

Oil Pollution Alarm System

ATE5100

Features

- Multi-function: oil pollution alarm, water level monitoring, on-site video evidence collection, 5G transmission, GPS
- High accuracy
- Remote sensor, contactless detect
- High-frequency modulated fluorescence
- High sensitivity, ppm-level oil content can be detected
- Monitoring height: 0.5~8.0 meters
- Scanning area: about 100 cm²
- Can operate during the day and at night, not affected by background light such as sunlight
- RS485, LAN, 5G module output, the central control room updates the monitoring data and on-site images in real time
- On-site sound and light alarm

Application

- Environment: Port oil spill alarm
- Industrial Pollution: Oil spill alarm detection in rivers, lakes and reservoirs
- Environmental Monitoring: Ocean oil spill alarm detection
- Chlorophyll remote sensing detection in rivers, lakes and reservoirs



Product data information is current as of publication data. Products conform to specifications per the terms of Optosky Standard warranty.

Description

The significant impact of oil spills on marine ecosystems has attracted worldwide attention. Offshore drilling platforms and ship accidents are the main sources of oil spills.

The ATE5100 oil pollution alarm system is a new generation of oil pollution remote sensing detector launched by Optosky. ATE5100 adopts the world's most advanced high-frequency modulated laser induced fluorescence (LIF) high-speed imaging remote sensing technology, providing a new and more powerful technical means for environmental monitoring. It studies the pollution of water bodies by studying the fluorescence characteristics of algae and oil spills. The laser induced fluorescence method uses specific spectral characteristics to provide identification of different types of released oil and study the effects of weathering. ATE5100 also integrates functions such as water level monitoring, on-site video evidence collection, 5G transmission, and GPS positioning. It is a new form of product.

ATE5100 can be installed on a pole to monitor the water surface in real time. It is an indispensable instrument for emergency departments to monitor oil pollution in real time. ATE5100 also has an online scanning extension model that can be placed on a high pole to scan the oil pollution in the river section and the surrounding oil pollution, expanding the detection range.



1. Parameter

Function	Parameter	
Oil pollution alarm	Measurement object	Petroleum, motor oil, diesel, gasoline, kerosene, heavy oil, etc.
	Measuring principle	Laser-induced fluorescence (LIF)
	Measuring oil film thickness	L um thickness can be measured
	Measurement area	Round, diameter 100 cm ²
	Working time	Can work during the day and at night
Liquid level radar	Measuring range to	8m
	Measurement deviation	± 5mm
	Measurement frequency	W band (80GHZ technology)
	Beam Angle	8 degrees
Video Surveillance	Image Resolution	2560×1440
	sensor type	1/1.8 " progressive scan CMOS
	Minimum illumination	color: 0.005 Lux @(F1.3, AGC ON); Black and White: 0.001 Lux @(F1.3, AGC ON); 0Lux with IR
	Focal Length	2.8~12mm, 4x optical zoom
	FOV	107.4~39.8 degrees (wide angle-telephoto)
	Maximum aperture	F1.3
Complete Machine	Installation height	0.5 ~ 8.0 m
	GPS Positioning Accuracy	1m
	Power consumption	Less than 50W
	power supply	DC12V, 5A
	weight	3KG
	Environmental requirements	-5~45°C; relative humidity <90%, no condensation



2. Detection Principle

ATE5100 uses ultraviolet fluorescence oil measurement method, which is one of the standard methods for oil measurement in the field of environmental protection. It uses ultraviolet light of a specific wavelength to irradiate the oil on the water surface. The polycyclic aromatic hydrocarbons in the oil absorb the energy and are excited, thereby generating fluorescence of a specific wavelength. The intensity of the fluorescence is proportional to the intensity of the excitation light and the amount of the substance being measured. Therefore, according to the fluorescence effect of this oil substance, the oil pollution on the water surface can be detected. This method is especially effective for mineral oil and heavier components such as petroleum; it has high sensitivity and can detect sub-ppm levels (ppm: solute mass accounts for parts per million of the total solution mass). At the same time, there are fewer interference factors. It is now one of the most common methods used by people for water surface oil detection.

The ATE5100 UAV fluorescence imaging oil pollution remote sensing detection system loads the laser and spectral analysis system onto the drone, which emits laser from the air towards the water surface (sea surface, river surface). The oil pollution on the water surface will emit fluorescence of a specific wavelength after absorbing ultraviolet light. The fluorescence on the drone collects the fluorescence signal and analyzes it to obtain the oil pollution situation on the water surface.

