption	12V DC 50W
In-Vehicle Main Unit Dimension	280 x 105 x 140 mm	Roof Unit Dimension	184 x 205 x 228 mm
In-Vehicle Main Unit Weight	3 kg	Roof Unit Weight	3.7 kg

A10I | A10IE

Model	A10I | A10IE	Detection Subject	Methane (CH4) | Ethane (C2H6)
Measuring Principle	Laser Absorption Spectrum	Operating Humidity	< 98%RH, no condensation
Static Detection Limit	0.5 ppm(Methane) | 5ppm(Ethane)	Operating Temperature	-40 ~ 60 ℃
Response Time	0.05s(Methane) | 0.1s(Ethane)	Concentration Range	0~10,000 ppm
Sampling Method	Sniffer	Power Supply and Power Consumption	12V DC 80W
Main Unit Dimension	280 x 105 x 140 mm	Main Unit Weight	3.5 kg | 4.8 kg

L Series

Remote Detector

L Series Hand-Held Laser Methane Remote Detector.
Innovate the"flashlight" appearance design for easy holding and longterm use, embody the design concept of A Reliable Tool In The Hand Of Inspector, combining ergonomics and reliability.

Water and Dust Resistant, Grade IP68
Available for explosive environment, Grade EXib IIC T4
Adaptable to various working conditions such as cities, wild field, stations and pipelines with reliability, durability, safety and stability.

Maximum detection distance is 200 m
Provide a specific building inspection mode by app for non-door-to-door inspections to high-rise residential buildings.
Can be equipped with various practical accessories such as Stand Handle and Laser Sight to improve work efficiency.

One

Support Bluetooth connection with inspection application **AlphaOne**
Support access to external or user's information platform

iOS Android

AiLF
advanced instrument

ALuminum

Aluminum alloy integrated body
Made from a single piece of metal, high hardness, light weight.
Hard-oxidized surface, making it more resistant to wear, and comfortable grip.

Minimalist design with only 1 button for instant use.
Allow frontline workers to focus on inspection targets without concerns of parameter configuration and curve change.

Long endurance, fast charging with Type C interface. Equipped with a low-temperature resistant battery pack, ensuring a day-long working even in extremely cold regions.

L20

Model	L20P I L20I L20C	Detection Subject	Methane (CH4)
Measuring Principle	Laser Absorption Spectrum	Detection Laser Class	Class I Eye Safe
Static Detection Limit	3 ppm · m I 5 ppm · m I 5 ppm• m	Indication Laser Class	Class IIRI No direct sight or Instrument observation
Response Time	0.05 s I 0.05 s I 0.I s	Enclosure Protection Class	IP68
Maximum Detection Distance	200 m I 150 m I 150 m	Explosion-proof Grade	Exib IIC T4 Gb
Concentration Range	0~100,000 ppm · m	OperatingTemperature	-20 ~ 50 ℃
Power supply and endurance	Lithium battery >12h	Operating Humidity	< 98%RH, no condensation
Main Unit Dimension	225 x 70 x 80 mm	Main Unit Weight	0.52 kg I 0.51 kg I 0.51 kg

L10

Model	L10 | L10E| L10M	Detection Subject	Methane (CH4)
Measuring Principle	Laser Absorption Spectrum	Detection Laser Class	Class I Eye Safe
Static Detection Limit	5 ppm · m	Indication Laser Class	Class IIIR No direct sight or instrument observation
Response Time	0.05s | 0.1s | 0.1s	Enclosure Protection Class	IP68
Maximum Detection Distance	100m | 80m| 50m	Explosion-proof Grade	Exib IIC T4 Gb
Concentration Range	0~100,000 ppm · m	OperatingTemperature	-20 ~ 50 ℃
Power supply and endurance	Lithium battery > 10h	OperatingHumidity	< 98%RH, no condensation
Main Unit Dimension	0.38kg | 0.36kg| 0.36kg	Main Unit Dimension	170 x 52 x 52 mm

P Series

Pan-tilt Monitoring

P20 New Pan-tilt Scanning Gas Leak Monitoring System
P10 Line-shaped Beam Gas Leak Monitoring System

P20 (NEW)

NEW

In stations and process areas, it requires continuous rotation for the scanning laser pan-tilt to inspect along each route; To accurately detect distant targets, it must have good locating accuracy and repeatability.

Traditional Pan-tilt Products	New Pan-tilt Product
Flame-proof	Intrinsically safe and explosion-proof
Industrial TV Pan-tilt	Continuous operation high-reliability Pan-tilt
Open-loop motion control	Closed-loop control
High power consumption	Reduced power consumption by 5 times to 20w
Large size	Reduced size by 4 times
Heavy weight	Reduced weight by 6 times to 5.5 kg
Difficult maintenance	Plug-and-work automatic recovery of inspection
Requires backend system	Pan-tilt integrates detection, alarm, and track control functions

all in ONE

P20 integrates laser detection, leak point determination, recording, inspection route management, and network communication on the pan-tilt, making it a complete monitoring and alarm device. Even if the backend system is offline, the pan-tilt can independently and continuously perform on-site leak monitoring and synchronize breakpoint alarm data when the system is restored.

Multi applied

P20 's ultra-low power consumption supports solar power supply and can be connected to the backend system via 5G network. Its compact size and weight, similar to a surveillance camera, make it easier to install and dismantle.

Solar Cell Panel

P20 Installation

The line-shaped detection beam, combined with cooperative target "reflective plates" spanning the detection area to capture trace gas leaks in the air. Suitable for pipe corridors, tunnels, valve rooms, and compressor centers.

P10

The reflective structure allows the light to pass through the monitoring area twice, enhancing the detection capability. The use of directional reflective target eliminates the need for strict alignment. Even if the bracket undergoes settlement or deformation due to external forces, it can maximize the detection performance.

P10

Model	P10	Detection Subject	Methane (CH4)
Measuring Principle	Laser Absorption Spectrum	Enclosure Protection Class	IP68
Static Detection Limit	10 ppm · m	Explosion-Proof Grade of Main Unit	Exib IIA T4 Gb
Response Time	0.5s	Operating Temperature	-40~70 ℃
Concentration Range	0~50,000 ppm · m	Operating Humidity	<98%RH,no condensation
Maximum Detection Distance	200m	Power Consumption	10W
Beam TransmissionMode	Reflection-type	Main Unit Dimension	90 × 83 × 130 mm
Main Housing Material	Stainless Steel	Main Unit Weight	2.0 kg

P20

Model	P20	Detection Subject	Methane (CH4)
Measuring Principle	Laser Absorption Spectrum	Detection Laser Class	Class I Eye Safe
Static Detection Limit	5 ppm · m	Indication Laser Class	Class IIIR No Direct Sight or Instrument Observation
Maximum ResponseTime	0.05s	Explosion-Proof Grade	Exib IIB T4 Gb
Concentration Range	0 ~ 50,000 ppm · m	Enclosure ProtectionClass	IP68
Maximum DetectionDistance	150m	Working Temperature	-40~70℃
Motion Range ofCloud Platform	Azimuth 360° continuously. Elevation + 200° ~-90°	Working Humidity	<98%RH, no condensation
Power Consumption	20W	Main Unit Dimension	139×139×263mm
Main Housing Material	Stainless Steel	Main Unit Weight	5.5 kg

U Series

Inspection UAV

Industry application
Partner load

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advanced instrument

U10 Ultimate UAV leak inspection System
U20 Light-weight UAV leak inspection System

DJI M30
Industrial UAV
Spport DJI's dock

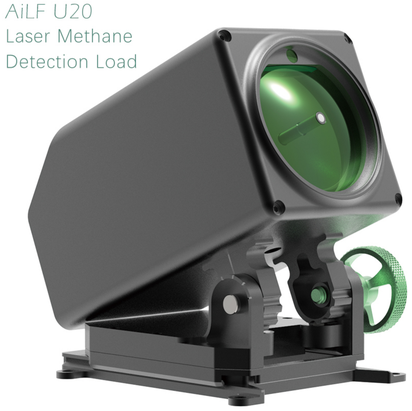
120 +

The advanced **AiLF** laser telemetry technology enables **U** series to have a response time of 0.025s and a very low static detection limit, capable of effectively detecting gas leaks at the height of over a hundred meters.

Light

The extremely lightweight design, meets the requirements of the "Interim Regulations on the Flight Management of UAV" with the carrier drone, and can perform tasks in airspace below 120m without application of flight.

AiLF U20
Laser Methane
Detection Load



Highly- Automated

It supports two automatic inspection modes of area scanning and route inspection, and can import KML files to GIS routes to generate inspection tasks. On-site selection allows for leak scanning in villages or stations.