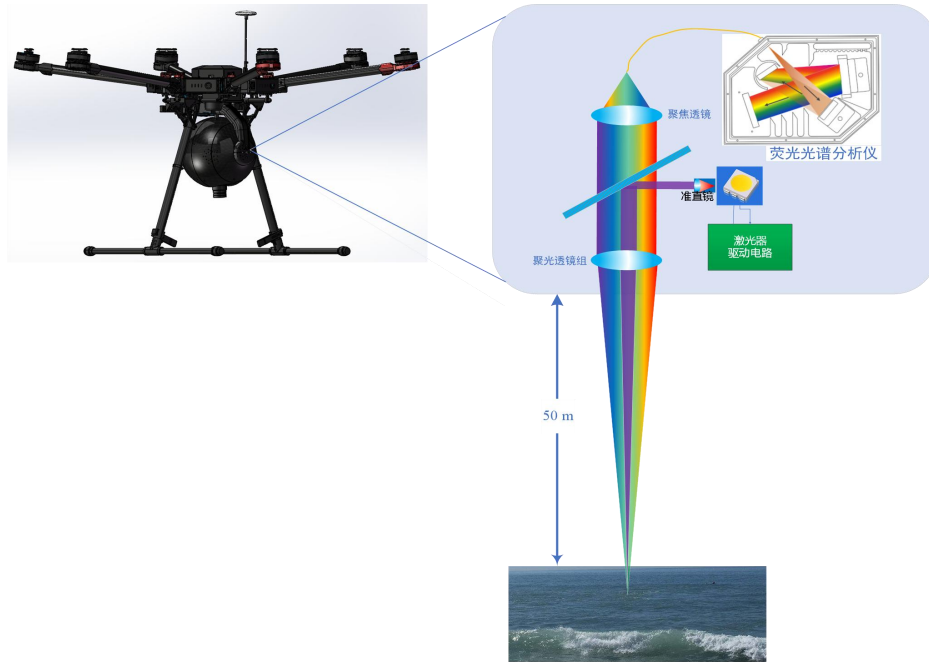


Figure 1 Working principle of ATE5100 UAV fluorescence imaging oil pollution detection system

3. Selection Guide

Model	Feature
ATE5100	Universal type, working distance 0.5-8 m
ATE5100Plus	High sensitivity type, maximum detection distance 1 Km.
ATE5100SC	Cross-sectional scanning type, maximum detection distance 1 km.

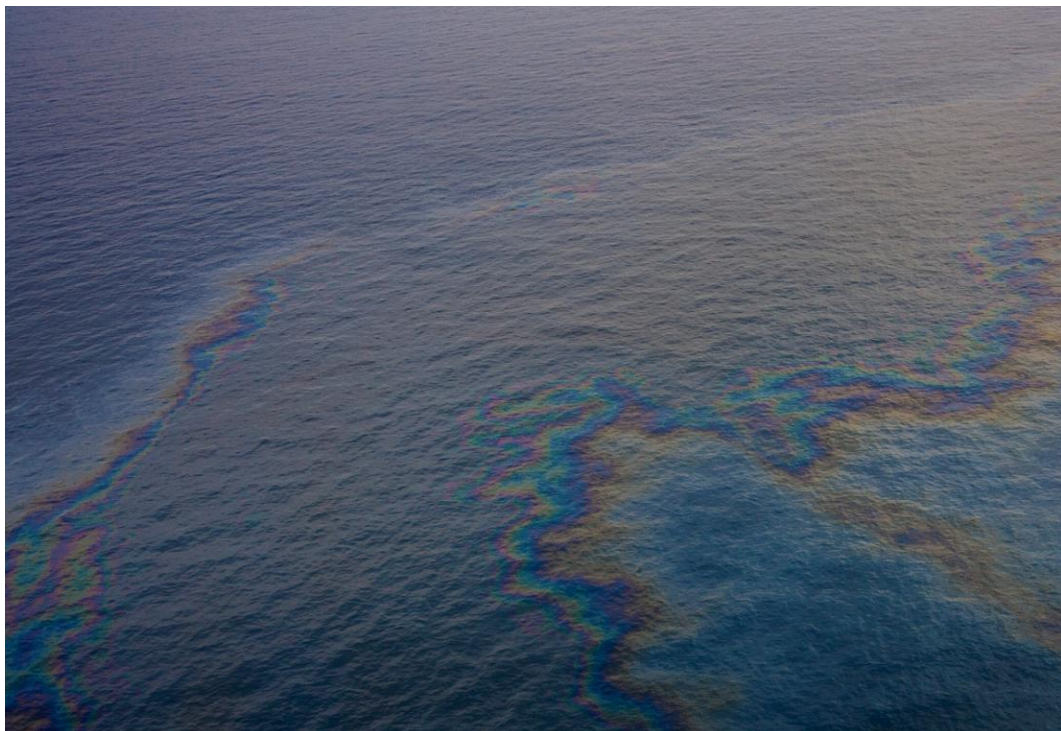


Figure 2 Oil pollution on the sea surface



Figure 3 ATE5100 pulse laser beam directed toward the water surface