Highly - Open

It supports exporting inspection reports and event records through the app, and the SD card is used to store inspection videos and logs. System integration services are provided to transmit inspection data and on-site videos to customer's information platform.

Honor
Clients

CALIFORNIA RESOURCES CORPORATION
saudi aramco energy ventures
国家管网 PipeChina
Chevron
قطر للطاقة QatarEnergy
中国石油

DJI M350
Industrial UAV

DJI H20
High-definition
camera

AiLF U10
Laser Methane
Detection Load

CE FC FDA RoHS 2011/65/EU

Model	U10 | U20	Detection Subject	Methane (CH4)
Measuring Principle	Laser Absorption Spectrum	Detection Laser Class	Class I Eye Safe
Static Dectection Limit	3 ppm · m | 5ppm · m	Indication Laser Class	Class IIIR No direct sight or instrument observation
Response Time	0.025s | 0.1s	Operating Temperature	-20 ~ 50 ℃
Maximum Detection Distan	150m | 80m	Operaing Humidity	<98%RH, no condensation
Concentration Range	0~50,000 ppm · m	Main Unit Dimension	174 × 89 × 163 mm | 94 × 94 × 55 mm
Compatible with UAV Mode	DJI M350 Series | DJI M30 Series	Main Unit Weight	0.7kg | 0.25kg

G Series

Portable Detector

G10 Portable Laser Gas Detector
G10V Electric-Bicycle-Mounted Laser Methane Inspection System
G10E Laser Ethane Identification Device

G10
Fast Disassembly and Installation with Trolley

CPA

Nationally approved metrological instruments, with accurate and reliable measurements,and clear traceability of metrological standards.

1 ppm Static Detection Limit

0.1 s Response Time

Laser technology provides better detection performance and long service life that traditional equipments don't have; Combined with mature sampling methods by a trolley or a probe, it makes leak detection rapider and more accurate.

Auto

With the built-in gas reference, the unit can continuously self-calibrate during operation to ensure accurate detection. Full-range detection supports readings of concentration in ppm, % LEL and %VOL.

G10V
Electric Bicycle Installation

Equipped with the gas pump with a higher flow and efficient filtering system, G10 can be mounted on an electric bicycle. Combined to be a flexible and convenient low-speed inspection platform G10V, by additionally using a L series remote detector.

AlphaOne Intelligent Inspection app
Record inspection routes, alarm points and note points. Generate a report after inspection.
Support system integration with outside or customer's network platform.

AiLF
advanced instrument

C_2H_6

Laser technology can detect the ethane, and output the accurate concentration value in a shorter detection time.
Meanwhile, you can refer to the detected methane concentration, and identify whether the leakage is from the natural gas according to the gas proportion.

Traditional Chromatographic Product	Laser Ethane Product
Several minutes-for analysis time	Real-time analysis
Qualitative measurement	Quantitative measurement
Graphic output	Direct display of concentration value
Replace key parts-every three years	10-year service life for key parts

G10

Model	G10V	Detection Subject	Methane（CH4）
Measuring Principle	Laser Absorption Spectrum	Display Unit	ppm, %LEL, %VOL
Static Dectection Limit	0.5 ppm	Explosion-proof Grade	Exib IIC T4 Gb
Response Time	0.1 s	Operating Temperature	-20 ~ 50 ℃
Concentration Range	0~100% VOL	Operaing Humidity	< 98%RH, no condensation
Enclosure Protection Class	IP66	Main Unit Dimension	208 x 78 x 53 mm
Power supply and endurance	Lithium battery >10h	Main Unit Weight	1.1 kg
Accessory	Rapid absorption accessory, inspection terminal	Optional Accessory	Hand-held probe, electric bicycle

G10V

Model	G10V	Detection Subject	Methane（CH4）
Measuring Principle	Laser Absorption Spectrum	Display Unit	ppm, %LEL, %VOL
Static Dectection Limit	0.5 ppm	Explosion-proof Grade	Exib IIC T4 Gb
Response Time	0.1 s	Operating Temperature	-20 ~ 50 ℃
Concentration Range	0~100% VOL	Operaing Humidity	< 98%RH, no condensation
Enclosure Protection Class	IP66	Main Unit Dimension	208 x 78 x 53 mm
Power supply and endurance	Lithium battery >10h	Main Unit Weight	1.1 kg
Accessory	Rapid absorption accessory, inspection terminal	Optional Accessory	Hand-held probe, electric bicycle

G10E

Model	G10E	Detection Subject	Ethane（C2H6）| Methane（CH4）
Measuring Principle	Laser Absorption Spectrum	Display Mode	Direct value display (ppm)
Static Dectection Limit	5 ppm (Ethane) | 1%VOL (Methane)	Explosion-Proof Grade	Exib IIC T4 Gb
Response Time	0.1 s	Operating Temperature	-20 ~ 50 ℃
Concentration Range	0~10,000ppm(Ethane) | 0~100%VOL(Methane)	Operating Humidity	< 98%RH, no condensation
Enclosure Protection Class	IP66	Main Unit Dimension	208 x 78 x 53 mm
Power supply and Endurance	Lithium battery >10h	Main Unit Weight	1.2 kg
Accessory	Strap, hand-held probe	Optional accessory	E-Bicycle-mounted bracket

C Series

Hand-held Detector

C10F Hand-Held Sniffer Full-Range Detector

CPA

Nationally approved metrological instrumenents, with accurate and reliable measurements, and clear traceability of metrological standards.

1ppm ~ 1000000 ppm(100 %VOL)

C10F has good performance of full-range detection, supports readings of concentration in ppm, %LEL and %VOL.

Auto

With the built-in gas reference, **C10** can continuously self-calibrate during operation to ensure accurate detection. Laser technology is superior to the traditional sensor without any failure or getting disabled, it's truly realized self-calibration(calibration free).

One

Support Bluetooth connection with inspection app **AlphaOne**

Support access to external or user's information platform

C10F

AiLF
advanced instrument

Water and Dust Resistant, Grade IP66
Applicable to explosive environment, Grade EXib IIC T3
Capable of adapting to various working conditions like indoor, wild field, station, pipelines with reliability, durability, safety and stability.

Long endurance, fast charging, and Type C interface working with low temperature resistance battery pack can ensure a-day-long working even in extremely cold regions.

Through the rear EZG gas interface, C10 can be connected with the accessories like gooseneck and sampling probe in a convenient and fast manner for replacing and checking filter.

C10F

Model	C10F	Detection Subject	Methane（CH4）
Measuring Principle	Laser Absorption Spectrum	Display Unit	ppm、%LEL、%VOL
Static Detection Limit	1 ppm	Explosion-proof Grade	Exib IIC T3 Gb
Response Time	0.2 s	Operating Temperature	-20 ~ 50 ℃
Concentration Range	0~100% VOL	Operating Humidity	< 98%RH, no condensation
Enclosure Protection Class	IP66	Main Unit Dimension	225 x 82 x 54 mm（excluding probe）
Power supply and endurance	Lithium battery >10h	Main Unit Weight	0.56kg
Accessories	Goosenneck probe	Optional Accessories	Sampling probe,portable bag

C10P | C10L | C10V

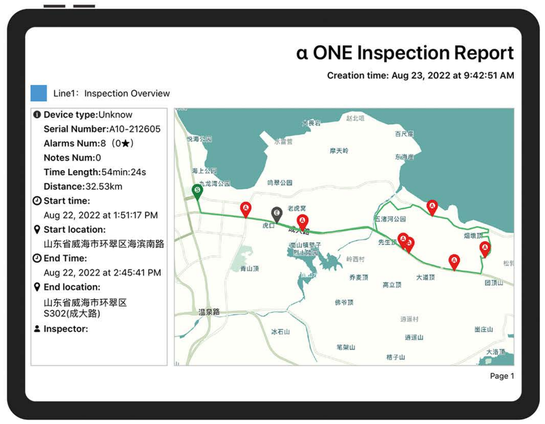
Model	C10P | C10L | C10V	Detection Subject	Methane（CH4）
Measuring Principle	Laser Absorption Spectrum	Display Unit	ppm | %LEL | %VOL
Static Detection Limit	1ppm | 10ppm | 10ppm	Explosion-proof Grade	Exib IIC T3 Gb
Response Time	0.2 s	Operating Temperature	-20 ~ 50 ℃
Concentration Range	0~10000ppm | 0~100%LEL | 0~100% VOL	Operating Humidity	< 98%RH, no condensation
Enclosure Protection Class	IP66	Main Unit Dimension	225 x 82 x 54 mm（excluding probe）
Power supply and endurance	Lithium battery >10h	Main Unit Weight	0.56kg
Accessories	Goosenneck probe	Optional Accessories	Sampling probe,portable bag

AlphaOne α One

Intelligent Inspection Application

AiLF advanced instrument

AlphaOne intelligent inspection Application
Provide IOT attributes for device detection.
Correlate concentration, location, time, events and people.
Support iOS and Android systems.



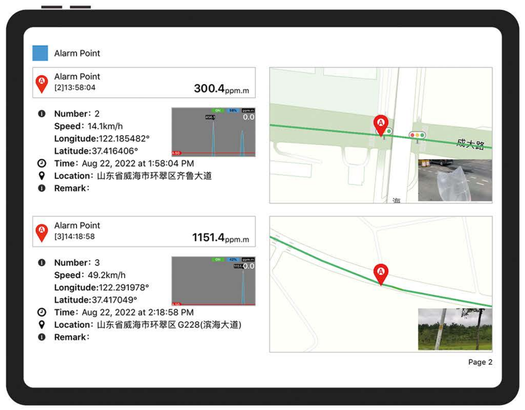
In 2015, AiLF Instruments pioneered inspection applications for devices, open to customers. Available on the Apple App Store and Android app platform, it continues to update for users to download.

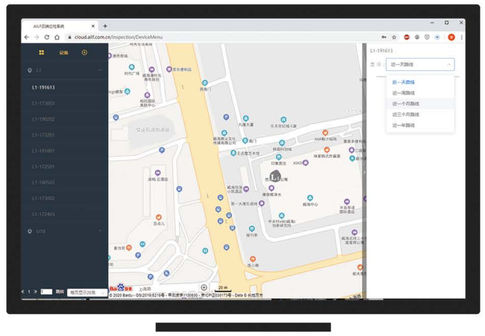
The software application of the device is not just a second screen but also a platform for accumulating and sharing practical work. Over the past decade, practical feedback from customers and on-site inspection experience have been continuously integrated into **AlphaOne** through iterative updates.
Making the features more powerful, applictions more intelligent, and operations simpler.

UIO update in often

A,L,U,G,C series can all be connected to **AlphaOne**.The application automatically creates the interface based on the connected device type.
On a touch-and-drag interface, the user experience is simple and intuitive. All functions can be completed through simple selections, minimizing the learning cost and improving the quality and efficiency of operations.

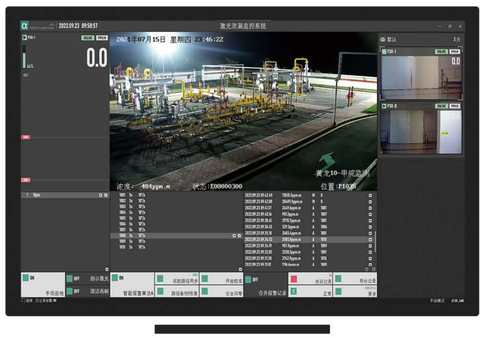
AIO all in one





AlphaCloud

Cloud Information Platform
AC can connect and bind detection devices under different accounts, synchronizing device information, status, location, and operation results.
Combined with embedded list, GIS, and dashboard views, it achieves multi-dimensional device management and data analysis.



AlphaSupervisor

Monitoring System Platform
P series comes with a network management platform, supporting one-site deployment for multi-site management. It can be deployed as an on-site configuration for the monitoring terminal and can also serve as an upper-level management platform, simultaneously managing multiple stations and devices.

AO, **AS** and **AC** have built an interactive system of data information for the detection devices.
AiLF Instruments remains open and integration of the system, providing open interface and customized service for users or external information platforms.

Available on the App Store Bluetooth GPS

MEMO

AiLF Instruments has always been committed to providing advanced and reliable leak detection solutions for the gas industry.

Our team has focused on laser absorption spectroscopy gas detection technology for 16 years, possessing deep theoretical knowledge and rich practical experience in instrument design, algorithm software, and application scenarios.

Our products cover a wide range of applications in the natural gas industry, from target identification, rapid inspections, fixed monitoring to regional leak risk assessment, and leak event determination. The applications span across the upstream, midstream, and downstream of gas industry.

Leak Finder, a professional service engineering brand under AiLF Instruments, is dedicated to using the most advanced technology to provide customers with accurate and timely leak detection services.

AiLF Instruments consistently adheres to innovation, industry expertise, delivering value through products and services, leading in technology, excelling in design, and satisfying customers.